

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2023

HEARINGS BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

ON

H.R. 8255

AN ACT MAKING APPROPRIATIONS FOR ENERGY AND WATER DEVELOPMENT FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 2023, AND FOR OTHER PURPOSES

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

Printed for the use of the Committee on Appropriations



Available via the World Wide Web: <http://www.govinfo.gov>

U.S. GOVERNMENT PUBLISHING OFFICE

46-653 PDF

WASHINGTON : 2023

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CONTENTS

HEARINGS

WEDNESDAY, APRIL 6, 2022

	Page
Department of Defense—Civil: Department of the Army; Corps of Engineers— Civil	1
Department of the Interior: Bureau of Reclamation	12

WEDNESDAY, MAY 4, 2022

Department of Energy: Office of the Secretary	41
---	----

WEDNESDAY, MAY 18, 2022

Department of Energy: National Nuclear Security Administration	69
--	----

BACK MATTER

List of Witnesses, Communications, and Prepared Statements	171
Nondepartmental Witnesses	101
Subject Index	173
Department of Defense—Civil	173
Department of the Army	173
Corps of Engineers—Civil	173
Department of Energy	173
National Nuclear Security Administration	173
Office of the Secretary	173
Department of the Interior	174
Bureau of Reclamation	174

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2023

WEDNESDAY, APRIL 6, 2022

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

The subcommittee met at 10:01 a.m. in room SD-192, Dirksen Senate Office Building, Hon. Dianne Feinstein (chairwoman) presiding.

Present: Senators Feinstein, Shaheen, Heinrich, Kennedy, Murkowski, and Hyde-Smith.

DEPARTMENT DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

STATEMENT OF MR. MICHAEL CONNOR, ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

OPENING STATEMENT OF SENATOR DIANNE FEINSTEIN

Senator FEINSTEIN. The Subcommittee on Energy and Water Development will come to order.

Today's hearing will review the President's fiscal year 2023 Budget Request for the United States Corps of Engineering and the Bureau of Reclamation.

Ranking Member Kennedy and I will each have an opening statement. We will then turn to our witnesses to present testimony on behalf of the Corps and the Bureau. Each witness will be allowed 5 minutes for opening remarks, and of course if you need more, I have never seen us not do that. At the conclusion of the witnesses' testimony, I will recognize Senators for 5 minutes of questions each.

And I would like to welcome our witnesses. Thank them for being here today. They are: Mr. Michael Connor, the Assistant Secretary of the Army for Civil Works; Lieutenant General Scott Spellmon, the Chief of Engineers for the United States Army Corps of Engineers; and Mr. David Palumbo, Deputy Commissioner of Operations for the Bureau of Reclamation at the Department of Interior.

I would like to speak for a moment about the Army Corps' budget request which cuts more than \$1.7 billion from the enacted level for the Civil Works Program. That is a 21 percent cut. I am particularly disappointed that \$1 billion of that is to the construction account.

Last year we passed a Bipartisan Infrastructure Bill. It included \$17 billion for the Corps of Engineers. The point of the bill was to address the backlog in infrastructure funding, not replace the regular funding program. The budget request undercuts the value of that investment by dramatically cutting the construction account.

So in order to make tangible progress on our infrastructure backlog we have got to make some real investments this year. And in that regard I really hope that we would have some informal conversations among us on this subcommittee, and see what we might be able to do because I believe we are really going to set back our Nation if we can't have up-to-date infrastructure.

So we will now begin with our witnesses, unless anyone else has an opening statement, please go ahead.

STATEMENT OF SENATOR JOHN KENNEDY

Senator KENNEDY. First, welcome. Thank you for being here. Thank you for your service to our country.

I do have a few remarks that I wanted to make, and bear with me, I have got them written down here. I don't usually like to do it that way, but I wanted to choose my words carefully today.

At last year's Budget Justification Hearing with respect to the Corps and the Bureau of Reclamation, I gave some opening remarks as ranking member of the subcommittee, and I showed you some images, they are behind me today. I wanted to emphasize them again. These are images of what we call HSDRRS, which as you know is an acronym for Hurricane and Storm Damage Risk Reduction System.

HSDRRS was and is America's and Louisiana's response to Hurricane Katrina which struck New Orleans in—well, struck all of South Louisiana, and large parts of Mississippi in 2005. And I want to thank you, and I want to thank the American taxpayer, and the American people for HSDRRS.

Today, I just wanted to comment briefly on why I think our country can take pride in what I think of as the ingenuity of the United States Army Corps of Engineers working on all of its projects, but especially with Louisiana's Coastal and Restoration Authority which is very important to my State.

Hurricane Katrina, as we all know, was a cat (category) 5 hurricane. It hit New Orleans August 29, 2005, not just New Orleans it hit all of South Louisiana, it hit all of my friends in Mississippi, it caused unprecedented losses, we had 1,800 fatalities, \$125 billion in damage, there was a 28-foot storm surge, 85-foot waves. The surge and waves caused, in my State, 50 major levee breaches of our previous protection system, compromised 169 of our systems, 350 miles of levee protection.

Thirty-four; we have 71 pumping stations in New Orleans, which as you know is below sea level, without those pumping stations we would flood with every rain except for the French Quarter where our founders knew to build on high land; 34 of the 71 of our pumping stations were damaged.

About 80 percent of the City of New Orleans was flooded to depths as deep as 15 feet in some areas. I die a little bit inside every time I remember the devastation. And I don't want to mini-

mize the devastation in the rest of Louisiana as well, and in Mississippi.

Hurricane Katrina left—because the levees broke in New Orleans, and it flooded 250 billion gallons of water. It took us 53 days to pump it out. In response to hurricane Katrina America sent numerous Federal agencies, thank you America, to help Louisiana recovery and rebuild. I want to focus on the essential role that the U.S. Army Corps of Engineers played in that, because we don't talk about it enough.

In repairing and rebuilding the levees and the flood walls that encircle the New Orleans metropolitan area, not just New Orleans, the area surrounding as well, because I don't want to minimize the damage to anyone. The Corps incorporated lessons learned and recommendations from international experts. You talk to scientific organizations, you talk to other government agencies, you talk to the private sector, and we all studied the system failure.

From this collaborative knowledge base, and its work with the Louisiana Coastal Protection and Restoration Authority in my State, we are trying to do our part, these engineering accomplishments include: The Corps strengthening the levees, the flood walls, the gated structures, the pump stations that form the 133-mile Greater New Orleans area perimeter system that encircles this part of my State. And you can see some of your good work here.

The Corps improved approximately hundreds—I am sorry—70 miles of interior risk reduction structures within the levee that encircles the New Orleans Metropolitan region. Among the Corps' technically advanced engineering solutions, HSDRRS now includes a surge barrier wall that is 1.8 miles long. It is an engineering marvel. It is the largest design, built Civil Works project in your history one of the—maybe the largest in America's history.

HSDRRS also includes the largest drainage pump station in the world, HSDRRS works, and has already spared lives and property, save taxpayers millions of dollars in my area from expensive storm recovery.

Last year Hurricane Ida hit us, a category 4 storm. It hit Southeast Louisiana, its surge would have overtopped our levees before your good work, and additionally, there would have been overtopping along the inner navigation—Inner Harbor Navigation Canal Corridor if the HSDRRS surge barrier had not been in place. This would have flooded, gutted St. Bernard Parish, Orleans Parish, and I want, well, all of us to be mindful of that.

I am almost done Madam Chair. I am sorry I talk slow.

On May 26, the U.S. Army Corps of Engineers will be conducting an official ceremony at the surge barrier just outside of New Orleans. I am going to try to be there. The purpose will be turning over the HSDRRS system to Louisiana authorities who will—we will now operate it with your guidance. And I understand that Corps of Engineers' principals will be leading and participating in these ceremonies. We will have many State and local officials there. We will have many, many, many grateful Louisianans.

And I intend to be present, and I would like to ask the members of this committee to join me. I want you to all come to New Orleans and see this engineering marvel that the Corps of Engineers con-

structed, and the American people, who are the most generous people in the history of the world, paid for.

So I will be in touch. If you are interested in coming to Louisiana for May 26, we would love to have you. This project will take your breath away. Thank you, Madam Chair.

Senator FEINSTEIN. And I thank you Senator. Are there any other comments from the dais? If not, we will proceed with the witnesses.

We will hear from Assistant Secretary Connor, followed by Lieutenant General Scott Spellmon, then Deputy Commissioner Palumbo.

So Mr. Secretary, we are ready for you.

SUMMARY STATEMENT OF MR. MICHAEL L. CONNOR

Mr. CONNOR. Thank you Madam Chairman. Chair Feinstein Ranking Member Kennedy and distinguished members of the committee, thank you for the opportunity to discuss the President's Budget Request for the Army Civil Works Program.

The fiscal year 2023 budget request includes \$6.6 billion for the Civil Works program. It is focused on smart investments that are focused on yielding high economic and environmental returns, increasing resilience to climate change, and decreasing climate risk for communities and aquatic ecosystems based on the best available science, supporting a strong economy by facilitating safe, reliable, and sustainable commercial navigation, and promoting environmental justice, and investing in disadvantaged communities that have been too often left behind.

Sorry about that. There we go.

With this budget the Army will continue working with community partners to develop, manage, restore, and protect our Nation's precious water resources, particularly as it relates to the three main missions of the Army Civil Works Program: commercial navigation, flood protection and storm damage reduction, and aquatic ecosystem restoration.

With respect to disadvantaged communities, the administration has set a goal that 40 percent of the overall benefits of Federal investments in climate and clean energy investments flow to disadvantaged communities, the Justice40 Initiative. Actions in this area include an examination of the activities of key programs to determine whether benefits have accrued to disadvantaged communities.

There are also funds to one, improve access to Civil Works' technical assistance programs, and to develop projects that benefit disadvantaged communities. And two, ensure any updates to Civil Works policies and guidance will not result in a disproportionate negative impact on disadvantaged communities.

The fiscal year 2023 budget also continues the process of addressing the climate crisis and evaluating the Civil Works programs to identify appropriate actions to support the administration's efforts to tackle the climate crisis at home and abroad.

The budget includes well over \$1 billion to support the Corps of Engineers' climate resiliency efforts and reduce the risk of damages from floods and storms, and restore the Nation's aquatic eco-

systems. These efforts include incorporating natural and nature-based features—infrastructure solutions wherever possible.

Investments include \$974 million for construction of flood and storm damage reduction in aquatic ecosystem restoration projects, over \$90 million to improve the resilience of Corps infrastructure to climate change, and \$37.4 million for technical and planning assistance programs with an emphasis on work to help local communities identify and address their flood risks.

The budget also includes funding to continue studies to investigate climate resilience in numerous areas such as the Great Lakes coast, as well as Central and Southern Florida.

Let me highlight some specific allocations. In support of this administration's commitment to our Nation's coastal ports and inland waterways, critical links in the Nation's supply chains, the fiscal year 2023 budget includes over \$3 billion for the study, construction, and operation, and maintenance of inland and coastal navigation projects.

These funds will be used in conjunction with the \$465 million provided in the Bipartisan Infrastructure Plan for the maintenance and repair of existing navigation harbors, channels, and navigation locks and dams on the Nation's ports and waterways.

The budget proposes to drive over \$1.7 billion from the Harbor Maintenance Trust Fund for eligible projects with an emphasis on O&M (operation and maintenance), including dredging, of completed projects.

The budget also contains over \$1.5 billion for flood and storm damage reduction, including an increase in funding for technical and planning assistance to local communities. The budget proposes to assist these local efforts with emphasis on non-structural approaches.

The budget includes \$624 million for aquatic ecosystem restoration, including \$407 million for the South Florida Ecosystem Restoration Program, in addition to the \$1.1 billion allocated to South Florida Ecosystem Restoration and the Bipartisan Infrastructure Spend Plan. Together, these investments will enable significant progress in restoring America's everglades.

Significantly, the budget provides more than \$1.2 billion in the construction account, the construction program uses objective, performance-based guidelines to allocate funding toward the highest performing economic environmental, and public safety investments.

The fiscal year 2023 budget provides nearly \$2.6 billion in O&M account. For O&M, the budget emphasizes maintaining and improving the performance of existing projects. The allocation of funding among projects for maintenance reflects a risk-informed approach that considers both project conditions and the potential consequences of a failure. Of note, the fiscal year 2023 budget includes \$106 million in the investigations account which highlights the ongoing need in many communities to develop new projects.

Finally, the fiscal year 2023 regulatory program is funded at \$210 million to protect the Nation's water and wetlands, and provide efficiency in permit processing.

I am honored to implement the President's priorities through the Army Civil Works programs. I look forward to your questions. Thank you.

[The statement follows:]

PREPARED STATEMENT OF MR. MICHAEL L. CONNOR

Chairwoman Feinstein, Ranking Member Kennedy and distinguished members of the committee, thank you for the opportunity to be here today to discuss the transformational investments of the President's Budget request for the Army Civil Works program.

The fiscal year 2023 Budget request includes \$6.6 billion for the Army Civil Works program. These investments continue to focus on yielding high economic and environmental returns; helping communities to reduce their risks and adapt to climate change, and restoring aquatic ecosystems in ways that will make them more sustainable and more resilient to climate change, based on the best available science; supporting a strong economy by facilitating safe, reliable and sustainable commercial navigation; and promoting environmental justice and investing in disadvantaged communities that have too often been left behind. The Army will continue working with community partners to develop, manage, restore, and protect our Nation's precious water resources.

We believe in smart investments that improve the durability of our water management resources; and moving to a more sustainable posture for our water resources all across America.

The Administration has also set a goal that 40 percent of the overall benefits of Federal investments in climate, flow to disadvantaged communities—the Justice40 Initiative. The Justice40 Initiative is a critical part of the Administration's whole-of-government approach to advancing environmental justice.

The Budget focuses on the highest performing work within the three main missions of the Army Civil Works program:

- commercial navigation,
- flood and storm damage reduction, and
- aquatic ecosystem restoration.

In developing the Budget, we gave consideration to advancing two key objectives including: (1) increasing infrastructure and ecosystem resilience to climate change and decreasing climate risk for communities based on the best available science; and (2) promoting environmental justice in disadvantaged communities in line with Justice40 and creating good paying jobs that provide the free and fair chance to join a union and collectively bargain.

The fiscal year 2023 Budget continues the process of addressing the climate crisis and evaluating the Civil Works program to identify appropriate actions to support the Administration in tackling the climate crisis at home and abroad. The Budget includes over \$1 billion to support U.S. Army Corps of Engineers (Corps) climate resiliency efforts and reduce the risk of damages from floods and storms and restore the Nation's aquatic ecosystems. Investments include \$974 million for construction of flood and storm damage reduction and aquatic ecosystem restoration projects, over \$90 million to contribute to climate resilience efforts such as improving the resilience of Corps infrastructure to climate change, and \$37.4 million for technical and planning assistance programs with emphasis on work to help local communities identify, understand, and address their flood risks including work that would directly benefit disadvantaged communities by improving their resilience to climate change. The Budget also includes funding to continue studies intended to investigate climate resilience along the Great Lakes coast as well as in Central and Southern Florida.

The Army is also committed to securing environmental justice and spurring economic opportunity for disadvantaged communities that have been historically marginalized and overburdened by pollution and experience underinvestment in essential services. The Army is actively working, along with other Federal agencies, towards ensuring 40 percent of the benefits of climate and clean energy investments are directed to disadvantaged communities. These actions include an examination of the activities of key programs to determine whether those programs' benefits have accrued to disadvantaged communities. The fiscal year 2023 Budget includes funds to—(1) improve outreach and access to Civil Works information and resources; (2) improve access to Civil Works technical assistance programs (e.g., Planning Assistance to States and Floodplain Management Services) and maximize the reach of Civil Works projects to benefit disadvantaged communities, in particular as it relates to climate resiliency; and, (3) ensure any updates to Civil Works policies and guidance will not result in a disproportionate negative impact on disadvantaged communities.

The Administration's America the Beautiful initiative sets a goal of conserving at least 30 percent of America's lands and waters by 2030. The fiscal year 2023 Budget

includes funds to advance this goal at Army Corps-owned projects by creating safe outdoor opportunities in nature-deprived communities, supporting Tribally led conservation and restoration priorities, expanding collaborative conservation of fish and wildlife habitats and corridors, and increasing access for outdoor recreation.

In support of this Administration's commitment to our Nation's coastal ports and inland waterways, the fiscal year 2023 Budget includes over \$3 billion for the study, design, construction, operation and maintenance (O&M) of inland and coastal navigation projects. These funds will be used in conjunction with the \$465 million provided in the Bipartisan Infrastructure Deal Spend Plan for fiscal year 2023 for the maintenance and repair of existing navigation harbors, channels, and navigation locks and dams on the Nation's ports and waterways that support commercial navigation. The Budget proposes to derive over \$1.7 billion from the Harbor Maintenance Trust Fund for eligible projects with an emphasis on operation and maintenance, including dredging, of completed projects.

The Budget contains over \$1.5 billion for flood and storm damage reduction, including an increase in funding for technical and planning assistance to local communities to enable them to understand and to better manage their flood risks. The Budget proposes to assist these local efforts, with emphasis on non-structural approaches.

The Budget includes \$624 million for aquatic ecosystem restoration, including \$407 million for the South Florida Ecosystem Restoration (SFER) program, in addition to the \$1.1 billion allocated to the SFER program in the Bipartisan Infrastructure Deal Spend Plan, which together will enable significant progress in restoring this valuable ecosystem.

The Budget supports a Civil Works program that has a diverse set of tools and approaches to working with local communities, whether this means funding projects with our cost-sharing partners, providing planning assistance and technical expertise to help communities make better risk-informed decisions, or participating in the national and international conversations on how to best address our water resources challenges.

The Budget also focuses on maintaining the vast water resources infrastructure that the Corps owns and manages, and on finding innovative ways to rehabilitate it or divest it to others.

The fiscal year 2023 Budget provides more than \$1.2 billion in the construction account. The construction program uses objective, performance-based guidelines to allocate funding toward the highest performing economic, environmental, and public safety investments.

The fiscal year 2023 Budget includes \$50 million in Construction funds for the Innovative Funding Partnership program, which supports Corps efforts to accelerate and improve the delivery of water resources projects through greater non-Federal participation, and by removing barriers that prevent State, local, and private parties from moving forward with investments that they deem priorities.

The fiscal year 2023 Budget provides nearly \$2.6 billion in the O&M account. For O&M, the Budget emphasizes maintaining and improving the performance of existing projects. The allocation of funding among projects for maintenance reflects a risk-informed approach that considers both project and project component conditions and the potential consequences of a failure. The Budget gives priority to the maintenance of coastal ports and inland waterways with the highest commercial traffic. The Budget also includes \$60 million for operation and maintenance work to mitigate for adverse impacts from the operation of existing Army Corps-owned projects and \$20 million to install the necessary refueling infrastructure to support zero-emission vehicles at existing Army Corps-owned projects.

The fiscal year 2023 Budget includes \$106 million in the Investigations account.

The fiscal year 2023 Regulatory Program is funded at \$210 million to protect the nation's waters and wetlands and provide efficiency in permit processing.

I am very honored to implement the President's priorities for the Army Civil Works program. I'm excited to be a part of a great team—serving our Nation.

Thank you for inviting me here today. I look forward to your questions.

**STATEMENT OF LIEUTENANT GENERAL SCOTT A. SPELLMON, CHIEF
OF ENGINEERS AND COMMANDING GENERAL U.S. ARMY CORPS
OF ENGINEERS**

General SPELLMON. Chairwoman Feinstein, Ranking Member Kennedy, and distinguished members of the subcommittee, I am also honored to testify before you today. And thank you for the opportunity to discuss the fiscal year 2023 budget of the U.S. Army

Corps of Engineers, another record investment in our Civil Works Program.

And Senator Kennedy I should just thank you up front for your very kind words about the Corps. I think we all know that we did not do this alone, a lot of talented engineers and scientists in the State of Louisiana helped us deliver that system, and looking forward to 26 May, where we can finally cut the ribbon.

But today I look forward to discussing the status of important Corps projects and programs, as well as answering any questions the committee may have regarding the 2023 budget. Most importantly I look forward to continuing to work with this committee, all of Congress, and the administration to address the Nation's water resource infrastructure needs.

We greatly appreciate the committee's continued support of the Corps' program. With recent supplemental appropriations, including the Hurricane Ida Disaster Relief Supplemental, the Infrastructure Investment and Jobs Act, and continued record-high annual appropriations, the Corps Civil Works Program has experienced significant growth over the past several years.

This substantial level of investment enables critical water resource infrastructure to be studied, and constructed, and also helps with developing innovating approaches to address some of our most pressing needs through a focused research and development program.

The fiscal year 2023 budget reflects a targeted approach to continue investing in our water resources programs to promote climate resiliency, which will benefit the Nation's economy, environment and public safety now and well into the future.

The budget also supports the Secretary's priorities for the Corps by upgrading our Nation's waterways, protecting communities and ecosystems, better serving disadvantaged communities, investing in science and research and development, and finally, sustaining and improving our communications and our relationships with partners and communities.

The 2023 budget, taken with other recent funding, provides the Corps with what the Secretary calls, a transformational opportunity to deliver water resource infrastructure projects that will positively impact communities across our great Nation.

So we are also taking advantage of this opportunity to transform our organization and our decisionmaking processes to safely deliver quality projects on time, and within budget. We are also taking deliberate steps to proactively identify risk to the execution of our program, then developing measures to reduce, resolve, or eliminate those risks.

By evolving our policies, programs, and operations, and placing increased focus on research and development, we are working to overcome impacts of sea level rise, changes to precipitation patterns, and hydrology, and other effects of climate change, including improvement to the resilience of our own Corps operated infrastructure.

I will conclude by saying the Corps does not accomplish anything on its own, we draw upon our engineering expertise, and build upon our partnerships with our non-Federal partners, project stakeholders, and Congress to enable us to succeed.

I look forward to continuing our great collaboration, as we continue to take on the challenges that face us today, and those of tomorrow.

And thank you again Chairwoman Feinstein, Ranking Member Kennedy, and members of the subcommittee. I look forward to answering any questions you may have.

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL SCOTT A. SPELLMON

Chairwoman Feinstein, Ranking Member Kennedy, and Members of the Subcommittee, I am honored to testify before your committee today, along with the Honorable Michael Connor, Assistant Secretary of the Army for Civil Works, regarding the President's Fiscal Year 2023 (FY 2023) Budget (Budget) for the Army Civil Works Program.

Through the Civil Works program, the United States Army Corps of Engineers (Corps) works with other Federal agencies, and with State, Tribal, and local agencies, as well as others, to develop, manage, restore, and protect water resources, primarily through the study, construction, and operation and maintenance of water-related infrastructure projects. The Corps focuses on work that provides the highest economic, environmental, and public safety returns to the Nation. The Corps also regulates development in waters of the United States and works with other Federal agencies to help communities respond to, and recover from, floods and other natural disasters. The Fiscal Year 2023 Budget invests in improving the Nation's water infrastructure, including at U.S. coastal ports, while incorporating climate resilience efforts into the Corps' commercial navigation, flood and storm damage reduction, and aquatic ecosystem restoration work.

The Corps uses its engineering expertise and its relationships with project sponsors and stakeholders to develop innovative approaches to address some of the most pressing water resources challenges facing the Nation. I am committed to the Secretary's priorities for the Army Civil Works program, including investing in the Nation's coastal ports and inland waterways to facilitate waterborne transportation and strengthen economic growth; helping communities to reduce their risks and adapt to climate change; restoring aquatic ecosystems in ways that will make them more sustainable and more resilient to climate change; modernizing the Civil Works program to better serve the needs of disadvantaged communities; investing in science, research, and development to deliver enduring water-resource solutions; and strengthening communications and relationships to solve water resource challenges. I am absolutely focused on ensuring that we deliver studies and finish quality projects safely, on time, and within budget. These priorities will ensure a better return on taxpayer investment and improve the lives of all Americans. Under my oversight and direction, and with the leadership of Assistant Secretary Connor and his team, the Corps is committed to efficiently and effectively executing the Civil Works program.

The Corps' Military program also continues our work across the globe with a presence in more than 110 countries supporting national security and our Combatant Commanders.

SUMMARY OF FISCAL YEAR 2023 BUDGET

The Civil Works program is performance-based. It uses a targeted approach to invest in our water resources and promote climate resiliency, which will benefit the Nation's economy, environment, and public safety—now and in the future. With the requested funds, the Corps will emphasize investments in high return projects; increasing resiliency to climate change; facilitating safe, reliable, and sustainable commercial navigation; and accelerating and improving delivery of water resource projects.

The Corps focuses on high-performing projects and programs within its three main water resources missions: commercial navigation, flood and storm damage reduction, and aquatic ecosystem restoration. The Budget includes \$6.601 billion in discretionary funding for Civil Works activities throughout the Nation.

INVESTIGATIONS

For the Corps Investigations program, the Fiscal Year 2023 Budget includes \$105.9 million in the Investigations account and \$9.75 million in the Mississippi River and Tributaries account. The Corps uses these funds to evaluate water resources problems and opportunities, design projects within the three main Civil

Works mission areas, and support related work. The Budget also supports planning assistance and technical assistance programs, where the Corps shares its expertise with local communities to help them identify and understand their water resources problems and helps them to develop options including ways that they can increase their resilience to and preparedness for flood risks.

CONSTRUCTION

For the Corps Construction program, the Budget includes \$1.221 billion in the Construction account and \$66.7 million in the Mississippi River and Tributaries account.

The goal of the Civil Works program is to produce as much value as possible for the Nation from the available funds. Projects are primarily funded based on their economic, environmental and safety returns. The selection process includes giving priority to investments, on a risk-informed basis, in dam safety assurance, seepage control, and static instability correction work at dams that the Corps owns and operates, and work to address significant risk to human safety, as well as construction of dredged material disposal facilities for high and moderate use segments of commercial deep-draft, shallow-draft, and inland waterways projects. In developing the Fiscal Year 2023 Budget, we also gave consideration to projects that provide climate change benefits to disadvantaged communities.

The Budget provides \$407 million for the South Florida Everglades Restoration (SFER) program, which includes the Everglades. This amount, as well as the \$1.1 billion included in the Infrastructure Investment and Jobs Act Spend Plan, will enable significant progress on restoration of this unique ecosystem. The Budget funds four projects to completion: (1) Chickamauga Lock, Tennessee River, TN; (2) Corpus Christi Ship Channel, TX (Main Channel and Barge Lanes); (3) American River Common Features, Natomas Basin, CA; and (4) Pipestem Lake, ND.

OPERATION AND MAINTENANCE (O&M)

All structures age and can deteriorate over time, causing a potential decline in reliability. As stewards of a large portfolio of water resources projects, the Corps is working to sustain the benefits that the key features of this infrastructure provide.

The Corps continues to improve the efficiency and effectiveness of the operation and maintenance of its large portfolio of water resources projects. The Corps does so by targeting its investments in infrastructure maintenance, repair, and rehabilitation on a risk-informed basis. It invests in the highest priority needs with emphasis on the key features of the infrastructure that the Corps owns and operates, and in work that will reduce long-term O&M costs in real terms.

Generally, the O&M program supports completed works owned or operated by the Corps, including operation and maintenance of locks and dams along the inland waterways; maintenance dredging of inland and coastal Federal channels; operation and maintenance of multi-purpose dams and reservoirs for flood risk reduction and related purposes such as hydropower; monitoring of completed navigation and flood damage reduction projects; and management of Corps facilities and associated lands, including serving as a responsible steward of the natural resources on Corps lands.

For the Corps O&M program, the Budget includes \$2.599 billion in the Operation and Maintenance account, \$1.704 billion in the Harbor Maintenance Trust Fund, and \$148.5 million in the Mississippi River and Tributaries account. These funds will be used in conjunction with the \$1 billion provided in the Infrastructure Investment and Jobs Act for fiscal year 2023 for operation and maintenance work, including \$465 million for the maintenance and repair of existing navigation harbors, channels, and navigation locks and dams on the Nation's ports and waterways that support commercial navigation.

REGULATORY PROGRAM

Through the Regulatory program, the Corps protects the Nation's waters including wetlands, and regulates development that could impede navigation, while allowing reasonable development to proceed. The Budget proposes the necessary level of funding for the Regulatory program to enable the Corps to protect and preserve these water resources. The Fiscal Year 2023 Budget provides \$210 million for this program.

REIMBURSABLE PROGRAM

Through the Interagency and International Services (IIS) Reimbursable program, the Corps assists other Federal agencies, State, local, Tribal governments, and those of other countries with timely, cost-effective solutions where these partners do not

have the capability to act as their own design and construction agent. The work is principally technical oversight and management of engineering, environmental, and construction projects is financed by the partners we service. We only accept agency requests that are consistent with our core technical expertise, in the national interest, and that can be executed without impacting our primary mission areas.

EMERGENCY MANAGEMENT

The Fiscal Year 2023 Budget includes \$35 million in funding for the Flood Control and Coastal Emergencies account to enable the Corps to prepare for emergency operations in response to natural disasters. The Budget for the emergency management program also includes \$5.5 million for the National Emergency Preparedness Program.

CONCLUSION

The Fiscal Year 2023 President's Budget for the Army Civil Works Program represents a continuing, fiscally prudent investment in the Nation's water resources infrastructure and restoration of aquatic ecosystems. The Army is committed to a performance-based Civil Works program, based on innovative, resilient, and sustainable risk-informed solutions.

Thank you, Madam Chairwoman and Members of Subcommittee. This concludes my statement. I look forward to answering any questions you and other Members of the Subcommittee may have.

DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

STATEMENT OF MR. DAVID PALUMBO, DEPUTY COMMISSIONER

Mr. PALUMBO. Thank you Chair Feinstein, Ranking Member Kennedy, and members of the subcommittee, for the opportunity to discuss the President's budget for the Bureau of Reclamation. I am David Palumbo, Acting Commissioner.

The Bureau of Reclamation is the largest supplier and manager of water in the Nation, and the second-largest producer of hydropower. Reclamation's working relationship with the subcommittee has helped us address both long-standing and emerging challenges in the West. Addressing drought resilience, water security, climate change adaptation, ecosystem health, and issues of equity are essential, as are the continuing needs of securing, maintaining, and modernizing our Nation's water infrastructure.

We have a generational opportunity to couple our fiscal year 2023 \$1.4 billion budget with that of the Bipartisan Infrastructure Law, to put money to work on the ground to advance these vital needs for the American people.

At the outset I would like to acknowledge the significant, expansive, and persistent drought. In most western watersheds there have been successive and compounding years of drought, exacerbating the dire conditions on the ground, increasing temperatures, increased evapotranspiration which decreases soil moisture, and ultimately decreases runoff which negatively impacts available renewable, freshwater resources.

These hydrologic conditions have resulted in the need to make difficult decisions. Many water users, power contractors, Tribes, and related communities have had to make significant sacrifices. In the Colorado River Basin we are in the 23rd year of drought. Last month we dropped less than 35 feet above minimum power pool at Glen Canyon Dam, with minimum power pool being the lowest point where we can generate hydropower at this critical facility, which provides carbon-free energy, electrical grid stability, and support for other renewables, like wind and solar.

We have not been at this elevation since Lake Powell was being initially filled nearly 6 decades ago. In California's Central Valley we are in our third consecutive, critically dry year. We have had to issue a 0 percent allocation to irrigation water service contractors, and last Friday we had to reduce water allocations to municipal and industrial contractors from 25 percent to minimum health and safety levels.

These types of situations highlight the need for immediate actions as well as thoughtful planning and on-the-ground work to make both our infrastructure and operational decisions more resilient to withstand future water resource scarcity and variability.

Reclamation's budget priorities reflect a commitment to drought planning and response activities to promote water security. Appropriately, this budget request acknowledges the need to continue to develop and deploy science-based drought and climate change adaptation strategies. Reclamation's WaterSMART and science and

technology programs directly contribute to these administration priorities.

Reclamation must also plan for the future of its infrastructure. Reclamation's dams and reservoirs, water conveyance systems, and power generating facilities serve as a water and power infrastructure backbone of the American West. However, as with all infrastructures, these features are aging and are in need of critical maintenance.

For example, in California we are about to embark on our largest dam safety construction project ever, at B.F. Sisk Dam. Our fiscal year 2023 dam safety request of \$210 million not only addresses this project in California, but also projects in Wyoming, Oregon, New Mexico, Washington and other locations.

We were able to leverage this funding to address more west-wide needs in an accelerated manner due to the \$500 million in Bipartisan Infrastructure Bill (BIL) funding, and \$100 million of which was allocated for B.F. Sisk Dam in fiscal year 2022. However, it is not sufficient to address infrastructure needs without also considering economic inequities, the needs of underserved communities, and environmental justice.

Reclamation is establishing and rebuilding water infrastructure for underserved populations by ensuring that clean drinking water is reliably provided to communities. Our budget includes funding for Reclamation's Native American Affairs Program to enhance our technical assistance to Tribes, and includes funding for Reclamation's Rural Water Program.

As with our Dam Safety Program, our Rural Water Program leverages \$1 billion in BIL funding to accelerate completion of these long-needed projects. The Bureau of Reclamation remains committed to working with Congress, and our operating partners and stakeholders in carrying out our mission and responsibly planning for the future.

The challenge of drought and climate change demands such action and the need for broader economic development and more equitable outcomes do as well.

I again thank the subcommittee. And I am happy to answer any questions.

[The statement follows:]

PREPARED STATEMENT OF DAVID PALUMBO

Thank you, Chairwoman Feinstein, Ranking Member Kennedy, and members of the Subcommittee for the opportunity to discuss with you the President's Fiscal Year (FY) 2023 Budget for the Bureau of Reclamation. I am David Palumbo, Acting Commissioner for the Bureau of Reclamation.

The Bureau of Reclamation is the largest supplier and manager of water and the second largest producer of hydroelectric power in the Nation. Reclamation manages water for agriculture, municipal and industrial use, the environment, and provides flood control and recreation for millions of people. Reclamation's activities, including recreation benefits, support economic activity valued at \$66.6 billion, and support approximately 472,000 jobs. Reclamation delivers 10 trillion gallons of water to more than 31 million people each year and provides water for irrigation of 10 million farmland acres, which yields approximately 25 percent of the Nation's fruit and nut crops, and 60 percent of the vegetable harvest.

Reclamation's fundamental mission and programs—modernizing and maintaining infrastructure, conserving natural resources, using science and research to inform decisionmaking, serving underserved populations, and staying as nimble as possible in response to the requirements of drought and a changing climate—position it as an exemplar for the Biden-Harris Administration's core tenets. The Bureau of Rec-

lamation's fiscal year 2023 budget provides the foundation to meet our mission, and to manage, develop, and protect water resources, consistent with applicable State and Federal law, and in a cost-effective and environmentally responsible manner in the interest of the American public. Reclamation remains committed to working with a wide range of stakeholders, including water and power customers, Tribes, State and local officials, and non-governmental organizations, to meet its mission.

Reclamation is requesting a total of \$1,414,225,000 in Federal gross discretionary appropriations. Of the discretionary total, \$1,270,376,000 is for the Water and Related Resources account, which is Reclamation's largest account, \$65,079,000 is for the Policy and Administration account, and \$33,000,000 is for the California Bay Delta account. A total of \$45,770,000 is budgeted for the Central Valley Project Restoration Fund, to be offset by expected discretionary receipts in the amounts collected during the fiscal year. These appropriations will complement the funding Reclamation received from the Bipartisan Infrastructure Law, which is allocated pursuant to statute in the amount of \$1.66 billion in fiscal year 2023. Following are some focus areas and highlights of Reclamation's Fiscal Year 2023 Budget request.

Racial and Economic Equity: Activities to Support Underserved Communities, Tribal Programs & Tribal Water Rights Settlements: Reclamation advances racial equity and assistance to underserved communities through investments in Tribal water rights settlements, continuation of the Native American Affairs technical assistance program, rural water projects, and investments in specific projects for underserved communities. The Bipartisan Infrastructure Law also invests very substantial portions of its funding to underserved populations and Tribal communities as described later in my testimony.

The fiscal year 2023 discretionary request includes \$20.0 million for the Native American Affairs program to work with and support Tribes in the resolution of their water rights claims and to develop sustainable water sharing agreements and build Tribal technical capacity. This funding will also strengthen Department-wide capabilities to achieve an integrated and systematic approach to Indian water rights negotiations to consider the full range of economic, legal, and technical attributes of proposed settlements. Finally, funding also supports Reclamation efforts for Tribal nations by supporting many activities across the Bureau, including rural water projects, the Yakima River Basin Water Enhancement Project, activities of the Klamath Project, and the Lahontan Basin project, among others.

Conservation and Climate Resilience: Reclamation's projects address the Administration's priorities for conservation and climate resilience through funding for the WaterSMART program, funding to secure water supplies to wildlife refuges, and funding for proactive efforts through providing sound climate science, research and development, water security, drought resilience, and clean energy.

The WaterSMART Program serves as the primary contributor to Reclamation's Interior's Water Conservation Priority Goal. Since 2010, projects funded under the Water Conservation Program, including WaterSMART Grants, Title XVI (Water Recycling and Reuse Program), California Bay-Delta Program, Yakima River Basin Water Enhancement Project, and the Desalination construction program are expected to achieve more than 1.4 million acre-feet of water savings each year once completed.

Through WaterSMART, Reclamation works cooperatively with States, Tribes, and local entities as they plan for and implement actions to address current and future water shortages, including drought; degraded water quality; increased demands for water and energy from growing populations; environmental water requirements; and the potential for decreased water supply availability due to climate change, drought, population growth, and necessary water requirements for environmental values. This includes cost-shared grants for water management improvement projects; watershed resilience projects; the Basin Study Program; and drought planning and implementation actions to proactively address water shortages. The fiscal year 2023 request includes \$62.4 million for the WaterSMART Program.

Climate Science: Reclamation's fiscal year 2023 budget for Research and Development (R&D) programs includes \$25.3 million for both Science and Technology, and Desalination and Water Purification Research—both of which focus on Reclamation's mission of water and power deliveries. Climate change adaptation is a focus of Reclamation's R&D programs, which produce climate change science, information and tools that benefit adaptation, and by yielding climate-resilient solutions to benefit management of water infrastructure, hydropower, environmental compliance, and water management.

The Desalination and Water Purification Research program addresses drought and water scarcity impacts caused by climate change by investing in desalination and water treatment technology development and demonstrations for the purpose of more effectively converting unusable waters to useable water supplies. The Science

and Technology program invests in innovation to address the full range of technical issues confronting Reclamation water and hydropower managers, including the Snow Water Supply Forecasting Program that aims to improve water supply forecasts through enhanced snow monitoring and water management to address the impacts of drought and a changing climate.

Modernizing and Maintaining Infrastructure: Reclamation's water and power projects throughout the western United States provide water supplies for agricultural, municipal, and industrial purposes. Reclamation's projects also produce hydropower and maintain ecosystems that support fish and wildlife, hunting, fishing, and other recreation, and strengthen rural economies.

Dam Safety: Reclamation manages 487 dams throughout the 17 Western States. Reclamation's Dam Safety Program has identified 360 high and significant hazard dams. Through constant monitoring and assessment, Reclamation strives to achieve the best use of its limited resources to ensure dam safety and maintain our ability to store and divert water and to generate hydropower. Although some pending infrastructure priorities will be addressed through the Bipartisan Infrastructure Law, additional priorities exist and the fiscal year 2023 budget request includes \$210.2 million for the Dam Safety Program.

The Dam Safety Program helps ensure the safety and reliability of Reclamation dams to protect the downstream public. Approximately 50 percent of Reclamation's dams were built between 1900 and 1950, and approximately 90 percent of the dams were built before adoption of currently used, state-of-the-art design and construction practices. Reclamation continuously evaluates dams and monitors performance to ensure that risks do not exceed the Federal Guidelines for Dam Safety Risk Management and the Public Protection Guidelines. The Dam Safety Program represents a major funding need over the next 10 years, driven largely by necessary repairs at B.F. Sisk Dam in California. The B.F. Sisk Dam is a key component of the Central Valley Project and California's State Water Project, providing 2 million acre-feet of State and Federal water storage south of the California Sacramento-San Joaquin River Delta. Reclamation is modifying the dam to reduce the risk of potential failure resulting from potential overtopping in response to a seismic event, using the most current science and technology to develop an adaptive and resilient infrastructure. In addition to B.F. Sisk, Reclamation has identified 19 additional projects with anticipated modification needs through 2030.

The budget also requests \$96 million for specific Extraordinary Maintenance (XM) activities across Reclamation in fiscal year 2023. This request is central to mission objectives of operating and maintaining projects to ensure delivery of water and power benefits. Reclamation's XM request relies on condition assessments, condition/performance metrics, technological research and deployment, and strategic collaboration to better inform and improve the management of its assets and deal with its infrastructure maintenance challenges.

Renewable Energy: Reclamation owns 78 hydroelectric power plants. Reclamation operates 53 of those plants to generate approximately 15 percent of the hydroelectric power produced in the United States. Each year on average, Reclamation generates about 40 million megawatt hours of electricity and collects over \$1.0 billion in gross power revenues for the Federal Government.

Reclamation's fiscal year 2023 budget request includes \$5 million to increase Reclamation's hydropower capabilities and revenue from existing public infrastructure and reduce project operating costs (e.g., water and power delivery costs). Revenues derived from hydropower production are invested in the underlying public infrastructure to ensure continued, reliable operations and benefits.

Section 70101 of the Bipartisan Infrastructure Law established the Indian Water Rights Settlement Completion Fund (Completion Fund), making \$2.5 billion available to the Secretary of the Interior to satisfy Tribal settlement obligations as authorized by Congress prior to enactment of the Bipartisan Infrastructure Law. The Department allocated \$1.7 billion of those funds in fiscal year 2022, \$355 million of which supported Reclamation's Tribal settlement implementation actions, and additional funding will be allocated in fiscal year 2023. In addition to the Completion Fund, fiscal year 2023 represents the fourth year of Reclamation Water Settlements Fund allocations, which provide \$120 million in annual mandatory authority for Reclamation Indian water rights settlements. Funding made available by previous mandatory authorities, such as that authorized in the Claims Resolution Act, remain available for settlement implementation, while the ongoing operations and maintenance requirements of the Arizona Water Settlement Act are expected to continue to be supported within the Lower Colorado River Basin Development Fund. In fiscal year 2023, the Department of the Interior is requesting \$34 million for ongoing operational requirements for existing settlements to be added in the Completion Fund and the Administration is interested in working with Congress on an ap-

proach to provide a mandatory funding source for future settlements. Additional information can be found in the Permanent chapter of the Reclamation request.

The investments described in Reclamation's fiscal year 2023 budget, in combination with the Bipartisan Infrastructure Law implementation and prior year efforts, will ensure that Reclamation can continue to provide reliable water and power to the American West.

Water management, improving and modernizing infrastructure, using sound science to support critical decisionmaking, finding opportunities to expand capacity, reducing conflict, and meeting environmental responsibilities were all addressed in the formulation of the fiscal year 2023 budget. Reclamation continues to look at ways to plan more efficiently for future challenges faced in water resources management and to improve the way it does business.

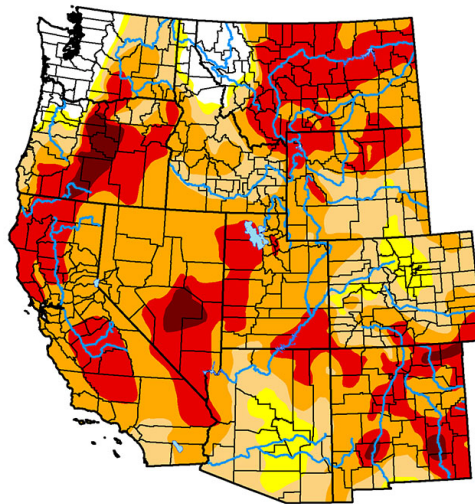
Thank you for the opportunity to summarize the President's Fiscal Year 2023 Budget Request for the Bureau of Reclamation.

CENTRAL UTAH PROJECT COMPLETION ACT (CUPCA)

The Department's fiscal year 2023 CUPCA Program budget of \$20 million reflects the Administration's commitment to strengthening our climate resiliency and supporting conservation partnerships, and continues the progress of prior appropriations including \$50 million included for the CUPCA Program in the Bipartisan Infrastructure Law. As authorized, the completion of the Central Utah Project Utah Lake System pipelines will deliver 60,000 acre-feet of municipal and industrial water to Salt Lake and Utah Counties. The completed project will provide increased water security, helping communities adapt to and increase their resiliency under changing climate conditions.

The request provides funding to continue construction of the system; to support the recovery of endangered species; and implements fish, wildlife, and recreation mitigation and water conservation projects. One of the goals of the project is the recovery of the June sucker fish, a critical element of listed species recovery efforts.

U.S. Drought Monitor Western U.S.



March 29, 2022
(Released Thursday, Mar. 31, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	5.57	94.43	88.93	69.91	29.67	2.50
Last Week 03-22-2022	5.48	94.52	88.98	69.80	28.66	2.50
3 Months Ago 12-28-2021	3.43	96.57	90.94	71.00	31.05	4.82
Start of Calendar Year 01-01-2022	3.68	96.32	89.29	64.90	23.85	3.94
Start of Water Year 09-28-2021	2.21	97.79	89.60	75.38	52.46	18.40
One Year Ago 03-30-2021	10.10	89.90	75.22	58.59	39.39	20.56

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Deborah Bathke
National Drought Mitigation Center



droughtmonitor.unl.edu

Senator FEINSTEIN. Thank you very much.

Deputy Commissioner Palumbo, 94 percent of California is now in severe drought, or worse, as the most severe drought in the West in recorded history deepens.

This is an emergency which many of us feel that really requires our action, and I believe we have secured \$210 million in emergency funding last year. So here is the question. What actions are being taken now to address these issues as the drought continues to deepen?

Mr. PALUMBO. Thank you very much Chair. The Bureau of Reclamation is taking a variety of actions. In the State of California we are using the funding of the \$210 million provided, which we very much appreciate from this subcommittee, to deploy actions on the ground to address drought.

For example, we are installing salinity barriers to deal with water inflow restrictions into the Delta. We are looking at fish hatchery operations, looking at laboratories for Delta Smelt, installing curtains at Shasta Dam to control temperature. We are putting together a variety of drought mitigation activities and programs to deal with impacted farmers and communities throughout the West.

That funding, the \$210 million, plus additional funding from this subcommittee has come at the right time, and is being deployed responsibly.

Senator FEINSTEIN. Well, I am a bit confused. If I understand it correctly, the Congress passed a Disaster Supplemental in February of 2018 that included \$15 billion in construction funding for critical flood and storm damage reduction projects. Four years later, as I understand it, construction continues to stall due to Corps policy guidance requiring full funding upfront.

So Assistant Secretary Connor, I appreciate your willingness to discuss this issue with me in the past, but I also appreciate the Corps' recent attention to fully resolving the long-standing obstacles in the South San Francisco Bay Shoreline Project.

As directed, in the fiscal year 2022 Energy and Water report language, will you commit to revise the Corps policy guidance so these projects can continue to move ahead?

Mr. CONNOR. Chair Feinstein, I commit to working with you and your staff on exercising any and all discretion I have to moving those projects, and work with General Spellmon to move those projects forward as quickly as possible. We may have some legal authority issues that we have to raise with you and your team, and we are working through that right now.

We have had some good discussions lately. Our goal is to ensure that all the projects in BBA 2018 are moving forward. And we have got good construction on some activity, and we have got some projects, particularly South San Francisco held up. But I am committed to working with you and your team on moving those projects forward.

Senator FEINSTEIN. Thank you. Senator Kennedy.

Senator KENNEDY. Thank you, Madam Chair. I want to take a little different approach today, gentlemen. I am going to ask you a few quick questions, feel free to give me a yes or no; there is a method here to my madness.

Like everybody else in the Western Hemisphere, and a few in the Eastern, I have some specific projects I would like to talk to you about, but I am not going to talk to you about them today. I want

to talk about a larger issue. And that has to do with the integrity of the Corps, and some of this loose talk about earmarks.

So let me ask you a couple questions, with the exception of a really small number of projects, less than 1 percent, is it not true that Congress doesn't authorize construction of proposed Corps projects without a comprehensive study that can take up to years to complete to determine if the project is economically justified? Is that accurate?

General SPELLMON. Yes, sir.

Senator KENNEDY. That study has also got to show that the project is environmentally sound, right?

General SPELLMON. Yes, sir, that is correct.

Senator KENNEDY. Technically feasible; is that correct?

General SPELLMON. Yes, Senator.

Senator KENNEDY. So somebody just can't call you folks up at the Corps and say, I have got a project, and I want it done and you better get it done. It doesn't work that way; does it?

General SPELLMON. That is correct, Senator, it does not.

Senator KENNEDY. All right. And in your years at the Corps, what percentage of all Corps projects have been authorized by Congress for construction without meeting this three-part test?

General SPELLMON. Sir, I have been with the Corps, six-and-a-half years, I am not aware of any.

Senator KENNEDY. Any? Every project has had to be economically justified, environmentally sound, and technically feasible based on an objective study.

General SPELLMON. Sir, that is correct.

Senator KENNEDY. Not by politicians.

General SPELLMON. That is correct.

Senator KENNEDY. All right. What does a favorable chief's report mean?

General SPELLMON. Sir, it means that the project, as you said, is technically feasible, it is economically justified, and it will achieve its desired effect in one of our Corps mission areas.

Senator KENNEDY. Okay. And in your years with the Corps, what is your best estimate of all the construction authorizations that have been enacted without a favorable chief's report?

General SPELLMON. Sir, I am not aware of any that have been authorized without a favorable report.

Senator KENNEDY. Okay. And not to put too fine a point on it, but one of the things that the Corps looks at in this study which can take years, is whether the taxpayers are getting a return on their investment. In other words, the benefits have to substantially outweigh the costs; is that right?

General SPELLMON. Yes, sir, that is correct.

Senator KENNEDY. Now, earlier I talked about HSDRRS, and the levee protection system in Southeast Louisiana which protects Louisiana from the South. But like a lot of States, we are not only endangered by the South, water from the South, we are endangered by water from the North.

Louisiana, you can see from the map, drains 41 percent of the Continental United States, and parts of two Canadian provinces, so we have a threat from the North, from water. The Great Flood of 1927, we remember it. I don't remember how many tens of thou-

sands of acres flooded, millions dollars' worth of damage, this is 1927 now. As usual America turned to the Corps of Engineers, and we said help us fix it.

And you did. And you built levees from just South of the Canadian border all the way down to the Gulf of México, it costs \$13 billion. Man that was a lot of money then. It saved this country trillions of dollars. And the point I am trying to make, look, earmarks are now back, and I am not making a critical or laudable statement about them, it is up to the Senate whether they want to do earmarks, but I don't want there to be any confusion.

I don't know the technical definition of an earmark, I don't know how many lawyers can dance on the head of a pin either, but I don't want these Corps projects to be considered earmarks. This isn't politics, these projects have to be studied, they have to we have a substantial return on investment, and I want this country to know that, and be proud of that, and I don't want, as we have this discussion about earmarks, the sterling reputation of the Corps of Engineers to be tarnished.

Thank you Madam Chair.

Senator FEINSTEIN. Thank you, Senator. Senator Heinrich.

Senator HEINRICH. Thank you, Madam Chair. Madam Chair, first, I want to ask unanimous consent to enter an article into the record. This is from E&E Daily, and the headline is, "Army Corps cuts would put boating camping sites at risk", White House fiscal 2023 budget would cut more than \$50 million from Army Corps recreation spending without—I just ask unanimous consent to put that in the record.

Senator FEINSTEIN. So ordered.

[The information follows:]

E&E DAILY

APPROPRIATIONS & B OTHERS

Army Corps cuts would put boating, camping sites at risk

The White House fiscal 2023 budget would cut more than \$50 million from Army Corps recreation spending.



BY: HANNAH NORTHEY | 04/01/2022 07:04 AM EDT



An Army Corps of Engineers flag during the 2008 inauguration of a flood wall in Louisiana. | Judi Bottoni/Associated Press

E&E DAILY | President Biden's proposed budget cuts to the Army Corps of Engineers this coming fiscal year could affect the agency's ability to maintain hundreds of popular boating and camping hot spots across the nation, according to advocates who are rallying support on Capitol Hill.

While the corps would overall receive increased funding through the president's fiscal 2023 budget request combined with supplemental infrastructure bill and disaster relief funds, the National Marine Manufacturers Association (NMMA) is asking lawmakers for help.

That's because the president's [request](#) proposes to cut the Army Corps' budget for recreational operation and management to about \$240 million for fiscal 2023. That's compared with \$295 million in the fiscal 2022 omnibus spending package.

Even though the spending is just a sliver of the agency's overall budget, the trade group warns the effect could be far-reaching given the Corps [hosted](#) almost 300 million visitors at its myriad boat ramps, campgrounds, hiking trails and other scenic areas across the nation last year.

Callie Hoyt, director of government affairs for NMMA, said the agency may be forced to do minimal upkeep or even close some facilities. "They can't keep the lights on for a lot of different sites across the country," she said.

Hoyt pointed to corps-operated summer [hot spots](#) in states like Georgia, Arkansas and Oregon and near cities like Los Angeles. Top draws for visitors are sites like Lake Sidney Lanier in Georgia, which has 40 corps-operated parks and campgrounds and 10 marinas, as well as the Hartwell dam on the Savannah River, which the Army Corps built in the 1950s for flood control, hydropower and navigation, creating Lake Hartwell.

A spokesperson for the corps acknowledged the fiscal 2023 budget request is less than the 2022 appropriations level and said the corps will look at the funding proposed for all of its business lines to plan for the coming year.

"At this time, we cannot speculate on what impact the proposed funding for fiscal 2023 will have on the recreation program," said the spokesperson. "USACE understands the importance of the recreation program to the American public."

To be sure, Congress holds the ability to replenish funding for the agency and will likely do so. Both Democratic and Republican administrations in the past have opted to lowball their funding requests for the agency knowing that lawmakers would step in.

What's more, while Biden's budget proposal was a dip compared with spending levels in the omnibus, the agency's overall budget was made larger this week after the Biden administration [announced](#) it would be releasing an additional \$2.7 billion in infrastructure dollars — adding to what's already a historic amount of spending with a focus on climate and equity.

Overall, Biden's proposed budget includes \$6.6 billion for the agency, a drop from more than \$8 billion included in the 2022 omnibus spending package. But the Biden administration has said it plans to add \$22.8 billion in supplemental funding from the infrastructure package and disaster relief funds for fiscal 2022 and 2023 to advance the agency's work.

The funding will be used to conduct far-reaching investigations into climate resilience along the Great Lakes and Florida coast; incorporate climate resilience in policy guidance and project planning; and push forward dozens of projects aimed at fortifying vulnerable beaches, channels and coastlines.

Lowry Crook, a former Army Corps official under the Obama administration, said the proposed budget showed significant investments in regions like Florida's Everglades; Sacramento, Calif.; and waterways running through central Colorado.

Crook said the challenge the corps is facing is not access to funding, but completing its work in the face of supply chain issues, tight deadlines, rising costs, a limited dredging fleet and other obstacles.

"When I talk to the corps, the biggest concern is being able to execute this funding all at once and show they can execute it," said Crook.



YOUR ACCOUNT MANAGEMENT TEAM

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Senator HEINRICH. Assistant Secretary Connor, I bring this up because in the last 2 years we have seen this incredible surge in visitation to public lands, writ large, everything from Army Corps, to Forest Service, to our National Parks. Army Corps actually experienced an additional 20 million visits just last year. So I just want to ask, are these cuts a good idea? It seems to be a particularly unfortunate time to do that.

Mr. CONNOR. Senator Heinrich, thank you for raising the issue. I think myself and General Spellmon, we have had discussions about that. We certainly understand the value, increasing value of recreation, as you point out. So we have got some work to do with this budget, we are trying to fit in a lot of priorities, but we need to go through and analyze the full range of impacts, with respect to potential, you know, reduction of services to the general public, and we don't want that.

So with that budget we are going to try and manage it so that we don't have those impacts. The good news is, through IIJA (Infrastructure Investment and Jobs Act), the Bipartisan Infrastructure Law, and other mechanisms, we have made some investments in the maintenance of facilities, but we need to operate those facilities. And so we are going to look at the 2022 spend plan, we are going to look at other ways that we can ensure we are not reducing services. But it is a concern, and I appreciate you raising it.

Senator HEINRICH. No. I look forward to working with you on this, on this issue. I think if anything we have really seen, this is a part of our economy that has grown dramatically as a result of people's desire to be outside in the midst of COVID. I think that is going to carry forward for a number of years, and we certainly want to keep those facilities open.

Mr. Palumbo, historical and projected climate changes have translated to pretty significant water supply, reductions, and habitat degradation in the Rio Grande Basin, warmer conditions, decreased runoff into the Rio Grande resulting, frankly, in a drier river every single year.

The existing low flow conveyance channel that runs alongside the Rio between San Acacia, New Mexico, and Elephant Butte Reservoir has been identified as a key source of water inefficiency in the Middle Rio Grande. What can we do about addressing existing river inefficiencies such as the low flow conveyance channel, so that we can keep more water in the main stem, and protect the habitats that rely on that water?

Mr. PALUMBO. Thank you very much, Senator, for bringing up this issue. This is an important issue for the Bureau of Reclamation. We are currently implementing several projects with the low flow conveyance channel to remove sediment, remove plugs, and improve connectivity to the Rio Grande at large. So, we are focusing on this, it is important, and we have folks doing work on the ground in this area.

Senator HEINRICH. So it didn't take long for that entire conveyance channel to sediment up. Should we be looking at whether it was a good idea in the first place?

Mr. PALUMBO. Yes, absolutely. The Bureau of Reclamation prides itself on adaptive management. If something doesn't work, let us not do it again, let us figure out a way to do it better. That is also part of this program, to ensure that there are other ways in which to provide the habitat, provide the flows, and get them in the right areas at the right time.

Senator HEINRICH. Assistant Secretary Connor, in the face of continued aridification of the West, and I use that word rather than drought because it is now a permanent dynamic. How can we better manage the Rio Grande as an interconnected system rather than a series of separate reservoirs each with separate purposes?

Mr. CONNOR. It is a great question. It is the question, du jour of the day, because we have got to holistically use all of our infrastructure. The Bureau of Reclamations Facility, particularly the Rio Grande Basin. The facilities that we have under the Corps of Engineers to control Abiquiu, use that in tandem with El Vado, and ensure that we can add to water supply, and you help put that provision in place through the last word that we can expand the use of Abiquiu, and that is a necessary part of the process.

We have got to look also how we do flood risk reduction, and how we make releases, and see if we can't coordinate with the water suppliers, so that our releases aren't solely focused on flood control, that we do our job, that we operate in a way that we can help maximize water supply for other entities. And that means not just coordinating with the Bureau, but the Rio Grande Conservancy

District, with Tribes. There is a lot to do, there is a lot of capability, and it requires even better coordination than in the past.

Senator HEINRICH. I am out of time, but would the Corps and BOR (Bureau of Reclamation) be willing to work with the National Academy of Sciences to study the Upper Rio Grande as a whole, and come up with some management practices to keep the river wet.

Mr. CONNOR. Yes we had a discussion with NAS just this week.

Senator FEINSTEIN. Thank you very much. Senator

Hyde-Smith.

Senator HYDE-SMITH. Thank you, Chairwoman Feinstein, Ranking Member Kennedy, and I certainly want to thank our witnesses today. We truly appreciate you being here, and as we discussed the 2023 budget for the Corps and the Bureau of Reclamation.

Secretary Connor, I just really appreciate the time that you spent in traveling to Vicksburg, Mississippi, in February for a briefing on the Yazoo Area Pump Project. That is a really important project to me, it is one of my very top priorities because I have seen the suffering that has happened in Mississippi. But today I would like to discuss environmental justice, a topic this administration says is a top priority as well.

As you know the comprehensive Yazoo Backwater Area Project is a congressionally authorized Corps project designed to provide flood protection to thousands of residents in the South Mississippi Delta, most of whom are African-Americans. I have visited this place many, many times, and I don't live far from it.

The Yazoo Backwater Area comprises of 1,446 square miles, six Mississippi counties, these are some of the most rural underserved counties in the entire United States. This project consists of three components designed to be used in tandem including levees to keep Mississippi and Yazoo River flood waters out, floodgates to let accumulated interior flood water out, and pumping stations to remove flood waters trapped on the protected side of the levee system when the floodgates have to be closed because the Mississippi River is high, and excess rainfall occurs.

All of these features have been completed except for the pumps. Unfortunately, the EPA (Environmental Protection Agency) in 2008 stopped the Corps from completing the pumps, the project's last remaining feature. Since that EPA veto in 2008 the area has experienced catastrophic flooding nearly every year, causing billions, with a B, in damages, and destroying lives, home, property, wildlife habitat, and the environment.

In 2019 the Yazoo Backwater Area, which is more than 11 times the size of Washington, D.C., remained flooded for well over 6 months it was underwater. It was disastrous on the quality of life for the people who live and work there, many who are already impoverished. Two people lost their lives.

During the onset of the COVID-19 pandemic in 2020 there was another terrible flood. It again displaced residents and forced them into crowded shelters, or to move in with family, neither option ideal during an unprecedented pandemic.

Recognizing that this perpetual flooding was simply not sustainable for the people or the environment, and armed with the new scientific information, the Corps issued a new proposed plan for the

pumps in December of 2020. Unfortunately, the EPA, last November, put the brakes on the Corps from moving forward yet again. It simply dismissed years of new Corps environmental studies, and thousands of pages of scientific information that fully justifies the pumps.

We often hear, we need to listen to the science. Well, what does the science say? The science says the Corps' new proposed plan would not convert any wetlands to non-wetlands. The science says the project would benefit all sections of the economy and contribute to the wellbeing of all area residents. The science says the project would benefit wetlands, aquatic species, wildlife, and wildlife life, habitat, and every important resource that flooding has been destroying for decades.

But here is the real irony, the current administration has placed environmental justice at the top of its priority list, the Yazoo Backwater Area population is nearly 70 percent minority, with roughly 30 percent living in poverty.

The Corps Environmental Justice Appendix indicates that the pumps would significantly benefit low-income and minority populations, and it shows that more than 90 percent of the homes would be devastated from a 100-year flood event, are minority occupied.

Secretary Connor, please, there are two things, and I want you to thoroughly answer both of these for me, if you would. Please share your thoughts on the environmental justice benefits associated with the Yazoo Backwater Project? And do you consider the Corps' new proposed plan to be consistent with this administration's emphasis on promoting environmental justice?

Mr. CONNOR. Senator Hyde-Smith, I wish I would have started with your statement when I got into Yazoo, because it took me a while to get up to speed the way you just articulated it. It is a very complex system. And I will get exactly to your points, because I don't think it is ironic that this administration focuses on environmental justice.

And how we have dealt with the Yazoo Basin, or how we are going to deal—let me put it that way—because, yes, we cannot move forward with the project that the Corps most recently proposed, because of the reinstitution of the veto, that is correct, and that is concerning, because we have got to get to some project to address the uncompleted project as you mentioned.

And we are getting the attention that we need at a very high level to move forward in the interagency group, chaired by CEQ (Council on Environmental Quality) Chair Brenda Mallory, she has convened us together, and when I went down to Yazoo in February, it was with Chair Mallory, to get a first-hand account, and you cannot understand the system without that first-hand account because of the complexity of it.

So we need to address the intended project as it was originally conceived. And you are right, it is missing that last phase of the project, so we have got to deal with that backwater flooding, we have got to figure out the mix of structural and non-structural. And when I say structural, I think pumps are still in the mix for the discussion that we are going to have in this interagency group.

There are questions about the science from some of the other agencies, the Corps feels very strongly that it has got peer-re-

viewed science, but we need to have that dialogue about what exactly are the impacts to wetlands, are we reducing the wetland function. Those are going to be some detailed conversation.

But I can assure you this is part of the environmental justice agenda to get to a project, to get to a solution, because of the factors that you mentioned with respect to minority residents in that area, as well as the poverty level that exists in that area. So that is why it is getting this attention, and I just wanted to note, I appreciate the fact, being part of this group, that there is a sense of urgency that we need to get to a reconfigured project.

So I share your views, the importance, and I will keep you posted as that interagency group continues to work on that reconfigured project.

Senator HYDE-SMITH. Please do so. And General Spellmon, give me your knowledge of civil engineering. Please share your thoughts on how practical, if even possible, it would be to provide meaningful flood protection in the Yazoo Backwater Area without a pumping station? How would that be possible?

General SPELLMON. So Senator, as you know this pump station was part of the project since it was initially authorized in the 1941 Flood Control Act. We have looked at 34 options to how to evacuate water from that basin, and our recommendation—we are certainly open to any other ideas that may be out there, but we are confident in our science, we are confident in our engineering that the pump station can be operated in a manner that protects these communities that you mentioned, but also protects the 38,000 acres of wetland that are in that area. So we are confident of that.

The other 34 options, we looked at everything, from looking at rain levees around every home, we just could not economically justify that, we have looked at elevating homes, we have looked at buyouts, we looked at elevating roads, and again not all of that—after we got through that analysis was consistent with our long-standing environmental operating principles. And some of it, frankly, we just could not get to economic justification. We stand by our recommendation but again we are open to any other ideas that may be out there.

Senator HYDE-SMITH. I appreciate your answer very much, both of you. And I know I am over time. Thank you.

Senator FEINSTEIN. Thank you. Senator Shaheen.

Senator SHAHEEN. Thank you Madam Chair, and thank you to each of our panelists for the work that you do, and for being here today. I want to especially thank the Army Corps. In the last 6 years or so we have had two of our harbors dredged in New Hampshire, and right now the turning basin in the Piscataquis River is being dredged, and for a State with only 18 miles of coastline that is pretty good. And I really appreciate that effort.

But because of the challenges we had trying to get in the queue to get those projects done, I recognized just how challenging the funding is for the work that you are doing, and was very pleased to see that the Army Corps received \$9 billion from the Bipartisan Infrastructure Law, and of that the Corps has already announced \$4 million in projects in New Hampshire for 2022 and 2023, fiscal years 2022 and 2023, which has been really important.

But it raises a couple of questions that I hear from people about how project selection is doing? How are those projects determined? And so can you speak to the type of projects that you are looking at, as you are looking at this funding?

General SPELLMON. Yes ma'am, I will start. When I formulate my recommendations when I take them to the Secretary, I look at five criteria. To the top of that list is always life safety. So for example, a dam safety project that we know that has a population at risk downstream, those always go to the top of the list. Second priority, I have legal mandates across the country, some of that, Endangered Species Act, for example.

Some of our projects have a national security component to them. I would use the example of the Soo Lock and the steel industry; we have made that argument before. And then finally—I am sorry—number four is economic and environmental returns, I think there is a narrative, an incorrect narrative that the Corps only looks at benefit-to-cost ratios, that is not the case that is part of the justification.

And then finally, and maybe most importantly, we want to finish what we start. If we have a project that is under construction, we never want to demobilize a contractor because of lack of funding. We want to make sure we can keep our contractors at work and finish work that we have initiated.

Senator SHAHEEN. Thank you. I certainly share that, and I think that is really helpful to know. One of the things both you and Mr. Palumbo talked about in your opening testimony was the importance of science and research and development in determining how to respond to particular areas. And I was really dismayed to see that the President's budget reduces the Coastal Inlets Research Program from over \$12 million in fiscal year 2022 to only \$100,000. And I wonder if you could speak to why that is, and how can we do what we need to do if we are not able to have the research to allow us to address climate change, and the other critical projects we have.

General SPELLMON. Senator I know, I know the Secretary shares the same. We are absolutely committed to elevating our investment in research and development. And I think folks like me have to do a better job of communicating the importance of research and development. Today, in the Civil Works Program we invest about 0.02 of 1 percent of our overall program into R&D, where folks like Apple are investing 4.5 percent, or my counterparts in the Netherlands, the Rijkswaterstaat, are investing 4 percent.

In fact, many of my senior leaders are down in Vicksburg, Mississippi, this week going through our top ten research and development priorities, and we are framing up the argument, and what we would like to include in the 2024 budget, for these top ten initiatives in the Civil Works Program. So we want to get more aggressive on that front.

Senator SHAHEEN. Good, I really appreciate that.

Mr. CONNOR. Senator, can I?

Senator SHAHEEN. Yes, please.

Mr. CONNOR. Can I just add, real quick, that General Spellmon will have a very strong partner in this effort. We are completely

in sync with the importance of R&D, and how we want to put it out in the 2024 budget.

Senator SHAHEEN. That is great. And, you know, listening to everybody raise the concerns about the projects that we have in our home States, and the challenges that we face with climate change, it seems to me that as we did in the '20s, and '30s, and '40s, and we looked at projects like the Tennessee Valley Authority, the effort to electrify the country, and all of the projects the Army Corps was involved in, in doing that.

But this may be another time when we need to really relook at the kind of regulations that you are talking about with respect to your Yazoo River Project, the kind of things that were done with respect to the project in New Orleans, where we know we have got all this water draining in, we have got a drought in the West, and yet this water is flowing into the Gulf and we are not able to divert it to places that we need.

It seems to me that we are in a position where we need to totally reexamine some of the assumptions that we have made for the last three or four decades, and think about how we better position ourselves to address the challenges of the 21st century. And I think that requires the kind of overhaul you are talking about, General, as you think about research, what else do we need to do in terms of regulation, and other areas to address the challenges that we face? Thank you, Madam Chair.

Senator FEINSTEIN. Thank you, Senators. Senator Murkowski.

Senator MURKOWSKI. Thank you, Madam Chairman. And Senator Shaheen know that I agree with what you have just concluded there. In many parts of Alaska, particularly on our coast, we are seeing levels of erosion that are threatening communities. Those communities don't have a lot of alternatives, there is no road out, and they are kind of very, very isolated.

So we have got a list of those threatened communities, communities that we know need to be relocated, we are in the process of relocating one out of dozens, and yet we know that every year there are more communities that are further threatened. And now it is not just looking at the coastal communities, it is the river communities where we are seeing river erosion at pretty remarkable rates there. So know that I would join you in that.

Secretary Connor, thank you for working with us. General Spellmon, thank you as well for all that the Corps has done in trying to address many of the backlogged projects that we have seen in my State. I think we made some good progress with the Infrastructure Bill. I had a chance yesterday to meet with Colonel Delarosa to talk about the Alaska-specific projects.

I can tell you right now there is an urgency from the communities, whether it be the community of Nome, up in the Interior, the Moose Creek Project, specifically the lower point. That is truly a safety issue for that community. And so they are wondering how quickly they can expect to see the funding move out.

We got a little bit of a top line on that yesterday, but I guess what I would like to hear you say this morning is that there is a level of priority with these projects, again that have been on the list for a long, long time and we are finally starting to see going? Secretary Connor.

Mr. CONNOR. The Corps very effectively got the guidance document for the Bipartisan Infrastructure Law, as well as the Disaster Supplemental to my office this week, so we will process and get it out by the end of next week.

Senator MURKOWSKI. Okay, good. Well, we will be working closely with you just so we can give good guidance to people on the ground in terms of what to expect. I want to ask you about the Port of Alaska, and Anchorage, as you know, a pretty significant port there, handles one-half of all Alaska inbound fuel and freight, it is distributed Statewide, consumed by 90 percent of Alaska's population, everything funnels in to this port. It supports more than 14 billion in commercial activity in our State, it is the main inbound, containerized freight and fuel distribution center.

It additionally is the strategic seaport that supports DoD (Department of Defense) missions in Alaska, the Pacific and the Arctic. This port is absolutely critical to Alaska, to the community—to the country really, and the problem that we are facing is that it is in severe disrepair. So I know that this has been brought to your attention, but I have had no fewer than a half dozen meetings in the past couple weeks just on this particular project.

So I would ask for a commitment to work with us to get the New START funding in, in 2023 if we can, but just need to know that this is on your radar here.

Mr. CONNOR. Senator, it is definitely on my radar. I know as part of the modernization effort there is a range of permitting as well as some infrastructure needs. So I think, quite frankly, General Spellmon may have more knowledge, but I am a little unclear about the infrastructure investments needed to be made. So we need to get up to speed with respect to that, and the authorizations presently available, but absolutely get the need for coordinated permitting to take those actions, and move them forward as quickly as possible. General?

General SPELLMON. Senator, I have been to the port, I would certainly acknowledge all of your comments. We recognize its importance, and we are committed to do our regulatory work, or other work, and we will continue to work to make our best technical argument for the New START Authority.

Senator MURKOWSKI. Good. Well, we know again that this is not just a local priority, it is truly a State-wide priority. Last question; and this relates to some of our small harbors. And I appreciate what you have said in terms of your analysis, and the review, General, in terms of how you determine priorities for projects. But I have always been concerned that our smaller ports, our smaller harbors, they are get kind of overlooked. And we have had this conversation in the past, that is why we have our small and subsistence harbors category,

But, you know, when you think about cost benefit any economic analysis is going to show that large ports are favored, because they have big, economic impacts, and so everything that we can do to find a way to help the small communities for these coastal communities, that port, that harbor, that is their economy that will allow for them to really exist. So I am looking at Craig, which I was really disappointed didn't make the list, and I would like to understand why, but also Dutch Harbor.

For communities like Craig, communities like Dutch, if the barge doesn't make it in with the groceries, it is not like you can just drive somewhere else to go get the materials that you need. These communities need their harbors, there is no other option.

So I guess I would like a quick understanding as to how and why communities like Craig and Dutch Harbor didn't make that list and whether—what we need to do to ensure that, for instance, Craig gets the \$30 million for preconstruction engineering and design. How do we help these communities?

General SPELLMON. So Senator, I will start. First, I would tell you that I am responsible across the Nation for maintaining 577 Federal navigation channels, and so we do, we recognize there are many of those channels that don't get touched on a routine basis.

I acknowledge your comments about Craig Harbor, and Dutch Harbor. I hope I am wrong. The Jobs Act, we are seeing nearly a billion-dollar investment in Alaska, and we are working down the priorities we think that you have shared with us. And you mentioned it is Nome, it is Barrow, it is Kenai, it is Moose Creek, and it is Slough Creek.

Again, I hope I am wrong. I think we are really going to stress our contracting partners in the State of Alaska. And when I took these recommendations to the Secretary I have got 963 construction projects underway today in the Civil Works Program, I did not want to put us in a position where we were going to have money sitting in a bank where we couldn't get after the work. So as I made these recommendations we wanted to get—give the Secretary projects that we knew we could get after right away.

We are not forgetting about the projects that you mentioned Craig and Dutch, we are going to get after these, it might just be in next year's appropriation that we can make that argument.

Senator MURKOWSKI. I am hearing next year's appropriations. Okay.

Mr. CONNOR. Can I just quickly add?

Senator MURKOWSKI. Okay, Secretary Connor.

Mr. CONNOR. A lot of discussion about Craig, and Dutch Harbor as part of the allocation process. And I think we have got an issue that we need to discuss with you with respect to the \$250 million limit that was in the IIJA for small ports. And of course we allocated that to Port of Nome, which is also a very important port. So we get to work through that issue, but they definitely are on the radar screen.

And I wanted to just get quickly because I absolutely agree with your assessment that we need to look at a wider range of benefits. And my predecessor, Mr. James, issued a comprehensive benefits memo. I want to build upon that. I think that was a very good piece of work, we want to give that guidance to the Corps to look at a wider array of benefits, including regional benefits which are very important.

And then we want to institutionalize not just looking at those benefits, but being able to make decisions based on that wider view of the benefits. And we have got a directive to move forward to the rule making, on principle, requirements, and guidelines, our agency specific procedures that will allow us to make decisions on a broader basis that is a high priority as part of our agenda.

Senator MURKOWSKI. Great. That is really good to hear. I appreciate that because I think we recognize. Again, it is not just the number of individuals served, but truly a much wider range of benefits that can accrue to your region.

Thank you, Madam Chairwoman. I apologize for going over my time.

Senator FEINSTEIN. And thank, you Senator. I have a bit of a beef, and so I am going to raise it now. Assistant Secretary Connor, over the last 2 years we have provided \$82 million for the Army Corps WIFIA (Water Infrastructure Finance and Innovation Act) Program, to provide low-interest loans for local dam safety projects. The implementation for this program has been stalled. We have been clear, and I think to ignore congressional intent in this manner, regarding how taxpayer dollars shall be spent is really not acceptable.

My State, California, has 89 dams which are in less than satisfactory condition, and would cause loss of life or significant economic damage if they were to fail. Dam safety has been a priority of mine as an appropriator since I have come to the Senate, and it is critical to millions of Americans who live near these dams.

When will you finalize—apparently we have 14 million a-year-and-a-half-ago there. So the question is, when will you finalize the program rules and get out these funds so we can start repairing dangerously deficient, non-Federal dams?

Mr. CONNOR. Madam Chair, thank you for your leadership in this area. It is a legitimate beef that you have, absolutely. So we have a proposed rulemaking that we are in the final throes. I expect that within the next month or so, hopefully, no more than 6 weeks, we will be in the Federal Register with that proposed rulemaking, which is the first step to setting up the program.

The WIFIA Program, and enlisting the ability for private dam owners to repair and modify their dams, it is part of the resilience agenda that we need in this era of climate change. So it is another important tool we are moving forward. And lastly, I would just note, we have lit a fire under ourselves, because WIFIA is now in the President's budget for 2023, so we acknowledge the importance of the program, we have got to move forward and get it stood up to address all the reasons you just mentioned.

Senator FEINSTEIN. So I want to understand this. I have your word here that it is going to move?

Mr. CONNOR. You have my word I am going to do everything possible to move it through, and get it in the Federal Register in the next one to 2 months.

Senator FEINSTEIN. Well, I accept that with thanks. So thank you.

Senator Kennedy, you are next.

Senator KENNEDY. Madam Chair I just wanted to point out that Senator Hoeven just called me, he is on his way. I would like, you know, if we could indulge him for a few minutes because I know John has some questions he wants to ask. I wanted to ask one of my colleagues a question. Senator Hyde-Smith, I listened with interest about your situation in Mississippi. And I appreciate it. The Corps wants to go forward, and the EPA won't?

Senator HYDE-SMITH. Pretty much correct, that that is what has happened. The EPA is one that put the brakes on, and we had signed the MOUs, we had done everything, and the science was very, very strong. And the amazing thing is the two different sets of scientists with EPA, and with the Corps have not sat down. And I think that is critical. Am I correct, Daniel?

They have not sat down together, and I don't know why that has not happened. But I really, really would like to see that happen. And thank you for the discussion because, literally, a lady who was pregnant died because of this flooding. And, you know, we talk about wetlands, we talk about everything else, 6 months these houses were under water—this property was under water, 6 months. And you know, I talked to so many people who were living in hotel rooms, who were living with relatives in the back of businesses, that people allowed them to live, these people cannot afford hotel rooms, and other areas like that.

Senator KENNEDY. Well, can I ask? Why haven't the two sets of scientists talked? Or they have these things called telephones at a minimum?

General SPELLMON. Sir, our team from Vicksburg and the scientists have sat down and compared data. What may be happening is——

Senator HYDE-SMITH. With EPA and with the Corps, the two sets.

General SPELLMON. Yes. Yes, ma'am. What may be happening is new staff that have come in within the past several months of the past year, but we will pack up this afternoon to go meet the——

Senator FEINSTEIN. Could you speak directly in the mic? Sorry to interrupt you.

General SPELLMON. Yes, ma'am. So my parting comment is, we will pack up this afternoon and meet with any scientist from any Federal agency or State agency that would like to compare notes on our data.

Senator HYDE-SMITH. Yes. The Corps is very willing, EPA is the one that we can't get—to seem to get as interested as——

Mr. CONNOR. Senator, can I just add very quickly?

Senator KENNEDY. Yes. But let me put a finer point on. Here is what I am missing. The Corps spent a lot of time and money doing this project, on this project, did its studies, decided there is no damage to wetlands. The leadership of the EPA changed; one of the leadership's priorities is environmental justice.

And the EPA is saying, in the name of environmental justice we are going to hold up on this project, even though this project will help people who happen to be 70 percent African-Americans. Am I missing something here?

Mr. CONNOR. I would just add, I don't speak for EPA, but I have spoken to Administrator Regan, and Assistant Administrator Fox. They are strongly committed to getting their team with our team as part of this interagency group, I think the administrator was particularly moved by his visit down to the Yazoo Basin. So frustrating, yes, but we are going to get together——

Senator KENNEDY. Sir, when is your administrator going to make a decision?

Mr. CONNOR. Well, we have got to get the teams together, and not just have a meet and explain the differences, we as leaders have to reconcile those differences so we can make a decision about the project that can move forward.

Senator KENNEDY. Well, how about next week?

Mr. CONNOR. We are getting together our, interagency group tomorrow at the leadership level, and having yet another meeting. And the goal is to then focus the issues so that we can get our teams to get into those details so we can—

Senator KENNEDY. Right. Again, I am just trying to get a timeline. The Corps spent a lot of time and money, and says, we are ready to go. It has passed all the studies, the scientists say go, you all have it—because of the change in leadership, have said, no, we are holding up. And we have got to make a decision. I am just asking a simple question. When are you going to make a decision?

Mr. CONNOR. As soon as we can.

Senator KENNEDY. Yes, when is that?

Mr. CONNOR. That is hopeful we are going to be working on this all year.

Senator KENNEDY. It is going to take a year?

Mr. CONNOR. Well, it is going to take some time to reconcile the differences between the agencies.

Senator KENNEDY. Why?

Mr. CONNOR. Because there are disagreements about the science, we as leaders can convene folks, we can focus the issues, but we have got to have that dialogue, and that is going to take a little bit of a time,

Senator KENNEDY. I don't understand why. I don't get it. I don't understand why you can't put the two scientists together, lock them in a room, give them some coffee, give them a few honey buns, and say, okay, over the next 8 hours, work this out. I don't get it. That is the way the real world works. Why can't you do that?

Mr. CONNOR. Well, we are going to do that.

Senator KENNEDY. When?

Mr. CONNOR. Whether the 8 hours is what it is going to take.

Senator KENNEDY. Or maybe it will take a couple of days.

Mr. CONNOR. Or whether it is going to take 24, or 48 of intense dialogue, I don't know the answer to the question. I just know that we are committed to forcing that process to happen and coming up with the project.

Senator KENNEDY. Do you understand why people get frustrated about that?

Mr. CONNOR. Absolutely.

Senator KENNEDY. Okay. I can't even—I mean, I am just asking for a decision. I am not telling you what decision to make. I just don't see why you can't do it within 6 weeks.

Mr. CONNOR. I understand the frustration. I am part of a committed team that is going to get to a decision, Senator.

Senator KENNEDY. Okay. Thank Okay. Thanks again, for all your good work, gentlemen, and ladies.

Senator HYDE-SMITH. Six weeks would be great.

Senator FEINSTEIN. Senator Hyde-Smith, any questions?

Senator HYDE-SMITH. Sure.

Senator KENNEDY. I will let you go.

Senator HYDE-SMITH. Hey, you are my honey bun.

Senator KENNEDY. Okay. Good. I like that.

Senator HYDE-SMITH. Shifting gears from flood control to innovation, Congress is asking the Corps to do a lot of things with the record high funding the Corps has received in recent years. I want to make sure you have the tools you will need to be successful. Part of what you will need is innovation, and to be able to access the innovation taking place in the private sector, sometimes the rigid structure of the Federal acquisition process doesn't make that very easy for you.

To address that very problem Congress gave NASA (National Aeronautics and Space Administration)—I am sorry—NASA, DoD, and a number of other agencies, Other Transaction Authority, OTA, has been used to great effects by the Department of Defense, including the Corps of Engineers to access innovation—innovative solutions, and cutting-edge technologies from entities that aren't traditional Federal contractors.

Unfortunately the Department of Defense reads the law as providing OTA only for the Corps' Military Mission, and not the Civil Works Mission. Given all that we are asking you to do, you need these important tools would be what most people would conclude. But Secretary Connor, and General Spellmon, don't you think having the ability to use Other Transaction Authority in your Civil Works Mission would be a useful tool for you to have?

General SPELLMON. Senator we do. As you suggested we have used this on several projects in our Military Construction Program, I would argue, to great effect. And we also think there is value in bringing this over to the Civil Works Program. I have just not had the opportunity yet to sit down with Mr. Connor to talk about this particular tool, but you have our commitment, we will have that conversation, ma'am.

Senator HYDE-SMITH. And as Congress works on the next Water Resources Development Act, will you work with me to help put that tool in your hands?

General SPELLMON. Yes, Senator.

Senator HYDE-SMITH. Thank you very much.

Senator FEINSTEIN. I would like to bring up a subject that is of real concern to me. The Bureau and several States have already severely reduced water allocations in many cases to zero. And I am a westerner, and I am from a big State, it is 40 million people, it is a huge commercial State, it is a big AG State, but there is no way the West can survive extreme droughts, plus climate change, without more investment in infrastructure to move water from the wet years to the dry ones.

WIIN (Water Infrastructure Improvements for the Nation) Act funding, I think, and I wrote the bill, is key to developing long-term solutions to these challenges, and last year we provided an additional \$155 million to WIIN Act funding for water storage, desal, and water recycling and reuse projects. So I have continued to work with my colleagues to appropriate funding for good projects, but the President's budget recommends no funding for any of these projects. And I am curious as to why?

Mr. PALUMBO. Senator, thank you very much for that question. The way the Bureau of Reclamation is looking at the WIIN Act projects, we were able to make a lot of progress on getting projects determined feasible, getting projects started with funding, and we are now utilizing the BIL funding, the Bipartisan Infrastructure Law funding in large storage to put towards some of those WIIN projects. We are going to be making an announcement later this fiscal year, in 2022, using that BIL funding to advance those WIIN-related projects.

And we also have queued up money for 2023 out of the BIL funding for those WIIN Act projects. So, we absolutely thank the subcommittee on supporting those projects, getting them moving, and we are going to keep them moving, because the WIIN Act authority expired, but we are going to keep them moving with BIL funding.

Senator FEINSTEIN. Well, thank you very much for that. We will follow closely and see if it happens. Please know that this is a big problem out West, and one of the things that I have seen is how big this country is when you fly back and forth over it. And I am really concerned. So this is a top priority for me, and I believe for California.

So I thank you for that answer, and my expectation will be that the administration will respond. So thank you very much.

Mr. PALUMBO. Absolutely.

Senator KENNEDY. Can I say one more thing, Madam Chair?

Senator FEINSTEIN. Yes, okay.

Senator KENNEDY. First, I am going to just repeat what I have said before, what a delight it is to work with you Madam Chair, and your very able staff. I am going to be calling you gentlemen, I need to get updates on three projects that I know you are working on, that are really important in my State, and have become more important recently.

The Calcasieu River and Pass, you know, we need some dredging done there, it is a major LNG (Liquefied natural gas) export hub, and we need to get it to what 42 feet deep and about 800 feet wide, our Atchafalaya—I know you know the projects I am talking about—Atchafalaya river dredging, we have got to maintain that the authorized depth of 20 feet deep, and a bottom width of 400 feet.

And finally, last but certainly not least, I don't mention these in any particular order, our New Orleans to Venice Hurricane Protection Project. So I will just be calling you, and to try to get an update. And again, I wanted to thank you for giving so much to our country.

Senator FEINSTEIN. That was nice, very nice, Senator. Thank you very much.

Senator KENNEDY. Thank you. You are welcome, Senator.

ADDITIONAL COMMITTEE QUESTIONS

[The following questions were submitted to the Department, but the questions were not answered by press time.]

QUESTIONS SUBMITTED TO MR. MICHAEL CONNOR

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

Recreation Program

Question. The Corps was the second leading provider of recreation on public lands and waters in 2021, yet the President's budget requested a significant cut to the Corps recreation budget. How can the Corps continue to support increasing demand for recreation and sustain the significant economic footprint of Corps managed lakes in local communities across the country if they don't have enough funding for basic operations and maintenance? Can you please explain the rationale for this funding reduction at a time when the American public's interest in outdoor recreation is surging?

QUESTIONS SUBMITTED BY SENATOR JOHN HOEVEN

Question. I have supported the development of a WIFIA program within the Corps of Engineers that would match the WIFIA program established at the Environmental Protection Agency. The Red River Valley Flood Protection project received an EPA WIFIA loan, which provides tremendous cost savings for the local share of that large public-private partnership or P3 project. Last year, the Corps WIFIA program supported loans for projects at non-Federal dams.

Would you support the expansion of the Corps WIFIA program to include the construction of levees in cases where those levees would be entirely constructed, owned, and operated by a non-Federal entity?

Question. The Dakota Access Pipeline (DAPL) is vital energy infrastructure, transporting well over half a million barrels of oil per day from North Dakota to energy consumers throughout the Midwest.

DAPL has additional delivery capacity, up to 1.1 million barrels per day, which sits unused while the EIS process remains delayed, a process which has now gone on for over 2 years.

Families are paying record high gasoline prices, and consumers need long-term certainty.

Will you promptly complete and release the draft EIS?

Question. You said previously that your office would not reopen standalone jurisdictional determinations (JDs) under the Navigable Waters Protection Rule (NWPR). However, it is our understanding that Army Corps offices around the country are calling into question the validity of negative JDs issued under the NWPR, despite such JDs being valid for 5 years.

Have you given a policy direction from headquarters questioning the validity of JDs completed under the NWPR?

If permittees cannot rely on a lawful negative JD letter issued by the Corps, what are they supposed to rely on?

Will you confirm that the Army Corps will not pursue enforcement actions against permitted entities complying with a lawful negative JD?

QUESTIONS SUBMITTED BY SENATOR BILL HAGERTY

Question. I was able to visit the Chickamauga Lock construction project in May 2021 and see first-hand the size, scope, and importance of this project to the region and our country. For fiscal year 22, the project did not require any funding thanks to the years of support and leadership of the Appropriations Subcommittee on Energy and Water Development. However, for this coming fiscal year, local leaders tell me they will need about \$39 million to finish construction of the Chickamauga Lock projects.

Assistant Secretary Connor, does the President's budget request any funding to finish the construction of Chickamauga Lock? If so, will that funding be sufficient to complete construction of this project?

Assistant Secretary Connor, can you discuss the importance to the region and our nation's broader inland waterway system of completing this project on schedule?

Assistant Secretary Connor, will you be able to discuss delays or contracting issues with the construction project? And can you provide me with a detailed timeline of the project's completion?

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Question. Outdoor recreation is a critical economic driver in my State of Tennessee and it is estimated that it generates nearly \$700 billion in gross economic output in the U.S. Now more than ever, Americans are looking to get outdoors and spend time in our national parks and lakes. The U.S. Army Corps of Engineers plays an integral role in maintaining and ensuring our Nation's waterways are safe and navigable. To that effect, in fiscal year 2022, Congress provided \$295 million for the Corps' recreation programs. However, industry tells me your fiscal year 2023 budget request only includes \$240 million for these activities, which represents a \$55 million reduction.

Assistant Secretary Connor, at a time when the USACE is in need of increased resources to manage a surge in outdoor recreation participation by millions of Americans in the wake of a pandemic, please explain the rationale for the Administration's proposal to cut this funding.

Question. Constituents from construction materials producing industries tell me that the USACE and EPA are not acting to approve water permits that they rely on to supply materials to build infrastructure projects and communities. The current permit criteria should be based on longstanding practice, however, the recent spate of rulemaking has caused the USACE and EPA to slow walk permit approvals. These approvals are needed to deliver the infrastructure investments Americans need.

Assistant Secretary Connor, how many 404B permits and JDs have been approved in the last 6 months and how many are outstanding in your backlog, applied for yet waiting approval?

Assistant Secretary Connor, what action are you taking to ensure permits are being processed even as simultaneous rulemakings and judicial reviews by the SCOTUS move forward?

Assistant Secretary Connor, further what is your plan to ensure material producers and other key industries can receive approvals in order to effectively supply building materials to markets that are suffering significantly from shortages and operational disruptions in their supply chain?

QUESTIONS SUBMITTED TO LIEUTENANT GENERAL SCOTT A. SPELLMON

QUESTIONS SUBMITTED BY SENATOR JON TESTER

Question. I am pleased that the New York District of the Corps has undertaken several projects under the authority of section 542 of the Water Resources Development Act of 2000 (Public Law 106-541) and sections 3158, 3159, and 3160 of the Water Resources Development Act of 2007 (Public Law 110-114).

Among these projects is phase 1 of a feasibility study of constructing an invasive species barrier in the Champlain canal. The importance of this work has been driven home recently by evidence that the round goby, a highly invasive fish, is now making its way to the canal which will allow it to access Lake Champlain, where it is expected to have devastating ecological impacts.

Progress on the Corps feasibility work has been painfully slow, however, due in large part to the need, under section 542, for the Corps to work with a local sponsor, requiring cost share contributions, agreements and coordination that take months, even years, to get in place. This feasibility work, as well as design and ultimately construction of this much needed measure is specifically authorized section 5146 of WRDA 2007 as a 100 percent Federal project. Working under this authority the Corps could accelerate progress and provide a solution to invasive species transfer at a much earlier date.

When will the Corps allocate the needed funds within its work plan and undertake the Champlain Canal invasive species barrier project under the authority of section 5146 of WRDA 2007 and thereby accelerate this important and highly time sensitive project?

QUESTIONS SUBMITTED BY SENATOR MITCH MCCONNELL

Question. Kentucky Lock and Dam is a gateway to more than 700 miles of navigable waters, with \$10 billion of products passing through it annually. Its current average delay is one of the longest delay times of any lock in the inland waterway system. Congress authorized the Kentucky Lock and Dam addition project in 1996 and has appropriated over \$1 billion since then. Yet, this project is still ongoing and, as we recently learned, is facing even more extension, pushing the estimated completion timeline from 2025 to as late as 2030.

What are the reasons for such a major delay? Based on the latest official assessment in 2020 which stated a 2025 completion, why has the project doubled in remaining length to 2030?

Construction of the original lock began in 1935 and took just 6 years to complete. With vast advancements in modern technology, why has this addition project taken over 26 years and counting?

What are concrete, hard and fast ways to accelerate the timeline without compromising the integrity of the project?

What is an updated timeline for completion, and do you expect additional funding needs?

QUESTIONS SUBMITTED BY SENATOR JOHN HOEVEN

Question. I recently wrote to you about how drought conditions in the upper Missouri River basin create challenges around Lake Sakakawea. Persistently low water levels create problems for lake access, on top of a backlog of deferred maintenance at various recreation areas around the lake. We have a history of State and local officials working with the Corps to meet these challenges during drought conditions and I hope we can do so again.

Will you support basic investments in things like boat ramps and Corps-owned infrastructure at Lake Sakakawea as part of a coordinated effort to preserve lake access during drought conditions in the upper Missouri basin?

Question. Last fall, the Corps of Engineers announced that it would conduct a special release of water from Fort Peck on the Missouri River to support the spawning of the pallid sturgeon. The Corps eventually cancelled this plan due to persistent drought conditions that made it unworkable, but it raised concerns that conducting this release would result in problems downstream. I have heard from many farmers in northwest North Dakota who have concerns about negative impacts on cropland and processing facilities. It is also my understanding that a surge of water could hurt the operation of several municipal water intakes.

Can you ensure that the Corps of Engineers will not conduct such a pulse in the future if such a pulse would harm local interests along the Missouri River?

QUESTIONS SUBMITTED BY SENATOR BILL HAGERTY

Question. I recently became aware of a permit application under consideration by the Corps of Engineers involving expansion of an existing dock structure located in Port Allen, Louisiana. My constituents and industry leaders have voice concerns that his project could have long-lasting negative consequences for upstream users. Over the last several weeks I have had conversations with the various USACE Commanders and U.S. Coast Guard leadership. The permit application, if approved would permit Panamax-sized vessels at this already dangerously constrained point of the Mississippi River and would create a hazard to navigation that would limit full utilization of the Mississippi and could obstruct free navigation on that river. The U.S. Coast Guard, which is responsible for ensuring the Mississippi River is safe and navigable, has evaluated this location on prior occasions and found it unfeasible because of the increased probability of major marine incidents. As I understand it, the final decision whether to approve or deny the permit will be made by the New Orleans District Commander.

Lt. Col. Spellmon, will the effects on the entire Mississippi River system be considered as part of this decision?

Lt. Col. Spellmon, since this decision will have major impacts across the entire length of the Mississippi River system, would it be more appropriate for this decision to come from Division or Headquarter leadership? If not, could you explain the rationale?

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QUESTIONS SUBMITTED TO MR. DAVID PALUMBO

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

Klamath Basin Drought Response Agency

Question. The Klamath Basin has suffered back to back drought years which is causing considerable hardship to farmers and also harmed endangered species and migratory birds. The fiscal year 2023 budget request recommends \$21 million for endangered species. How do you plan to use these funds to meet the needs of fish, tribes and farmers in the Basin?

Last year I worked to provide an additional \$9.9 million under the Disaster Response Program for the Klamath Drought Response Agency to help farmers impacted by the significant lack of irrigation water delivered from the Project. We hear from Klamath water users that there is a shortfall in the \$27 million in funding needed for the Klamath drought response agency. What is Reclamation doing to address this shortfall?

The Department has held a series of meetings with the stakeholders in the Basin. Are there more meetings scheduled in the future? Will you provide more information on these engagements, specifically what are your long term goals for this effort?

QUESTIONS SUBMITTED BY SENATOR JON TESTER

Question. The Dry-Redwater Regional Water Authority System in Montana has been in progress for nearly two decades, and while they've made substantial progress, they still need Federal funding to build out the project. In 2020, we passed, with bipartisan support, legislation to authorize Bureau of Reclamation to conduct a \$5 million feasibility study for the project, to clear the way for a formal authorization. How is Reclamation planning to fund that study, and what timeline can we expect to see for completing it?

QUESTIONS SUBMITTED BY SENATOR JOHN HOEVEN

Question. The Garrison Diversion Unit was initially designed and intended to serve irrigation purposes. Since the project was first authorized in 1965, the focus and mission of the project has changed multiple times, most recently under the Dakota Water Resources Act of 2000.

Garrison Diversion and the Bureau of Reclamation are currently conducting a basis of negotiation for the cost of water to make good use of the McClusky Canal for the Eastern North Dakota Alternate Water Supply Project (ENDAWS), which will help secure an affordable and reliable water supply for half of North Dakota's population. As part of this process, Reclamation is determining repayment costs for use of Federal facilities that currently remain under-utilized.

Do you think Reclamation should be able to share actual proof of costs prior to claiming they are legitimate costs?

Will you work with my office and our state to approve a cost of water for ENDAWS that is fair to water users, for what would otherwise be a stranded Federal asset providing no benefit U.S. taxpayers?

SUBCOMMITTEE RECESS

Senator FEINSTEIN. If there is no further business before this committee, we will stand adjourned.

[Whereupon, at 11:21 a.m., Wednesday, April 6, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2023

WEDNESDAY, MAY 4, 2022

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

The subcommittee met at 10:04 a.m. in room SD-192, Dirksen Senate Office Building, Hon. Dianne Feinstein (chairwoman) presiding.

Present: Senators Feinstein, Murray, Tester, Shaheen, Kennedy, Collins, Hoeven, and Hagerty.

DEPARTMENT OF ENERGY

OFFICE OF THE SECRETARY

STATEMENT OF HON. JENNIFER GRANHOLM, SECRETARY

OPENING STATEMENT OF SENATOR DIANNE FEINSTEIN

Senator FEINSTEIN. I think we will get started. Senator Kennedy is on his way, but has sent signal that this is what we should do. So we will do it.

And the Subcommittee on Energy and Water will please come to order.

Today's hearing is going to review the fiscal year 2023 budget request for the Department of Energy.

Thank you, Secretary Granholm for joining us today. I am particularly pleased to see you again and back this year. A lot has happened since we last saw you, including historic funding for the Department through the Bipartisan Infrastructure Bill, and our recent fiscal year 2022 spending bill. I know that implementing this funding has been keeping the Department busy.

The administration's fiscal year 2023 request for the Department, totals \$48.6 billion, representing more than \$3.7 billion increase from last year, and that is billion, not million. As I understand this, most of this proposal increase is aimed at reducing our fossil fuel consumption, and addressing climate change.

Your budget includes funding for research and development, of renewable energy, batteries, electric vehicles, and also demonstrates these technologies at a scale that would reduce emissions. These investments, I believe, are important as we continue to reduce our dependence on fossil fuels for heating our homes and powering our cars.

Recent international conflicts have highlighted the need to pursue domestic, cost-effective solutions for our energy consumption, and energy independence is national security.

So I wanted to take a moment to applaud the administration's continued resolve to act aggressively to combat climate change.

Ranking Member Kennedy will be here shortly, and has asked that we move ahead. So we will. And I might ask the Senator that is here, if she would have any opening statements on behalf of her side.

STATEMENT OF SENATOR SUSAN M. COLLINS

Senator COLLINS. Thank you very much, Madam Chair. I have a number of issues that I hope to bring up with the Secretary today, they range from energy storage which we need to improve in order to integrate renewables into the electric grid, and to weatherization programs that will help us conserve, to the exciting work on deepwater offshore wind energy that is being performed at the University of Maine. So I look forward to discussing all of those issues.

And I want to thank the Chairwoman for her leadership. Thank you.

Senator FEINSTEIN. Excellent. And thank you.
Madam Secretary, please proceed.

SUMMARY STATEMENT OF HON. JENNIFER GRANHOLM

Secretary GRANHOLM. Thank you so much Chair Feinstein, and to Senator Collins, and in absentia, all of the committee members who I know are really interested in this topic regarding the Department of Energy and our 2023 budget request.

I am so proud to lead this Department as the 16th Secretary of Energy, and I am grateful for the support that you have given to the Department of Energy, including through the 2022 Omnibus Legislation.

Under the Biden administration, as you have noted, Madam Chair, the Department of Energy is interested—not just interested—committed, deeply committed to increasing energy security, affordability, and resilience. We are committed to securing the clean energy supply chain that is necessary to reduce our reliance on unabated fossil fuels, and to increase our energy independence.

Like the \$3 billion from the Bipartisan Infrastructure Law for battery manufacturing that we announced on Monday, we are also committed to strengthening America's competitiveness by accelerating scientific discovery and innovation. And these commitments are reflected in this budget, and a look around the world shows us that this is the right focus, with the right priorities for this moment in history.

Right now we face a trio of crises. One is climate change which costs the United States \$148 billion last year alone in damages from extreme weather. Then the second is COVID-19, and of course now Russia's war, invasion of Ukraine which is costing American families right now, too, as they see prices rising from gas stations to grocery stores.

So let me be clear. First, that the Department of Energy is using every tool available to increase oil and energy supply. In late-

March, for example, the President authorized the release of 1 million barrels per day from our strategic petroleum reserve over the next 6 months, 180 million barrels total, coordinating with our international allies and partners who also committed to releasing another 60 million barrels.

And I appreciate Congress' support of President Biden's ban on Russian energy imports. We are also working to offer relief to American families at home through the \$3.5 billion Weatherization Assistance Program that was provided in the Bipartisan Infrastructure Law. But ultimately, these crises tell us that energy security, and energy independence, and energy affordability, all depend on a shift toward American-made clean energy.

And that is why we are working with our international allies to advance alternative energy sources, and boost clean energy manufacturing. It is why we are grateful that Congress, through the Energy Act of 2020, and the Bipartisan Infrastructure Law has invested in clean building technologies here at home, with American parts, and American labor.

I am grateful that we are, with members of Congress, that they have demonstrated the faith in our Department to oversee a lot of these investments in the new offices, the clean energy goals, the supply chain goals that come with them.

We are hard at work implementing this legislation here at the Department of Energy. Most recently DOE (Department of Energy) began accepting applications, for example, for the \$6 billion in civilian nuclear credit for the existing fleet of nuclear plants, a way to keep reliable and clean energy online.

The \$62 billion from the Bipartisan Infrastructure Law that came to the Department of Energy, is an historic investment in projects that will serve our Nation for decades. But on its own, it is not sufficient to address the Nation's full energy challenges, and that is why our request includes base year funding for efforts to complement the Bipartisan Infrastructure Law, in order to maximize its impact to lower costs, and provide clean, reliable, secure American power.

This request also supports our Office of Energy Efficiency, and Renewable Energy, our Office of Science, the 17 national labs which sharpen our innovative capacity, and our competitive edge, and of course our budget includes funding for DOE missions that keep our country safe. Like Environmental Management, and nuclear security.

I am proud of DOE's work to confront our Nation's most pressing challenges. I reaffirm my commitment to leading this extraordinary Department with its extraordinary employees, as we implement congressional actions. From the Bipartisan Infrastructure Law, the Energy Act, and to those still to come, hopefully, the Bipartisan Innovation Act, and the President's full agenda for building a better America.

So I thank you for the opportunity to be here today. And I am happy to answer your questions.

ENERGY PRICES

Senator FEINSTEIN. Thank you very much, Secretary. It is my understanding that this administration has taken several steps to

try to address this issue, and has tapped the strategic petroleum reserve three different times to try to get more gas into the market. I support these actions and agree that we should take as many steps as we can to address gasoline prices.

Madam Secretary, can you explain whether oil being released from the strategic petroleum reserve is going to be able to create any meaningful relief at the pump? And what else can be done, if anything?

Secretary GRANHOLM. Yes, great. Thank you so much for this question. As we know, the invasion of Ukraine, Russia is a huge exporter of oil on the global market, and the invasion of Ukraine pulled, initially, 1.5 to 2 million barrels per day off of that global market.

So for us in the United States, we are asking how can we increase enough supply so that when supply like that is crunched the prices don't go up, out of control. The biggest tool we have in our arsenal is the strategic petroleum reserve, and so the President has called, first of all, upon our oil and gas industry to produce more with the permits that they have, and the ability that they have to increase supply.

Second, he has called for this, the release of a million barrels per day for the next 6 months, as the oil and gas industry improves their production. The Energy Information Agency has said that by the end of this year, that we will see an additional million barrels per day from our domestic suppliers, and so that is why the President has called for an increase in a million barrels per day from the Strategic Petroleum Reserve to balance out the markets.

Now, the U.S. has said we will not accept Russian oil, which is great, so has Canada, and a number of other nations. The EU (European Union) is on the verge of doing something similar, if the EU pulls their supply their—if they say no more Russian oil for us, that will be another, perhaps, 1.5 million barrels that are pulled off the market. So then we will have about 3 million barrels off the market.

That will create additional volatility. We will see prices likely to increase. So while we are doing all we can to make sure that supply and demand meet itself to stabilize, I think this war has only accelerated the urgency with which we must move to electrify transportation, and to move toward clean energy.

Clean energy, that is American-made, is energy that is not going to be subject to the volatility of petro-dictators, to the volatility of a fossil fuel market that is global in nature. So that is why the President's goal is to try to stabilize supply now, and try to move as well toward clean energy.

And finally, I will say that the President is doing everything he can within his power in this global market, to make sure that we lessen our demand on oil. For example, by increasing the E15, the ethanol blend in gasoline, taking that to E15 so that we reduce, again, the amount of oil that is necessary. This is a very, very difficult situation, but I think, ultimately, it screams that we must accelerate toward clean energy.

CLIMATE CHANGE'S IMPACT ON THE STATE OF CALIFORNIA

Senator FEINSTEIN. I would just like to address one California question to you. We discussed this previously but we are experiencing a climate emergency, and California is bearing the brunt of a lot of these changes. We find that temperatures are causing more intense heat waves making western wildfires more frequent, destructive, and deadly. These are straining our power grids and forcing us to rethink their design.

Just last year in California 2.5 million acres burned. It destroyed 3,600 structures. The recent infrastructure bill would provide billions to help States upgrade their aging infrastructure. And so we are pleased about that. But can you help us understand how quickly this historic funding can be implemented to help States upgrade their aging energy infrastructure?

Secretary GRANHOLM. Yes. Thank you for that too. The part I think that is very hopeful for California in the Bipartisan Infrastructure Law related to energy infrastructure is the \$5 billion for resiliency, which could be used for the purposes of undergrounding wires in strategic locations. And so we are in the process, we will be putting out a funding opportunity announcement shortly. We just called for a request for information from stakeholders about how they would like to see that portion funded.

I will also say, I know I am over time, but we are also focused on the technology associated with the grid that will allow us to enhance sensors, drones, modeling so that we know that we can anticipate when wildfires are coming, so that both the technology as well as undergrounding, are hopeful improvements for California and States like it.

Senator FEINSTEIN. Thank you. Senator Collins.

WEATHERIZATION ASSISTANCE PROGRAM

Senator COLLINS. Thank you, Madam Chair.

Welcome, Madam Secretary. I want to talk to you about the importance of the Weatherization Assistance Program. In my State two-thirds of the homes use heating oil to stay warm. And just last week the cost of a gallon of heating oil exceeded \$6. That is a record high that I have never seen in our State, and it is causing tremendous hardship.

We know that the Weatherization Assistance Program makes a big difference in States like Maine where we have some of the oldest housing stock in the Nation. That means a lot of uninsulated attics, and leaky windows, which causes discomfort but also wasted energy. And that is why I have been such a long-time supporter of the Weatherization Assistance Program.

The Bipartisan Infrastructure Law which you have mentioned, and which I was one of ten Senators who negotiated it, included \$3.5 billion for additional funding for the Weatherization Program.

In light of this large infusion of new funding, Senator Reed and I, along with several of our colleagues, sent you a letter on January 13, urging you to update the program's regulation and guidance to ensure that the money could be spent more efficiently and reach more people.

I regret to say that we have not yet received a response to that January letter. And I would ask you today what improvements you see to help simplify and enhance the effectiveness of the Weatherization Program?

Secretary GRANHOLM. Thank you for that. Thank you for your long-time support of weatherization. I agree with you about the utter importance. There is 39 million homes that are eligible for weatherization, and unfortunately we can only do in a given year 35- to 40,000 of them.

And so we need—there is such a great need out there, that big slug from the Bipartisan Infrastructure Law will enable us to do hundreds of thousands more. Here is the update, and it is reflected in the budget. One is that as you know, many homes aren't eligible even though their income levels of the owners of the homes are eligible, because they may have a, you know, un-structurally safe roof, or they may have mold.

And so part of the update reflected in this budget is another \$30 million to make homes pre-weatherization ready, so that we can go in and do some of the structural changes on the homes that most need it. I mean these are homes that need it more than anything, but the regulations are such that they haven't been eligible.

So we are doing this pre-weatherization pilot, and we want to be able to see this expanded, we will come back and let you all know how that works. But we are very excited about that.

Some local, and I don't know if in Maine they do, but many States have their own pre-weatherization strategy, where they get their own State funding for it. But it is clearly necessary.

The second update is that, as you know, we spend a lot of money every year on the Low-Income Home Energy Assistance Program, or LIHEAP, and that money goes to people who are low-income, and can't afford their bills, but often they are probably living in homes that need weatherization, and that is why their bills are so high.

So we are combining now that effort, so we have asked in this budget for another \$100 million to do a—focus on the LIHEAP homes for weatherization so that we can end up as the government saving money, but we can target the weatherization efforts on the homes that clearly need it most.

ENERGY STORAGE TECHNOLOGIES

Senator COLLINS. Thank you for that update. A second issue of great interest to me is energy storage. I was the lead author of the Better Energy Storage Technologies Act, also known as the BEST Act, which became law in December of 2020. And it authorizes long-duration grid scale energy storage demonstration projects with the goal of strengthening the resiliency and reliability of the grid, and making it more feasible to incorporate renewables like wind, and solar.

Again, the Bipartisan Infrastructure Law included \$500 million for these demonstrations. My office has been contacted by several companies including some in Maine who are interested in accessing this funding. And again I would point out it did become law in December of 2020.

DOE has yet to issue any requests for information, or otherwise provided details on how it plans to implement the demonstration program. When can we expect to see energy storage demonstration announcements from DOE?

Secretary GRANHOLM. Yes.

Senator COLLINS. It really is the Holy Grail of incorporating renewables, is improving storage.

Secretary GRANHOLM. A thousand percent. Couldn't agree with you more, and thank you again for your leadership on this. You are absolutely correct. We had a roundtable with stakeholders in April to be able to get feedback for how we should be thinking about this.

There is three funded efforts that will be under that \$500 million umbrella. One is demonstrations, two is an Energy Storage Pilot Grant Program, and the third is long-duration demonstrations. We will be issuing an RFI (Request for Information) very soon. And I can have our team brief you on that, or your team on it separately. We will make sure that somebody does that, because I think it is within May we will be issuing the first RFI.

Senator COLLINS. Great. Thank you.

CONSENT-BASED SITING FOR INTERIM NUCLEAR WASTE STORAGE

Senator FEINSTEIN. Madam Secretary. Oh. Thank you made it clear that you support safe and workable solutions dealing with nuclear waste, and for several years we have included 20 million in appropriations for consent-based siting of the interim nuclear waste storage. And the Department has also requested additional information from stakeholders to develop a plan going forward on interim waste. That is my understanding.

Can you bring us up to date and discuss how the administration plans to break this stalemate on nuclear waste disposal? I know there is a recent request for information, but it has taken a long time, and I have watched literally nothing happen.

Secretary GRANHOLM. Well, the good news is, things are moving. So the request for information that we issued at the end of last year, we received over 200 responses. Now, I am not saying that there are 200 communities that are saying, sign me up. There may be some that were in opposition.

But we are assessing what we got back, and then we will proceed with a funding opportunity, but here is the—we will proceed; excuse me, with the next step which is to really get honed in on who might be interested from the information we glean.

You know, the communities that are interested in this are going to want to know how they will be compensated for the service to the Nation of being able to store this fuel safely. And so the first step is to get this RFI, and understand what they are doing, then we will do a next step on that to hone it in, that will happen I think in the summer.

And so we will be proceeding, it is our determination to have this issue resolved as well from an interim basis, which is what the step is we are talking about. And so we are enthused by the conversations that we have had with a number of communities.

Senator FEINSTEIN. Thank you. Senator, any other questions?

OFFSHORE WIND TECHNOLOGY

Senator COLLINS. I do. Thank you very much Madam Chair.

Madam Secretary, we have discussed previously a world-class consortium led by the University of Maine in floating offshore wind technology. I have worked with the university for many years on this project. I am very excited about it.

The university is pioneering a new era of energy independence by harnessing powerful, deepwater offshore winds through one of the Energy Department's offshore wind demonstration projects. The advantage of offshore wind is you can place the turbines far enough offshore so you can't see them from the shore. And we are working with—the university is working with our fishing industry to make sure we are not interfering there.

But once completed, this project, which is known as Aqua Ventus, will deploy the Nation's first floating, deepwater offshore wind turbines off the Coast of Maine. And in my State alone the offshore wind industry has the potential to support an annual average of more than 2,000 jobs which is very exciting. I want to urge you to focus on this kind of technology. The floating, deepwater, offshore wind technology which is being developed at the University of Maine, in addition to the work the Department is doing on conventional fixed-bottom offshore wind projects.

How is the Department prioritizing the advancement of domestic, innovative, clean energy technologies, particularly in the floating offshore wind space?

Secretary GRANHOLM. Yes. Thanks for this too. I share your enthusiasm about offshore wind, and the University of Maine, honestly, has been doing some amazing work, not just in offshore wind, but in materials, and you know, it is—you have got a great university there.

We are excited both about offshore and fixed-bottom. Offshore I mean—Senator Feinstein knows this too—will be particularly relevant for the Pacific Coast as well since we have such—there is such a steep drop in the shoreline, it is not graduated like it is on much of the Atlantic Coast.

So the technology that is being developed and that it will be the first offshore wind platform everyone will be watching and learning from. We just came from—and I just came from an offshore wind conference on the Atlantic, in New Jersey, where the offshore wind world was there looking at both these technologies, and prioritizing both of them.

Obviously it is a little—we have a lot of European input, because Europe has been much more advanced in deploying offshore wind technology, both floating and fixed-bottom. And so we are learning from them, and we are learning from what our own great minds at the University of Maine are producing. We look forward to the continued relationship with the University of Maine on this, because you are at the forefront.

Senator COLLINS. Thank you. Madam Chair, would you mind if I ask one more question?

Senator FEINSTEIN. Go ahead.

ADVANCED MANUFACTURING

Senator COLLINS. Thank you. You actually anticipated, in many ways, my next question. And it has to do with advanced composite materials and manufacturing methods, including large-scale additive manufacturing, and the manufacturing of bio-based composites, because they really have the potential to revolutionize our manufacturing sector.

And I appreciate the fact that there is more than \$582 million for advanced manufacturing in the Department's budget request. Starting in fiscal year 2019, DOE awarded \$20 million in funding to support a truly innovative collaboration between the University of Maine, and Oak Ridge National Laboratory. And through this partnership, the University of Maine has secured the world's largest 3D printer, and recently printed the world's largest 3D printed boat, at 25 feet and 5,000 pounds.

They also are working with the Department of Defense to produce vessels that could be used to transport cargo for our Armed Forces. And this is a very exciting collaboration between one of our national labs and the University of Maine. And the great thing about it, is not only does it produce innovation, but it supports job growth in the forest products industry, manufacturing composites, wind, and boat building.

Could you discuss how the Department plans to maintain and foster these kinds of collaborations between our national labs and universities that will help us maintain America's leadership in advanced manufacturing?

Secretary GRANHOLM. Yes. Thank you for that too. You know, again pointing to the University of Maine as leading the way. But the notion that you have a full spectrum, I mean the Oak Ridge National Lab which has this great expertise in additive manufacturing, and the fact that the University is supplying also next-generation talent.

So it is really a full spectrum. And that Oak Ridge also works—it is a facility that works with the private sector as well, having a great manufacturing site there that allows for them to be able to take advantage of their additive manufacturing their 3D printing machines.

Just to link this conversation with the previous question——

Senator FEINSTEIN. I am sorry. Let me interrupt you.

Secretary GRANHOLM. We are way over.

Senator FEINSTEIN. You are not using the microphone.

Secretary GRANHOLM. Is that better, maybe?

Senator FEINSTEIN. Yes.

Secretary GRANHOLM. Just to link with the previous—because the 3D printing of wind turbine blades, for example, using bio-based materials, we will be able to make sure that the life cycle of wind turbine blades means that it can be recycled eventually. So the combination of all of these technologies is where the DOE sweet spot is, and being able to ensure that next-generation students, the STEM (Science, Technology, Engineering, and Mathematics) students that we need for our labs, and for our scientific endeavors see it in action. And so we are excited about that too.

Senator COLLINS. Thank you very much. Thank you, Madam Chairwoman.

Senator FEINSTEIN. Thank you, Senator.

HANFORD SITE

Senator Murray, welcome.

Senator MURRAY. Thank you, Chair Feinstein.

Senator Granholm, welcome to you. You know, your Department is responsible for so many critical programs across the country, and in my home State of Washington, but I want to focus my questions on one today, and that is the Hanford site. As I have told you, and Director Young, and other members of this administration repeatedly, the Federal Government has a moral and legal obligation to clean up the Hanford site, and failure to adequately fund the mission there really jeopardizes that promise.

The fiscal year 2022 Omnibus provided \$2.6 billion for the site. Your Department's fiscal year 2023 request proposes cutting funding for the site by \$172 million. I know the administration did not use the fiscal year 2022 enacted levels in developing its request, but the fiscal year 2023 request represents cuts from the fiscal year 2021 enacted levels as well. And it also fails to meet the funding needs that the Department itself, as identified at the site.

One area that really illustrates that disconnect is the River Corridor, and other cleanup operations account. The Department's 2022 Hanford Lifecycle Report projected that this account needed \$261.5 million to keep pace with the Tri-Party Agreement's milestones. But your fiscal year 2023 Budget only requests 135 million for that account. Do you believe that request is adequate?

Secretary GRANHOLM. I look forward to working with you on this. I know that we need to fund the commitments.

Senator MURRAY. Well, how did you get to that request? It is half of what the Department says is required.

Secretary GRANHOLM. I understand. I understand. It is just—honestly, it is a question of balancing out what our numbers are across the whole environmental management portfolio, it is a \$7 billion—

Senator MURRAY. Well, I assure you at the site numbers—it is not just numbers.

Secretary GRANHOLM. And I totally understand that.

Senator MURRAY. This is about an incredibly important site in this country.

Secretary GRANHOLM. Yes.

Senator MURRAY. And we have a requirement to make sure we clean that up.

Secretary GRANHOLM. Yes. Yes, I know. And I so appreciate your advocacy on this, and I look forward to visiting. I am sorry that my hit—

Senator MURRAY. It is more than advocacy, it is an obligation.

Secretary GRANHOLM. It is. I hear you. I hear you, and I agree with you.

Senator MURRAY. Okay. Well, let me ask you about Building 324, because cleanup of that site is extremely important to the Hanford communities. Fiscal year 2023 was supposed to fund the infrastructure needed to start cleanup beneath that building. Your request

would not support that work. Does fiscal year 2023 request just kick the can down the road on cleanup of Building 324?

Secretary GRANHOLM. We will maintain Building 324, and that should be included in the next budget. We are not at all blind to how important it is to address it. It should be safe for this year. It will be maintained and safeguarded but, again, this was a question of balancing the funding priorities, and so.

Senator MURRAY. Well, the High-Level Waste Facility is only at the beginning of its significant lifecycle costs. In fiscal year 2023 the Office of River Protection is slated to get ready for the resumption of construction at that facility. Now, according to the Department's estimates, the facility's funding requirements are going to double between 2023 and 2024, and continue to grow throughout the rest of this decade.

Does your fiscal year 2023 request adequately support the facility's coming funding needs?

Secretary GRANHOLM. We believe this is a good budget, we believe this will make sure that the site is safe, and we continue to do work on it. However, we acknowledge that there are differing equities, and points of view, and we look forward to working with you on it.

Senator MURRAY. Okay. Well, explain to us why the Department proposes major increases for nuclear weapons and naval reactors, but cuts cleanup sites like Hanford?

Secretary GRANHOLM. Again, this is a question of balancing equities across all of the portfolios at DOE, we believe Hanford is extremely important, it is the largest cleanup site that we have. We have other cleanup sites as you know, across. We want to make sure that we do right by the whole of the budget. And so it is a balance.

Senator MURRAY. Well, Madam Secretary; Madam Chairwoman, fiscal year 2024, is going to be really critical for this site, and I am really disappointed by this year's request. We have got to do better than this.

Secretary GRANHOLM. I understand.

Senator FEINSTEIN. Thank you, Senator. Senator Hoeven.

CARBON CAPTURE UTILIZATION AND STORAGE

Senator HOEVEN. Thank you, Madam Chairwoman. I appreciate your holding the hearing today. Thank you so much.

Jen, good to see you again—or excuse me—Secretary, I am sorry. Good to see you, Secretary. Thanks for being here. I want to start right out on CCUS (Carbon Capture, Utilization, and Storage). As you know it is something you and I have talked about many times.

In terms of getting these projects going and, of course, we appreciate you coming out to our State last year, as a matter of fact, on Monday of this week I was part of dedicating the purchase of the Coal Creek Coal-Fired Electric Plant, 1100-megawatt plant which is quite a large plant that was purchased by Rainbow Energy, a remarkably innovative energy company in North Dakota, from Great River Energy, a Minnesota-based utility, cooperative.

And so they are moving forward, and of course part of their plan is to do CCUS, to have CCUS attached. They also have a biofuels plant on site where they have already started the carbon capture

piece as well, and they want to do the carbon capture on the coal-fired electric plant.

Not too far from them is another facility, Minnkota, another cooperative-owned, large coal-fired electric power plant, and they have what is called Project Tundra, which is their plan to put carbon capture on their coal-fired electric plant. And then not too far, to the west of them, we have the Dakota Gasification Company, which actually converts lignite coal to synthetic natural gas. They already do carbon capture for tertiary oil recovery, and have been doing that for some time, started that back when I was governor.

Now, for the rest of their CO₂ stream, they already separate the CO₂, 50 percent of that stream goes downhole for tertiary recovery. The other 50 percent, now they are actually building the tertiary storage piece for that, and we will do geologic storage—not tertiary—geologic storage for the remaining 50 percent of their CO₂ stream to capture the 45Q tax credit; so that is what is going on.

Now, what we need there are three things that we have put in place that we need your help on, to keep these projects moving. The first is the front-end investment funds, so DOE grants that help put the equipment on these plants to capture the CO₂. That is one.

LOAN PROGRAMS OFFICE INVESTMENT IN CARBON CAPTURE AND UTILIZATION SEQUESTRATION PROJECTS

Number two, the loan guarantees for the investment they have to make, so that they can finance it on favorable terms for the equipment that it takes to separate the CO₂.

So first, to help of the front-end funding; two, the loan guarantees, both through DOE, but also through RUS if they are cooperative; and then making sure that they are capturing the 45Q tax credit.

So one, we need your help to do this, and we need your commitment to access these programs in a timely and efficient way to make this happen. This is about cracking the code on carbon capture and leading the way forward.

So tell me about your commitment. You are willing to stop, and what you can do to make this happen sooner versus later.

Secretary GRANHOLM. Great. Thank you.

Senator HOEVEN. And accessing these programs.

Secretary GRANHOLM. Yes, yes. I appreciate it. I mean first, as you are aware, the biggest opportunity is through the Bipartisan Infrastructure Law, a \$10 billion commitment to carbon capture and sequestration obviously, North Dakota and Wyoming, hugely ripe States for that, given your geology.

Senator HOEVEN. Really, the only two States with all the regulatory of—approvals to do it, both State and Federal EPA (Environmental Protection Agency) approvals to do it. So we are ready to go.

Secretary GRANHOLM. Primacy. Yes, we know, we know. And so you have got great examples of projects. We expect that we will start to roll out the request for information and the funding opportunity announcements closer to the end of this year. So look forward to that.

The Loan Programs Office too, we have an additional request in our budget because they have, even though they have a \$40 billion budget they have got billion worth of requests for the Loan Program Office services. So hopefully you can help us on that side on the budget.

And the 45Q tax credit, I am just hopeful that we are able to increase the value of that tax credit through additional tax incentive, upping the number so that it becomes really commercially smart to—and get rewarded by the private sector to be able to capture the CO₂. So on both—on all three I am bullish about being able to be very helpful.

Senator HOEVEN. Appreciate that. Also, as you know, we have to be able to capture and put the CO₂ downhole through the Energy Environmental Research Center, which you have visited at the University of North Dakota they do—they have a partnership with DOE.

Secretary GRANHOLM. Yes.

Senator HOEVEN. Called PCOR, which is the Plains CO₂ Reduction Partnership, PCOR. Very important that we continue that partnership, and that funding continues so that they can continue to do the work, so that we can put that CO₂ downhole. So that is both funded in our approach budget, and it is also those contracts are in place, we need you to make sure your people are working to get them the funding so they can continue to do that part of the equation too.

Secretary GRANHOLM. Great. I know they really enjoy working with them so, yes.

Senator HOEVEN. It has been a good partnership.

Secretary GRANHOLM. Yes.

FERC APPROVAL PROCESS

Senator HOEVEN. The last thing is, can you help us expedite FERC (Federal Energy Regulatory Commission) so that we can get both pipelines to move natural gas around the country, very important right now, as well as LNG (Liquefied natural gas) facilities. Is there something you can do to expedite those approvals, or help expedite those approvals with FERC, we need that transmission badly.

Secretary GRANHOLM. Well, we know that we have right now, in terms of terminals. Are you talking about LNG?

Senator HOEVEN. Well, I am talking both pipelines to move LNG.

Secretary GRANHOLM. Pipelines, all right.

Senator HOEVEN. So we don't have stranded natural gas at a time when we need it, as well as the LNG. Plus, actually the pipelines are really important nationally and internationally, the LNG facility.

Secretary GRANHOLM. Yes. I mean, we want to make sure that there is not flaring, and so you have to make sure that the associated gas is captured and moved. So yes, FERC has already, I think approved 12 pipeline projects just this year, and they are well aware of the importance of this, especially given the geopolitical concerns that everyone shares about the increase in fuel costs, but also the pulling back of fossil fuels, and the cost, as a result of the war.

And our allies needing liquefied natural gas as well, so we have permitted at DOE an additional four terminals to be able to send liquefied natural gas to Non-Free Trade Agreement entities, like Europe. And I know FERC has also permitted, FERC and DOE have permitted another 30 billion cubic feet per day, of liquefied natural gas permission, although some of those terminals are not being built yet.

Senator HOEVEN. I apologize for going over my time. Thank you, Madam Chair, I appreciate it.

Senator FEINSTEIN. Based on time of arrival, Senator Hagerty is next.

Senator HAGERTY. Thank you, Senator Feinstein, for holding this hearing.

Secretary Granholm, thank you for being here today. Secretary, last year you divested a large financial stake in Proterra, an electric bus manufacturing company; is that correct?

Secretary GRANHOLM. Correct.

Senator HAGERTY. Why did you divest it?

Secretary GRANHOLM. Why did I divest?

Senator HAGERTY. Mm-hmm.

Secretary GRANHOLM. Because I was appointed, every appointee has to divest of individual stocks.

Senator HAGERTY. They have to divest for what reason?

Secretary GRANHOLM. For ethics reasons. You want to make sure that if you are involved in any decisions related to, for example, electrification of buses that there is not a conflict so I divested early.

Senator HAGERTY. I appreciate your executive experience, and I appreciate the fact that you undertook your responsibilities in a very serious manner, to avoid even the appearance of a conflict of interest, in this case, where you had responsibility.

I want to ask you another question. Do you know, Hunter Biden?

Secretary GRANHOLM. I have met him.

Senator HAGERTY. Have you ever had an opportunity, or your staff had an opportunity to discuss energy policy with Hunter Biden, given his experience in the space.

Secretary GRANHOLM. No.

Senator HAGERTY. Let me turn to another set of questions. Do you think it was appropriate for Vice President Biden to conduct foreign policy in Ukraine while an influential Ukrainian energy company called Burisma, was paying his son a million a year to serve on his Board? Or while a Russian billionaire was providing millions of dollars to Hunter Biden, at the same time that Hunter Biden was apparently paying his father's business—or living expenses.

Secretary GRANHOLM. With respect, sir, I am here on the Department of Energy's budget. I am not sure what relevance that has to the budget. And I also know that President Biden is an incredibly ethical human being and would never do anything that would demonstrate a conflict of interest.

Senator HAGERTY. Well, as a member of his cabinet, and somebody who obviously takes conflicts of interest very seriously, I wanted to see what your opinion was. I have got another couple of items to ask you about. Hunter Biden rode Air Force 2 to China

to conduct business deals with CCP (Chinese Communist Party)-aligned figures, at the same time that his father was meeting with and conducting foreign policy there with China.

Does that seem right to you? Would you have allowed that if you were Vice President?

Secretary GRANHOLM. Sir, I am not here to opine on something that might have happened in the previous administration, I am here to talk about the Department of Energy budget.

Senator HAGERTY. Well, in this administration, in 2021, while his father was President, Hunter Biden still owned an interest in BHR Partners, he owned that in partnership with Chinese Communist Party entities, and right after his dad, President Biden met with Xi Jinping, it was announced by Hunter Biden's lawyer that he divested his interest in that entity. Yet no one has given the details about when he divested it, how much profit he made. Do you think that is appropriate?

Secretary GRANHOLM. Sir, I have no information about any of the things that you are talking about.

Senator HAGERTY. Well, let us just go through the basic facts, because I think you do appreciate the importance of ethics in government, the importance of avoiding the appearance of conflicts of interest, but we have emails and photographs that show that President Biden, while he was Vice President, running U.S. Foreign Policy in Ukraine, met with several of his son, Hunter's, business associates including a Burisma executive, the Ukrainian energy company that, again, paid hundreds of millions of dollars. You have got \$3.5 million payment from a Russian billionaire that happened around the same time. You have got Hunter traveling to China on Air Force 2, conducting business there while his father is Vice President.

I mean, all of this I would think is very concerning particularly given the fact that it looks like there is a mix of personal and official business here. I don't think that you would want to see that. Would you allow personal and business—and business interests to be mixed in that regard?

Secretary GRANHOLM. Sir, I am not going to, by the assumptions in the question.

Senator HAGERTY. Well, I appreciate the fact that you have taken your ethical responsibilities seriously here. I think the American public is very concerned about what may have transpired. And I think the Biden White House should be transparent to the American people about this. I appreciate your willingness to act in a transparent fashion, to deal with any potential conflict of interest on your own.

I think you set an example for this administration. I wish the administration would live by its own dictates, and actually be responsible in their own disclosures. Thank you very much.

Senator FEINSTEIN. Senator Tester.

CLEAN ENERGY AGRICULTURE

Senator TESTER. Well, Thank you, Chairwoman Feinstein.

I appreciate the opportunity to visit with Secretary Granholm. I want to get back to energy. Diesel fuel in Montana is a \$5.44 a gallon, okay, there is a little tax on that, but it is \$5.44 a gallon,

which is a lot. And we have got a situation right now where energy companies are making record profits, they are doing stock buybacks, they are charging the hell out of the consumer, and quite frankly blaming a lot of different issues.

One fact is, is that if they quit using this war as an opportunity to jack up prices, I think we would see a better situation for the consumers. We also see last year, for example, everything west of the Mississippi being in a drought, everything east of Mississippi had more water than they needed.

I happen to be one of those guys west of Mississippi and we had the worst crop we have ever had in the history, since my grandfather homesteaded it in 1910. We didn't cut but a small, small fraction of what we normally cut, harvest.

So climate change is a problem. And choices for consumers a problem right now, because quite frankly, I can't put anything but diesel in my truck, or my tractor, and I would like to be able to run it on batteries, okay. I would like to be able to run my field tractor on batteries.

Now, this isn't a 30-horse tractor, this is a 375-horse tractor. I would like to be able to run it on batteries. I would like to be able to take my farm at some point in time and take it off the grid, and have solar, and wind, and put that into batteries and be able to run my farm off batteries, okay, because I got great wind resources, trust me, where I live.

The question becomes, you as a visionary, somebody who takes your job quite seriously as Secretary of Energy is: What does this budget do to move the ball forward in new generation that doesn't add to climate change, in battery technology, in carbon sequestration, to try to be better and cheaper with that on existing plants, in making nuclear waste benign?

Enlighten me, because I am going to tell you, I am 65 years old, I have got about another 8 or 10 years left on the farm, God willing. And in that years I want to have a tractor that I can't hear, because it has got an electric motor.

[Laughter.]

Secretary GRANHOLM. I want you to have that. And I think you will have that. Really, because we have this first of all technology is the answer, right? We are focused on so much of the advances you have just described, whether it is on battery, or on wind, and renewables, or on carbon capture sequestration, or on bio fuels, or on advanced vehicle technology, all of that is encapsulated within the energy efficiency and renewable energy increase that we are asking for this committee to support, and for the whole budget.

But it is also reflected in the Bipartisan Infrastructure Law that that you were supportive of as well. So carbon capture for example, there is \$10 billion in that Bipartisan Infrastructure Law for carbon capture.

Senator TESTER. So the question is, the real question here is, we have made some investments but the status quo continues to be \$5.44 diesel fuel, the status quo is not an affordable battery right now, it is not a battery big enough, it is not about the—there is all sorts of problems there. The status quo is carbon sequestration costs a bunch of money. If we can lower those costs we can lower costs for consumers

Does this budget have adequate dollars in it to invest in the kind of things that we need for 21st century energy portfolio?

Secretary GRANHOLM. Yes. It absolutely does. It invests in the research, and deployment, and development that will get us away from that. I mean, does this bring down the price of gas right now? No. But it invests in the technology that will get us to the point where you can have a tractor that you can't hear.

Senator TESTER. Well, I can say this, it doesn't matter what field you are in, if there is competition in the marketplace the consumer gets a fair shake, and I have got a number of bills in a meat packing industry, but you are not Secretary of AG (Agriculture), you are Secretary of Energy.

The truth is, there is no competition there. And I don't think there is near enough competition in the energy sector. You know, if we can develop some of these resources that, by the way, benefit both carbon-based fuels, and non-carbon-based fuels, I think it is a step in the right direction, and you are the right person to do that job. Thank you very much for doing it.

Secretary GRANHOLM. Thank you, sir.

Senator FEINSTEIN. Thank you, Senator.

The Chair is pleased to call on the Ranking Member. Senator Kennedy, welcome.

THE ADMINISTRATION'S ENERGY POLICY

Senator KENNEDY. Thank you. Thank you, Madam Chair. I am sorry I was late, I was in another Committee.

Welcome, Madam Secretary. I have still got a lot of work to do on your proposed budget, but I just wanted to offer a few top line comments. After 15 months I think we—any fair-minded person who has paid attention, would have a general idea of the principles of the Biden administration. And it seems to me that the Biden administration believes in bigger government, it believes in higher taxes, it believes in more regulation, it believes in more debt, based on the President's proposed budget, it believes in a weaker military.

Not by its words but by its actions, I think it believes in higher energy prices. I think that the Biden administration hates fossil fuels on which, at the moment, the greatest economy in all of human history depends. I think the Biden administration thinks that is a mistake. And I think the Biden administration thinks that higher energy prices will somehow wean the American people off of fossil fuels.

The attitude seems to be, not in words but in deed, that we can see the future better than the American people because we are experts, and the American people just need to take their medicine with these higher energy prices, and in the long run they will be better off because we will use them to get rid of fossil fuels.

Now, let me talk about your budget. It is not going to pass in its current form, and I think you know that. I support wind and power, but I am an all-of-the-above energy type guy. I think eventually we should, and I don't mean sometime in the next century, we should realistically ask ourselves: When are wind and power going to be able to stand on their own feet without subsidies?

I also believe in nuclear power. I can tell from your budget that at least some of your work colleagues at the Department don't. I also believe in thermo—or in hydroelectric power. I believe in hydrogen. I have said it, but I am going to say it again, I believe in nuclear, and I think you should ignore the—I think it is clean energy, and the new technology with these small modular nuclear reactors has great potential. You shortchange them in your proposed budget. That tells me a lot.

But I also believe in fossil fuels, and I think it is wholly unrealistic, certainly now, certainly for the foreseeable future, and maybe forever to think that this world can run without fossil fuels. I am very disappointed in your budget, at its lack of emphasis on geoengineering. I know your work colleagues don't like geoengineering because they think it takes our eye off the ball of climate change.

But I think that is a mistake. I think climate change is real, but I think it will be solved or lessened by American ingenuity. It won't be done by the Federal Government. I am also disappointed in the fact that the Department—and that is why I say it is clear to me the Biden administration believes in a weaker military—your decision not to fund one of the major weapons that the United States has at a time when our security is clearly threatened. Now, I have given you a mouthful.

It is good to see you, Madam Chair. I am sorry I am late. Please don't construe it as a sign of disrespect.

I would like to hear what you have to say.

Secretary GRANHOLM. Great. Thank you. Let me focus on a couple of things I think we can agree on. One is the importance of nuclear power, and how it is an essential part of our clean baseload power, and we ought to be keeping the existing fleet afloat, and we just issued \$6 million in civilian—\$6 billion in civilian nuclear credits to be able to do that. And to hopefully have as many of them stay operating as possible.

But we have also got a \$2.5 billion commitment in advanced, nuclear reactors, as part of the Bipartisan Infrastructure Law column of our budget, that is number one. So we agree on that, and we want to continue funding the advanced nuclear reactors.

Number two, we agree on hydroelectric power, and we want to see more dams, and we want to make sure that we are taking advantage of a form of energy that is clean, dispatchable baseload power. I would also throw geothermal in there in that same sort of category. With respect to wind and solar, your question about when they become, essentially, reliable baseload power, is all contingent upon making sure that technology of batteries becomes cheaper, we have a goal, a earth shot of getting down the price of long-duration storage by 90 percent. And when we get down the price of long-duration storage, essentially wind and power become clean, dispatchable baseload power.

Here is where we don't agree. This administration believes in the importance of decarbonizing the fossil fuel industry. We know that we have gotten here for the past 120 years based upon fossil fuels, we acknowledge that. And we also know that technology, for the next hundred years, can power us going forward, decarbonizing is really important. So we agree on hydrogen, for example, and that

Bipartisan Infrastructure Law invests \$9 billion in hydrogen hubs. And I think one of them that is going to vie for it is in your region.

Senator KENNEDY. Mm-hmm.

Secretary GRANHOLM. But we make sure that we can decarbonize natural gas, for example, and couple it with carbon capture and sequestration. We are also big believers in the technology associated with direct air capture, and other carbon dioxide removal strategies. That is another \$3.5 billion in the budget.

Senator KENNEDY. Do you mind if I stop you and ask you question about LNG. I saw the President's statement. I want you to correct me if I am wrong. The President about a month ago, maybe a few weeks ago, time runs together, said: I want to expand LNG exports. But then I looked at the fine print of his statement. He said, but I want the plants that produce the LNG to be powered only with clean energy.

And then he said: But I am not going to change the regulatory environment for oil and gas. And shortly after that he came out with new proposed rules for NEPA (National Environmental Policy Act) that will make it impossible to build a pipeline. Don't you think that is misleading?

Secretary GRANHOLM. I am not sure exactly what statement you are referring to. But he did go to Europe and said that: We will provide another 15 billion cubic meters per year, we will increase our partnership with them. So as a result the Department of Energy has permitted four additional LNG terminals, allowing their volumes to go to Non-Free Trade Agreement countries in a way to fulfill that.

The Department of Energy and the Federal Energy Regulatory Commission have both permitted another 30 billion cubic feet of export with the——

Senator KENNEDY. But don't you realize the impact that the proposed changes in NEPA are going to have on the oil and gas industry?

Secretary GRANHOLM. The proposed changes in NEPA are to make sure—I am not in the EPA, it is not my call, but——

Senator KENNEDY. I know. I know. But it is sure going to impact you.

Secretary GRANHOLM. The intent there is to continue to use technology to clean up fossil fuel emissions like methane, and so making sure that we have got facilities that are not contributing to the problem, but that are using technology which they are excited to do. I mean many in the natural gas world really do want to be able to deploy the technology that button down pipelines, and make sure that they aren't contributing further to methane leakage.

Senator KENNEDY. But we tried to make NEPA a little more palatable, not get rid of it, just say you have got to give us a decision in a couple of years. In the Infrastructure Bill which the President is very proud of, and he has talked about it and taken for credit for it, and that is not a pejorative statement, every chance he has got.

But then you turn right around and undo everything that was done in the Infrastructure Bill with these new proposed rules for NEPA. And I know it is coming from EPA.

But Madam Secretary, you are extraordinarily intelligent, I have watched your career for years, you know as well as I do the impact this is going to have on LNG plants, on pipelines, on fossil fuel infrastructure. It is going to slow it down to the pace of an amoeba.

Secretary GRANHOLM. With respect, I fully disagree.

Senator KENNEDY. Okay.

Secretary GRANHOLM. I think that you can have——

[Laughter.]

Secretary GRANHOLM. I think you can accelerate permitting and still respect the environment, and not slow down the pace of energy production.

Senator KENNEDY. Thank you, Madam Secretary. It is nice to see you again.

Secretary GRANHOLM. Nice to see you, too.

Senator KENNEDY. I am going to call you about Mexico.

Secretary GRANHOLM. Okay.

Senator KENNEDY. They are confiscating our assets. We need to stop them.

Secretary GRANHOLM. All right, we are on it. I hear you.

Senator FEINSTEIN. Senator Shaheen, welcome.

Senator SHAHEEN. Thank you, Madam Chair; and Ranking Member. And thank you, Secretary Granholm, so nice to see you.

Secretary GRANHOLM. Thank you.

ENERGY PRICES

Senator SHAHEEN. And thank you for the great work that you and the Department of Energy are doing. We have all these appropriations subcommittee hearings going on at the same time, so getting from one to the other is challenging.

But I want to start with what I think is the biggest concern on many of my constituents' minds, and I am sure you are hearing this around the country, and that is the high cost of energy, because of the pandemic, and supply chain issues created there because of the war in Ukraine, we are seeing the costs of Energy go up in ways that people were not expecting. So what can we do to address that?

Secretary GRANHOLM. Thank you for the question. I mean the President is obsessed about this. You know, he desperately, as like everybody, wants to make sure that people who go to get gasoline at the pump are not just shocked, but hurt by it, especially people who are on fixed and moderate incomes.

So the President has used the biggest tool in our arsenal, which is the strategic petroleum reserve to try to make up for some of those barrels that have been pulled off the market because of the Russian invasion. So Russia right now has about 1.5 million barrels per day, to 2 million off the market. As a result of the United States, rightfully saying, we are not going to finance Putin's war, Canada same thing, Europe is on the verge of deciding the same issue.

If they too decide that they will not take Russian oil that could get as much as 3 million barrels per day off the market. That supply constraint is what is causing prices to increase, which is why the President said, we are going to issue a million barrels per day from our strategic petroleum reserve, to try to stabilize the market

in as much as he is also calling for increased production from the oil and gas industry.

The Energy Information Agency is saying that by the end of this year that the oil and gas industry in the U.S. will be producing another million barrels per day, but we have still got a gap, which is why we are calling for all oil producing nations to step up at this moment and to not finance Russia's war. So that is number one.

Number two, the President has also called upon an increase, for example, in ethanol blend so that we reduce demand of oil increase biofuels. It is a smaller strategy, but he is looking at every way he possibly can to try to address the problem.

Ultimately though, as you know, the solution lies in moving to clean energy. And so, even as we are increasing supply right now, we have to accelerate the move and the technologies which is what this budget represents, to clean.

Senator SHAHEEN. Well, Vladimir Putin is certainly helping move us more expeditiously to address energy in a way that helps us deal with the climate change. So in the long—in the short term, however, as we said, there are significant challenges for families. And so anything we can do to help address that I think is going to be very important.

ENERGY-SAVINGS PERFORMANCE CONTRACTS

One of the things that I have worked on, and that we have discussed in the past over the years, is how we address energy efficiency. It is the cheapest fastest way to deal with our energy needs. One of the biggest—as you know, the largest single energy user in the United States is the Federal Government, and one of the best things we could do is to promote energy-savings performance contracts within the Federal Government.

Now, because of the way CBO (Congressional Budget Office) scores those contracts, it is challenging for Departments to use those because they are not scored as savings, they are scored as costs. I think we ought to change that. So far I have not been able to convince my colleagues that that is something that makes sense.

But can you talk about, one of the things we saw during the Obama administration was a performance contracting challenge that resulted in 340 performance contracts, and \$8 billion in energy savings. Can you talk about the possibility of doing that kind of challenge again?

Secretary GRANHOLM. I would love to work with you on this, because I think it is so important to be able to incentivize the installation of American-made products that end up reducing energy. It is such a triple win. And I think that particular challenge, if my numbers are right, created more than 30,000 jobs in American companies. So it is a win, win, win all the way around. And I would love to work with you on that, because I love challenges, and I love to incentivize that, and I think that challenge was particularly effective. I would love to see it happen again.

Senator SHAHEEN. Great. Thank you. I look forward to doing that. We will follow up with the Department.

Secretary GRANHOLM. Okay, great.

WEATHERIZATION ASSISTANCE PROGRAM

Senator SHAHEEN. The one other question I had was, in too many years, and the past few we have seen funding for the Weatherization Program, and for State energy offices be slowed down. Can you talk about when our State energy offices can expect those dollars, and whether we expect them to be distributed on time this year?

Secretary GRANHOLM. Yes. We are going to distribute them definitely on time. I just want to make sure I get you the right numbers here. So right, in April we released a request for information on the—well that was on the building codes piece of things. Wait a second.

So we have \$500 million through the State Energy Program for the Bipartisan Infrastructure Law. I know that they are working on the request for information so that they can shape the funding opportunities, some of that is going to be formula I believe, as well. We want to get as much of this out this year as possible while we are working on all of the other big slugs of the Bipartisan Infrastructure Law. This is a hugely important one. We are working with States as well.

You know, I am a big believer in—as former governor, I know you are too—in the bottom-up strategies, because so many at the local level know well how to do this, and they know what they want to do given their assets. And so both on the State Energy grants as well as the future-looking energy grants, which incentivizes states to think about what additional technologies they want to help shore up inside of their State, to be able to create jobs in perhaps industrial clusters, around those energy technologies to create jobs.

Both pieces of those, in addition to what we have known as Community LIHEP (Low Income Home Energy Assistance Program (LIHEAP)), which is getting—communities that are at the back of the line often, who want—who have a strategy of, for example, weatherizing a community to be provided technical assistance to navigate the Federal system to be able to access some of these grant opportunities that they might not otherwise have the technical ability to do all three of those.

Senator SHAHEEN. Great, thank you. Thank you very much. Thank you, Madam Chair.

ADDITIONAL COMMITTEE QUESTIONS

Senator FEINSTEIN. I want to thank you for being here, we very much appreciate it.

And the hearing record will remain open for 10 days. Senators may submit additional information or questions for the record, within that time if they would like. The Subcommittee requests that all responses to questions be provided within 30 days of receipt.

[The following questions were submitted to the Department, but the questions were not answered by press time.]

QUESTIONS SUBMITTED TO HON. JENNIFER GRANHOLM

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

Gasoline Reserve

Question. DOE operates the Northeast Gasoline Supply Reserve established in 2014. The reserve was created to provide back-up gasoline and petroleum supplies in the event of a severe winter storm or other disruption.

To date, the Northeast Gasoline Supply Reserve has never been used and costs taxpayers over \$20 million in annual appropriations. According to a DOE study, operating costs for the gasoline reserve are more than double what some other countries pay for their gasoline reserves.

Do you agree that the Gasoline Reserve has never been used?

Do you agree that the Gasoline Reserve is more expensive than other similar reserves?

Do you agree that the Gasoline Reserve would only supply the region with ½ to 1½ days of gasoline?

If Congress were to sell the Gasoline Reserve would the Department oppose?

QUESTIONS SUBMITTED BY SENATOR JOHN KENNEDY

Question. Are emergency releases from SPR the Administration's long-term plan to combat rising gas prices? If the Administration's energy policies continue to choke out the fossil fuel industry and American's use 20 million barrels of oil per day, what is the plan for when SPR runs out of oil? Is there a plan to refill SPR after the emergency releases are conducted?

What is the Department doing to ensure our energy grid is secure? How can Americans be assured that their lights will continue to turn on and gas will continue to be at the pumps?

Have you or anyone from your department reached out to the Department of Interior regarding leasing in the Gulf of Mexico?

Will you commit to working with other agencies to help reduce record high gas/energy prices?

Do you support expanding the use of natural gas domestically—especially natural gas that is produced here in the United States?

Can you speak on the importance of natural gas, and how it has helped the US lower emissions for 15 straight years?

Some of the cleanest oil and gas production comes from the Gulf of Mexico, with that in mind why does the Administration beg countries with much lower emission standards to increase production? Does China care about net-zero emissions by 2030?

Environmental Management (Cleanup)

Question. Under the Environmental Management (Cleanup) program the request includes a 599 percent increase for mission support.

Can you please describe, in some detail, how this funding will be used and why it requires such a large increase?

Will you work with myself and others in the Louisiana delegation on potential financial assistance—multi-year funding that has already been fully appropriated—for CCS projects?

Will this Administration support proposals pending in Congress to expand the 45Q tax credit for CO2 that is sequestered?

Will you work with us, EPA, and the State of Louisiana on permits for Class VI injection wells?

Have you given up on SMRs? Is there no more research and development or promising technologies to pursue? I am interested to hear your planned path forward on small modular reactors given the budget request.

Moving to the Advanced Reactors Demonstration Program, what is the current schedule for each of the two of the two demonstrations being funded by the Department? Are they still on schedule for commercial deployment in 2027 and 2028 respectively?

While I am pleased to see an increase in funding for domestic HALEU in the budget request, the Department has yet to articulate a detailed plan. Walk us through the Department's plan, including schedule milestones and associated budgets for production of HALEU.

The fiscal year 2021 appropriations bill provided \$75 million to establish a uranium reserve. Similar to HALEU, most of our uranium products come from Russia. What efforts has the Department made to establish the uranium reserve program?

What is the path forward for the program given the budget request includes no additional funding?

Do you have a cost and schedule estimate for how long it will take to consolidated interim storage sites to be ready to receive nuclear fuel?

What activities related to interim storage is the Department currently executing? How will the funds requested in fiscal year 2023 be used?

QUESTIONS SUBMITTED BY SENATOR JOHN HOEVEN

Question. The Plains CO₂ Reduction Partnership, or PCOR, is one of four Regional Carbon Sequestration Partnerships created by the Department of Energy and administered by the Energy & Environmental Research Center located in my State, in close alignment with the University of Wyoming and the University of Alaska at Fairbanks. The existing four Regional Carbon Sequestration Partnerships (RCSPs) collectively cover most of the United States, and since their establishment in 2003, have provided critical leadership in carbon management.

Congress provided not less than \$20 million in the final fiscal year 2022 appropriations bill for the four RCSPs, amounting to a minimum of \$5 million to the PCOR Partnership.

Will you commit that the Department will follow Congressional direction in promptly carrying out funds for RCSPs?

QUESTIONS SUBMITTED BY SENATOR BILL HAGERTY

Question. Your budget request for fiscal year 2023 proposes to cut the critical construction and infrastructure budget line that all 17 National Laboratories depend on to maintain their world leading facilities by \$36 million compared to what this Committee provided in the fiscal year 2022 Omnibus Appropriations Act. This will result in delay of major user facilities that the Department has deemed essential for accomplishing mission and reduce effectiveness. Specifically, at Oak Ridge National Laboratory, these cuts could reduce the number of operating cycles at the High Flux Isotope Reactor by at least 20 percent, which will have an effect on medical isotope production and other critical work. At the Spallation Neutron Source, the numbers of instruments available for research would be reduced and a potential reduction in workforce. At the same time, your budget request proposes to increase funding for research activities that would be conducted at these facilities.

Are you aware of this imbalance, and the potential consequences to user facilities across the Department of Energy?

Will you commit to working with me and this Committee to strike the right balance between research and operations at these facilities?

Question. The isotope supply for the nation—and the western world—is at risk. Isotopes are important to our security, health, technologies, and economy, yet recent events in Ukraine have underscored the vulnerability of our reliance on foreign suppliers and how the United States lacks the necessary capacity to scale up production when the supply chain breaks down. Immediate action is needed to ensure that the nation has a self-sufficient supply of isotopes that is outside the influence of world events and foreign countries

Oak Ridge National Laboratory (ORNL) is the nation's largest producer of isotopes—materials used in applications across national security, medicine, industry, scientific discovery, and deep space exploration. As home to the High Flux Isotope Reactor (HFIR), hot cell facilities for handling radioactive material, and a legacy of isotope science that dates to the Manhattan Project, ORNL can produce more than 250 isotopes—an institutional strength not found anywhere else in the Western Hemisphere. But these world-leading facilities are completely stretched, and the Ukraine crisis and growing demand for isotopes domestically and globally have exacerbated the situation. Immediate expansion of capacity and capability is needed to meet current and future needs in a manner that avoids reliance on foreign supply chains.

Do you agree that HFIR and the associated isotope production facilities are critical to our national security to avoid reliance on foreign supply chains of isotopes?

Does the Department support expanding ORNL's isotope production capacity and capabilities to replace isotopes previously supplied by Russia?

What is the Department's immediate plan to expand isotope production capacity and capabilities in the near term?

Question. For years, Congress has provided hundreds of millions of dollars to develop a first-of-a-kind advanced or small modular reactor. I think you will agree with me that when an advanced reactor or a small modular reactor is developed,

we want the United States to be the one that produces and develops that reactor. As I understand it, Congress requires that funding grants to industry be openly competed, however, there has not been much competition in the previous years for small modular reactors. The Department is currently funding a single project that was not competed. Tennessee is home to the Clinch River Site, which is the only site that has an early permit for an advanced reactor from the Nuclear Regulatory Commission.

Should Congress provide funding for the Small Modular Reactor Program in fiscal year 23, will you commit to ensuring that at least 3 awards be made, and that no more than 50 percent of the total funding shall go to any one project?

What is occurring in other countries that is enabling SMR technology deployment to move more quickly than here in the United States? What are the potential consequences for the United States in not being first? What does this mean for supply chain buildout and jobs opportunities in the United States?

Question. In January, your Department published a Funding Opportunity Announcement (FOA) soliciting proposals for industrial decarbonization projects. Page 4 of the FOA contained a chart illustrating that the refining sector is responsible for 17 percent of all industrial emissions. Yet the word refining does not appear in the remaining twelve pages comprising the Request for Funding. Industry tells me that your Department specifically excluded oil refineries from the parties eligible to apply. In other words, the refineries are responsible for 17 percent of industrial emissions, but can't seek Federal assistance to try to remedy the situation. During a House Energy & Commerce Committee hearing to review the Department of Energy fiscal year 2022 Budget, you gave response about increasing support for the downstream energy sector.

Will you work with the Environmental Protection Agency and Small Refinery Industry to ensure that industry to discuss suggestions to lower gasoline prices?

Question. Under Federal law—the Manufactured Housing Improvement Act of 2000—the HUD Code has exclusive dominion over construction and safety standards in manufactured housing. Therefore, any energy standards DOE develops for manufactured homes—including the ones you are developing pursuant to the 2007 EISA law—are merely draft standards that can't take effect unless and until adopted by HUD, after consideration by HUD's Manufactured Housing Consensus Committee.

Can you share with the committee what specific steps you took to consult with HUD and the Manufactured Housing Consensus Committee to try to develop energy standards that are compatible with the HUD code and that might have the support of HUD?

Question. Section 413 of EISA requires DOE to develop energy efficiency standards for manufactured housing. The statute says that DOE should use the IECC code—Except if it is not cost effective, comparing energy savings to increased costs to the homeowner. Instead of analyzing actual costs and burdens to actual manufactured homebuyers, DOE's proposed rule seems to employ esoteric mathematic concepts, including assumptions about speculative future price increases—instead of a simple analysis of the annual cost impact on a low or moderate income family trying to buy a manufactured home.

Therefore, can you share with this committee any analysis done by DOE regarding (1) the projected average annual cost increase for homeowners—resulting from increased mortgage costs directly arising from the higher home prices that even the DOE proposed rule acknowledges will occur. (2) The projected average increase in a down payment requirement related to the higher home price DOE's standards will cause. (3) The number of families that will no longer be able to buy a manufactured home—because they will no longer qualify for a mortgage because higher mortgage payments mean they no longer meet mortgage debt to income underwriting requirements.

In DOE's proposed rule on this, DOE seemingly offers no evidence that it followed the statute with regard to this requirement. The proposed rule offers no evidence that DOE tested out each incremental increase in energy standards to ensure that each increment meets the test of being cost effective. Can you offer any concrete evidence to show that you engaged in such an incremental approach, as required by statute? Please share the cost/benefit analysis results if they exist.

The Manufactured Housing Institute in its comment letter put forth a more incremental energy proposal, using the approach required in the statute. Have you analyzed MHI's proposal—and if you are rejecting that approach can you explain why you believe your proposed rule is better.

Question. The Tennessee Valley Authority (TVA) is partnering with National Laboratories and industry to establish a clean hydrogen hub to produce, deliver, store and use clean hydrogen across a multi-state region. If granted, this regional hub

would make Tennessee a leader the nation for a carbon-neutral future by leveraging existing production, consumption and connective infrastructure, to provide immediate, long-term, and diverse clean-energy jobs and union represented employment in a retired coal region in transition. Your Department has made \$8 billion available to invest in these regional hydrogen hubs.

As the Department of Energy implements this program guidance and distributes grants from the Office of Clean Energy Demonstrations, how is the agency considering projects where TVA is a partner or co-applicant?

TVA is fully funded from its ratepayers, and does not take annual appropriations, so as to not create any disadvantages for my constituents, will the agency treat any resources put forward by TVA as a non-Federal cost-share?

QUESTIONS SUBMITTED BY SENATOR PATRICK LEAHY

Question. The transportation sector has historically relied heavily on petroleum, which supports over 90 percent of the sector's energy needs today, and, as a result, surpassed electricity generation in 2017 to become the largest source of CO₂ emissions in the country. The time to act to reduce carbon emissions within the transportation sector is now, and I applaud the efforts made by President Biden and the Department of Energy to realize this goal. To address this challenge, we must work to develop and deploy clean technologies for all modes of transportation, from rail and road, to sea and air, while ensuring that mobility solutions for the transit of people and goods remains affordable and equitable.

Simultaneously, as the energy needs of our transportation systems have changed, so too has the mechanisms of mobility through which travelers and goods are transported. We have seen, with the proliferation of services like ride-sharing and on-demand grocery delivery, the potential of mobility-as-a-service technology in transforming transportation systems in urban areas. The next frontier of mobility aims to increase access to people living outside urban areas through new modes of medical, cargo and passenger connectivity. Electric aviation will empower the Delivery & Logistics Industry to reduce the costs and emissions. Specifically, electric vertical takeoff and landing vehicles (eVTOL) will integrate with existing transportation networks and move passengers and delivery-based commerce more quickly by allowing point to point, airport-free, movement of people and goods.

Given the urgent need to reduce emissions from the transit sector and the interest of the Biden administration to support domestic innovation and manufacturing, how does the Department of Energy intend to provide resources to American firms to foster the development of new and early-stage modes of transportation, like eVTOLs, to address the future conditions of the transportation sector while ensuring that domestic industry leads global innovation?

Question. Vermont actively hosts a number of demonstration programs with electric aviation manufacturers and Delivery & Logistics companies. These demonstrations have exemplified the vast potential of electric aviation to revolutionize and decarbonize the ways in which people and goods are transported, while supporting the research and development activities with applications that go beyond electric aviation. Ensuring that funding remains available for demonstration programs like this will help American organizations, educational institutions, and companies to develop new technologies.

How will the Department of Energy support technological advancement within the transportation sector through the creation of demonstration programs specifically related to battery and electrification technologies?

Question. On March 28, 2022, the Department of Commerce announced the launch of an investigation into alleged circumvention of duties for solar panels imported from four Southeast Asian countries. The investigation is in response to a petition from Auxin Solar, which alleged that Chinese manufacturers shifted some production to these countries in an effort to evade 2012 duties. Solar panel imports from these four countries account for 80 percent of all solar panel imports to the United States. The Commerce Department is considering up to 250 percent tariffs on these solar panel imports to be applied retroactively.

The Solar Energy Industries Association (SEIA) is forecasting that solar installations for 2022 and 2023 will be cut by 46 percent due to these circumstances, resulting in a drop of 24 gigawatts of planned solar capacity. If this capacity is replaced by fossil fuels, the United States will emit an additional 364 million metric tons of carbon by 2035. The SEIA is also projecting that 100,000 American solar workers will lose their jobs. The consequences to this investigation contradict President Biden's efforts to reduce greenhouse gas pollution and support good-paying American jobs in the renewable energy industry.

In SEIA's Broad Industry Survey, 88 percent of Vermont solar companies responded that the investigation will have severe or devastating impacts to solar business, and that \$10 million worth of projects have already been impacted in Vermont alone. I have heard from a number of Vermont solar companies that this investigation threatens their long-term viability, which would not only result in a loss of jobs in Vermont, but would also stymie the state's ability to address carbon emissions moving forward.

In May 2021, the Solar Energy Technologies Office released a Multi-Year Program Plan to accelerate the advancement and deployment of solar technology. One of the Plan's goals was to expand the solar workforce to 300,000 employees by 2025.

What is the Department's plan to expand the solar workforce and open new solar markets in spite of market disruptions caused by the Department of Commerce's investigation?

Question. On August 18, 2021, the Department announced a plan to provide \$6 million in funding to research and development projects advancing 5G wireless networking for science applications. Funding sponsored by the Office of Scientific Computing was awarded to five National Laboratories. Vermont is home to a U.S. Government Trusted Foundry, which is also the largest domestic producer of Radio Frequency-capable chips critical to 5G network implementation.

What are the Department's requirements for trusted microelectronics in these research and development projects?

How important are trusted supply chains for 5G wireless networking for science applications?

What value do advanced techniques and materials such as Gallium Nitride and epitaxial growth provide to science applications of 5G networking?

SUBCOMMITTEE RECESS

Senator FEINSTEIN. And so thank you so much for being here, for your words.

And the committee will stand adjourned. Thank you.

[Whereupon, at 11:15 a.m., Wednesday, May 4, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2023

WEDNESDAY, MAY 18, 2022

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

The subcommittee met at 10:04 a.m. in room SD-192, Dirksen Senate Office Building, Hon. Dianne Feinstein (chairwoman) presiding.

Present: Senators Feinstein, Heinrich, Kennedy, and Hagerty.

DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

STATEMENT OF HON. JILL HRUBY, UNDER SECRETARY FOR NUCLEAR SECURITY AND ADMINISTRATOR

ACCOMPANIED BY:

**HON. MARVIN L. ADAMS, PH.D., DEPUTY ADMINISTRATOR FOR DE-
FENSE PROGRAMS**

**HON. COREY HINDERSTEIN, DEPUTY ADMINISTRATOR FOR DE-
FENSE NUCLEAR NONPROLIFERATION**

**ADMIRAL JAMES F. CALDWELL, JR., DIRECTOR, NAVAL NUCLEAR
PROPULSION PROGRAM, DEPARTMENT OF ENERGY**

OPENING STATEMENT OF SENATOR DIANNE FEINSTEIN

Senator FEINSTEIN. The Subcommittee on Energy and Water Development will come to order.

Today's hearing is going to review the National Nuclear Security Administration's fiscal year 2023 budget request.

So thank you, Administrator Hruby and your colleagues for joining us today.

The budget request for NNSA (National Nuclear Security Administration) totals \$21.4 billion. That's a \$754.4 million or a 3.6 percent increase over fiscal year 2022. I can say it's an all-time high once again.

The Defense Nuclear Nonproliferation Programs, which successfully reduce nuclear dangers, are essentially held flat. For such accomplished programs, I would expect to see some greater investment but just a few key nonproliferation achievements include the elimination of over 7,230 kilograms of weapons-usable nuclear material from 48 countries, deployment of 930 counter-nuclear smuggling systems across 79 countries, and compilation of the 238 Cesium Irradiator Replacement Project, their removals from U.S. hospitals and universities.

While nonproliferation programs are held flat, the Weapons Activities Account sees a \$566.2 million or 3.5 percent increase. Both are budget allocations and the Nuclear Weapons Complex itself will increasingly struggle to accommodate an over-taxed system. So I expect this Administration to really make thoughtful choices.

I'm concerned about plutonium pit production. NNSA is required to make 80 pits per year by 2030 but acknowledged it would miss that deadline by anywhere from 2 to 5 years.

While NNSA's fiscal year 2023 budget calls for a \$2.4 billion increase for pit production modernization and infrastructure, it's clear that increased funding year after year is not going to solve systemic problems.

So I look forward to hearing you discuss with us how we can confront our nuclear deterrence and budgetary challenges together. I think that's most important and I thank everyone for being here.

The distinguished Ranking Member Kennedy will now have an opening statement and then we will turn to Administrator Hruby to present testimony on behalf of NNSA.

Thank you.

STATEMENT OF SENATOR JOHN KENNEDY

Senator KENNEDY. Thank you, Madam Chair.

Madam Administrator, thank you for being here. Thanks to all of our witnesses.

I can't think of an agency more important than the Nuclear Security Administration, especially now.

This proposed budget is not adequate. It's just not. I know there's a slight increase in funding, but I tell you what's not slight, the risks that the world faces today that have been extraordinarily enhanced in the last 3–4 months.

I mean, anybody with a brain above a single cell organism, which is most Americans, can see what's going on in the world. President Putin is working with President Xi, is working with the Ayatollah in Iran. I think President Xi is the quarterback but the other two players are critical members of the team. I think their goal is to have Russia dominate Central and Eastern Europe. I think their goal is to have China dominate the Indo-Pacific and be allowed to roam free in at least Sub-Saharan Africa and maybe all of Africa and also make moves in South America, and I think their goal is to have the Ayatollah in Iran dominate the Middle East.

Now I view all of this through the lens of the security of the United States of America. I do not want America to have to be the world's policemen, but I don't want Russia and China and the Ayatollah to be the world's policemen either.

This budget, proposed budget eliminates two weapon systems. It underfunds programs vital to our national security. Our distinguished Chair mentioned plutonium pit production. This proposed budget eliminates the tactical submarine-launched cruise missile, not acceptable. It's going to retire the B83 Gravity Bomb. It's got inadequate funding for plutonium pit modernization.

We can do better. American people deserve better, and I'm hoping we can talk about that today. But thank you all for being here and thank you, thank you to our Chair. I'm sitting close to her. I'm

hoping some of that wisdom and experience permeates over this way——

Senator FEINSTEIN. Oh, wow.

Senator KENNEDY [continuing.] And I mean that. I mean that.

I sit on Judiciary and the Senator was Chairman of our Judiciary Committee for a long time and I had the wonderful experience of being there with her for that, too.

So I'm done, Madam Chair.

Senator FEINSTEIN. Thank you.

We will turn over to our witnesses. I think Administrator Hruby.

SUMMARY STATEMENT OF HON. JILL HRUBY

Ms. HRUBY. Thank you. Thank you, Chairwoman Feinstein, Ranking Member Kennedy, and Members of the Subcommittee for the opportunity to present the President's fiscal year 2023 budget request for the Department of Energy's National Nuclear Security Administration.

We're grateful for the committee's enduring bipartisan support.

Chairwoman Feinstein, a written statement has been provided to the subcommittee and I respectfully request that it be submitted for the record.

Senator FEINSTEIN. So ordered.

Ms. HRUBY. NNSA's fiscal year 2023 budget request, as mentioned, is \$21.4 billion. This request is consistent with our expanded mission and the increasing pace of program deliverables as described in the 2022 Nuclear Posture Review.

In today's geopolitical environment, this budget reflects a responsive and responsible path forward.

The weapons activities request is \$16.5 billion, supporting five warhead modernization program, significant infrastructure recapitalization, and science-based stockpile stewardship.

NNSA is currently engaged in the simultaneous execution of our largest weapon modernization program effort in decades and an overhaul of our aging infrastructure. This approach carries risk but we are positioned to succeed and we are making progress.

The W88 Alt 370 and the B61-12 have achieved first production and are on track to meet DoD (Department of Defense) deliverables. The W80-4, the W87-1, and the W93 are in various phases of design and will enter production in the 2020s and 2030s. When complete, these programs, coupled with the DoD platform modernization, will update all three legs of the Nuclear Triad.

On the infrastructure front, the Uranium Processing Facility is fully enclosed with a projection completion date of 2026 and the 90 percent designs are underway for our future pit production facilities at Los Alamos and Savannah River.

Additionally, our innovative approaches on non-nuclear construction have demonstrated shortened schedule and reduced costs. We intend to build on these successes going forward.

Our scientific achievements in stockpile understanding continue and we intend to build on decades of success. This budget continues funding for the enhanced capabilities for subcritical experiments, inertial confinement fusion, exascale computing, and other key capabilities.

The Defense Nuclear Nonproliferation budget request of \$2.3 billion demonstrates the Administration's commitment to reducing global nuclear threats and is an essential complement to the weapons activities.

Through judicious use of prior year funding, we have a stable budget that enables targeted increases in high-priority projects. We continue to believe that it is easier to prevent a threat than to roll one back and that technical cooperation on nonproliferation, counterterrorism, and counter-proliferation with global allies and partners enhances our national security.

Such preemptive action and cooperation have been especially important in response to the invasion of Ukraine. In 2012, NNSA removed over 234 kilograms of highly-enriched uranium from Ukraine. Clearly the risks on the ground are lower today as a result.

More recently, NNSA personnel have been engaged in monitoring Ukraine's nuclear facilities and are in close contact with Ukrainian, regional, and IAEA (International Atomic Energy Agency) officials. As a result, we are providing validated data to assist U.S. decision-makers.

NNSA is increasing our support of nuclear power as a clean energy source to combat climate change. We are expanding our efforts in safeguards and security by design for advanced reactors and are working to supply high-assay low-enriched uranium to support the development of advanced reactors in partnership with DOE (Department of Energy) Nuclear Energy.

The Naval Reactors budget request of \$2.1 billion will support our nuclear-powered fleet. Progress on Columbia Class submarine propulsion, ongoing construction of the Spent Fuel Handling Facility, and expanded research and development are all key factors in retaining our qualitative advantage and naval capability for the current and future fleet.

Finally, we recognize that our people are the backbone of our enterprise. NNSA's Federal salaries and expenses budget request of \$496 million will be used to recruit, retain, and support 1,958 Federal employees.

Today, NNSA faces mission requirements as difficult as any in its history. With your continued support, we will deliver.

Thank you and I look forward to your questions.

[The statements follow:]

PREPARED STATEMENT OF HON. JILL HRUBY

Chairman Feinstein, Ranking Member Kennedy, and Members of the Subcommittee, thank you for the opportunity to present the President's fiscal year 2023 budget for the Department of Energy's (DOE) National Nuclear Security Administration (NNSA). NNSA greatly appreciates the Committee's bipartisan support for our nuclear security mission and for the talented and dedicated workforce responsible for carrying it out every day.

The Department meets its enduring national security mission by maintaining and modernizing the nuclear weapons stockpile so that it is always safe, secure, reliable, and effective; by reducing global nuclear threats; and by providing the U.S. Navy's nuclear-powered submarines and aircraft carriers with militarily effective propulsion systems. NNSA remains uniquely qualified to fulfill these tasks on behalf of the American people and in support of our allies and partners.

The NNSA fiscal year 2023 budget request is informed by the 2022 Nuclear Posture Review and reflects today's increasingly complex geopolitical environment. Importantly, the budget request provides full support for the significant nuclear weap-

ons design and production required to modernize all three legs of the nuclear triad. Once complete, this effort will provide the U.S. with a safer, more secure, and more reliable stockpile that, together with the Department of Defense (DoD) modernization programs, will provide the U.S. with a modern nuclear deterrent capable of responding to a wider array of challenges. The fiscal year 2023 budget request also includes continued funding for the NNSA infrastructure revitalization program needed to produce the weapons and materials for the planned program of record and create an enterprise that is more resilient and flexible. Funding for research, technology, and engineering needed for stockpile certification and innovation activities is maintained in the request.

At the same time, the fiscal year 2023 budget request recognizes we must press ahead with our nuclear nonproliferation and nuclear counterterrorism and counterproliferation efforts as a complementary approach to respond to geopolitical realities. These programs continue efforts to implement and support robust security and safeguards for nuclear materials; shift commercial, research, and medical industries away from highly radioactive materials and technologies; and develop technologies for early detection of proliferation activity. This request recognizes the increased efforts required as nuclear power expands around the world in response to climate change, and as Russia, China, and North Korea continue to diversify and expand their nuclear arsenals.

The NNSA budget request provides the support needed for Naval Reactors to continue work designing, producing, operating, and maintaining the nuclear propulsion plants for U.S. nuclear submarines and aircraft carriers. The request also fully supports three critical initiatives: the *COLUMBIA*-class ballistic missile submarine reactor systems development; construction of the Naval Spent Fuel Handling Facility; and the refueling and overhaul of the land-based reactor for continued training and technology testing.

In today's multipolar and more aggressive geopolitical environment, it is imperative that NNSA is both responsive to needs and acts responsibly to avoid escalation or arms racing while preparing for an uncertain future. Our budget request reflects this balance, and our work has never been more critical to global stability.

NNSA'S ACCOMPLISHMENTS IN 2021

Last year, NNSA achieved several key milestones across the nuclear security enterprise despite the unprecedented circumstances COVID-19 presented.

Life Extension and Weapons Modernization Programs: In 2021, NNSA completed first production units (FPU) for the W88 Alteration (Alt) 370 and the B61-12 Life Extension programs. Both refurbished weapons have increased safety and reliability.

Large Line-Item Construction: NNSA has three large line-item construction projects for nuclear materials underway: two projects associated with plutonium pit production—one at Los Alamos National Laboratory and one at the Savannah River Site—and one project associated with uranium processing at the Y-12 National Security Complex.

The Los Alamos Plutonium Pit Production Project (LAP4) received Critical Decision (CD)-1 approval in April 2021. The Savannah River Plutonium Processing Facility (SRPPF) received CD-1 approval in June 2021. CD-1 approval marks completion of a project's definition phase and the conceptual design as part of DOE's Order 413.3B process for the acquisition of capital assets. Clearing the CD-1 process allows NNSA to establish 90 percent design and associated cost estimation during the subsequent CD-2 effort.

The Uranium Processing Facility (UPF), consisting of seven subprojects, has completed three projects on schedule and under budget and the final four are underway. During 2021, significant construction activity continued and led to the successful full enclosure of all buildings in April 2022, setting the stage for equipment installation.

National Ignition Facility (NIF): In August, the National Ignition Facility at Lawrence Livermore National Laboratory achieved a breakthrough with an experiment that yielded more than 1.3 megajoules of energy and resulted in a burning plasma state for the first time in any fusion research facility. Burning plasma research is needed for high fidelity modeling of nuclear weapons and is one of the milestones needed to achieve self-sustaining energy production.

Secure Transportation: The Office of Secure Transportation accomplished 100 percent of its assigned missions safely and securely with no mission degradation despite operational challenges present from COVID-19.

Infrastructure Innovation: NNSA purchased the LeMond Carbon Facility in Oak Ridge, TN to replace facilities at Y-12 built in the 1940s used for process develop-

ment. Use of NNSA's purchase authority for acquisitions allows us to accelerate delivery of modern facilities without the need for new construction.

To support our climate goals, NNSA placed lease orders with the General Services Administration to replace gas-powered cars with approximately 50 zero-emissions vehicles, nearly doubling the size of electric-powered cars in NNSA's fleet.

Nuclear Material Disposal and Reduction: NNSA converted an additional 91 kilograms of plutonium to an oxide form, for a cumulative total of 1,187 kilograms, in preparation for final disposition, continued downblending excess plutonium, and completed construction of a characterization and storage pad for the first shipment of downblended plutonium from the Savannah River Site to the Waste Isolation Pilot Plant. Additionally, the Secretaries of Energy and Health and Humans Services jointly certified that global supplies of molybdenum-99 (Mo-99) produced without the use of highly enriched uranium (HEU) can meet the needs of patients in the U.S. This critical milestone in nonproliferation efforts also triggered a congressionally mandated ban on exports of HEU for foreign medical isotope production.

Global Material Security: NNSA conducted over 75 cyber engagements with international partners to enhance security of nuclear facilities and materials. Partnerships were also started with several domestic advanced reactor vendors for 'security-by-design' activities to enhance the security of the systems for both domestic and international use. NNSA replaced 50 devices (39 domestically and 11 internationally) that use high-activity radioactive sources with non-radioisotopic alternative technologies and secured 48 buildings (28 domestically and 20 internationally) with high priority radioactive sources. In addition, since the start of 2021, NNSA has signed new counter radioactive material smuggling arrangements with Estonia's Ministry of Interior, Ukraine's Ministry of Internal Affairs, Ukraine's State Security Service, Mexico's National Commission for Nuclear Security and Safeguards, Niger's High Atomic Energy Authority, and Morocco's Gendarmerie.

Counterterrorism: NNSA's Nuclear Emergency Support Team (NEST) conducted dozens of operations, including preventative radiological/nuclear detection support to the Presidential Inauguration, Presidential Address to a Joint Session of Congress, New Year's Eve celebrations in Las Vegas and New York City, Super Bowl LV, the Fourth of July celebration on the National Mall, and the 76th Session of the United Nations General Assembly. Additionally, NNSA conducted 50 virtual workshops with U.S. public information officers, law enforcement, first responders, and technical experts concerning radiological counterterrorism to build capacity and improve crisis and risk communication.

Workforce Development: NNSA achieved its highest Federal workforce level since 2013 with a total of 1,825 Federal employees onboard. To help develop the next-generation workforce, NNSA awarded 13 Minority Serving Institution Partnership Program grants for a total of 24 consortia grants to reach tens of thousands of students in STEM disciplines.

NNSA'S FISCAL YEAR 2023 BUDGET REQUEST

The President's fiscal year 2023 budget request for NNSA is \$21.4 billion, an increase of \$1.0 billion, or 5.1 percent, over the fiscal year 2022 enacted level. Funding levels do not reflect the mandated transfer of \$92.75 million in fiscal year 2022 to the Office of Nuclear Energy for operation of the Advanced Test Reactor. This funding request reflects the expanded mission in NNSA and the need for accelerated delivery of the modernization and infrastructure programs. The three NNSA missions—the nuclear deterrent, nuclear security and nonproliferation, and naval nuclear propulsion—have key deliverables in fiscal year 2023. In addition, the capabilities to position NNSA to be successful in the future must be nurtured. We are grateful for the sustained, bipartisan commitment by Congress and multiple administrations and ask for continued support.

WEAPONS ACTIVITIES APPROPRIATION

The fiscal year 2023 budget request for the Weapons Activities account is \$16.5 billion, an increase of \$566 million, or 3.7 percent over the fiscal year 2022 enacted levels. The request will be supplemented with prior year balances of \$396 million. This budget request represents the Administration's continued strong commitment to a safe, secure, reliable, and effective nuclear deterrent backed by resilient, flexible infrastructure along with cutting edge science, cyber security, and physical protection.

NNSA is fully aware that delivering the deterrent and capabilities our nation needs to respond to the current environment requires a faster pace and a more complete modernization of weapons than over the last several decades. That is why we are re-establishing production capabilities lost in the 1990s and overhauling both

our physical infrastructure and human capital to retain technical advantages and build resilience into our enterprise. NNSA is looking forward to overcoming obstacles and building on the successes of the previous year.

The fiscal year 2023 request reflects the need to advance the weapons modernization programs and production capacity at an accelerated pace. The Weapons Activities account includes:

- Stockpile Management: Maintenance and modernization of nuclear weapons and production operations to sustain confidence in the safety, security, reliability, and military effectiveness of the stockpile without resuming nuclear explosive testing and associated activities.
- Production and Infrastructure Modernization: Investment in NNSA's infrastructure to rebuild capabilities lost in the 1990s and revitalize and expand the capacity of other elements to support stockpile modernization and science. These projects range from significant line-item construction for Plutonium and Uranium related activities to minor construction of offices and light labs to operational infrastructure such as electrical and networking utilities.
- Stockpile Research, Technology, and Engineering: Continued development of state-of-the-art scientific, engineering, and manufacturing capabilities to enable continuous improvement in design, certification, and production of the enduring nuclear weapons stockpile and to stay ahead of the threat.
- Transportation, Nuclear, and Cyber Security: Keeping pace with evolving threats and sustaining transportation, cyber and physical security across the nuclear security enterprise to improve resilience.

NNSA restructured the Weapons Activities budget in fiscal year 2021 to enable better alignment of portfolios with resources. This allowed improved prioritization within portfolios that have multiple programs and interdependencies. Further refinements are proposed in fiscal year 2023 to align programmatic construction with the portfolio each project supports. Comparisons throughout the Weapons Activities portfolio assume this alignment in the fiscal year 2022 enacted levels as well.

Stockpile Management

The fiscal year 2023 Stockpile Management budget request is \$4.9 billion, an increase of \$291 million, or 6.3 percent, over the fiscal year 2022 enacted level. This portfolio covers the maintenance of a safe, secure, reliable, and militarily effective nuclear weapons stockpile. Activities include life extension programs (LEP) and other weapons modernization activities; surveillance, minor alterations, and limited life component exchanges; providing the safe dismantlement of nuclear weapons and components; and providing sustainment of needed manufacturing capabilities and capacities. The fiscal year 2023 request also includes funding for Nuclear Enterprise Assurance (NEA) to prevent, detect, and mitigate subversion risks to the nuclear weapons stockpile and associated design, production, and testing capabilities.

W88 Alteration (Alt) 370: NNSA expects the W88 Alt 370 program to enter Phase 6.6, Full-Scale Production, in July 2022. Production is currently on schedule to meet DoD deployment schedules.

B61-12 LEP: NNSA expects the B61-12 LEP to enter Phase 6.6, Full-Scale Production, in June 2022. The B61-12 LEP consolidates multiple variants of the B61 gravity bomb and improves the safety and security of the weapon. Production is currently on schedule to meet DoD deployment schedules.

W80-4 LEP: NNSA is continuing Phase 6.3 activities, Development Engineering, and plans to enter Phase 6.4, Production Engineering, in fiscal year 2023. The W80-4 FPU date is currently being re-evaluated due to COVID-19 impacts, slower than planned hiring and increased attrition, and component technical challenges. The updated FPU schedule will be developed by mid-2022. NNSA's revised schedule is expected to support the U.S. Air Force's (USAF) schedule for Long Range Standoff missile initial operating capability.

W87-1 Modification Program: The W87-1 will replace the aging W78 warhead using a modification of the existing W87-0 design. The W87-1 will deploy new technologies that improve safety and security, address obsolete designs and materials, and simplify warhead manufacturability. The fiscal year 2023 budget request supports NNSA's commitment for a planned FPU in fiscal year 2030 to meet DoD's scheduled deployment of the Sentinel missile. The request supports Phase 6.3, Development Engineering, activities including joint testing with USAF Sentinel missile and Mk21A reentry vehicle program and conducting the Conceptual Design Review. NNSA plans to enter Phase 6.3 in fiscal year 2022.

W93/Mk7: In February 2022, the NWC voted to authorize the W93's entry into Phase 2, Feasibility Study and Design Options. NNSA's fiscal year 2023 funding request will support the Phase 2 activities including further examination of design concepts from Phase 1, and down-selection to desired weapon design(s) to be subse-

quently developed in Phase 2A, Design Definition and Cost Study, planned for fiscal year 2026. All the W93's key nuclear components will be based on currently deployed and previously tested nuclear designs, as well as extensive stockpile component and materials experience. It will not require additional nuclear explosive testing to certify. The W93 is vital for continuing our longstanding cooperation with the UK, which is modernizing its nuclear forces. The U.S.'s W93 program is a separate but parallel program critical to the UK's replacement warhead (RW) for its submarine launched ballistic missile. As an allied but independent nuclear power that contributes to NATO's nuclear deterrent posture, the UK's nuclear deterrent is critical to U.S. national security.

Within Stockpile Management, the fiscal year 2023 budget request includes \$1.3 billion for Stockpile Sustainment, an increase of \$141 million, or 11.9 percent above the fiscal year 2022 enacted level. This program is responsible for producing and replacing limited-life components such as neutron generators and gas transfer systems; conducting maintenance, surveillance, and evaluations to assess weapon reliability and detect any potential concerns; and analyzing information compiled during the annual assessment process.

The request for Stockpile Management also includes \$631 million for Production Operations, an increase of \$62 million, or 10.9 percent, above the fiscal year 2022 enacted level. Included in this request is funding to support continued growth of base capabilities, both in staffing and equipment, required to support increased LEP workload as certain programs reach full-scale production rates.

Production Modernization

The fiscal year 2023 Production Modernization budget request is \$4.64 billion, an increase of \$484 million, or 11.6 percent, over the fiscal year 2022 enacted level. This funding focuses on production capabilities for nuclear weapons components including primaries, canned subassemblies, radiation cases and non-nuclear components needed to sustain the nuclear weapons stockpile near-to long-term.

Primary Capability Modernization: NNSA's most intensive recapitalization effort is reconstitution of plutonium pit production fabrication capabilities. NNSA is required to produce no fewer than 80 pits per year (ppy) during 2030. NNSA has outlined a two-site approach for producing 80 ppy utilizing Los Alamos National Laboratory (LANL) to produce 30 ppy and the Savannah River Site (SRS) to produce 50 ppy. The two-site approach will provide the required capacity while enhancing resiliency and flexibility. At this time, the production of 30 ppy at LANL during 2026 remains on schedule with some technical challenges remaining. However, the production of 50 ppy at SRS during 2030 is not achievable. The Secretary of Energy and the Nuclear Weapons Council have both notified Congress regarding the inability to produce 80 ppy in 2030. However, NNSA remains committed to achieving 80 ppy as close to 2030 as possible. The fiscal year 2023 budget request funds pit production and associated efforts with a 26 percent increase compared to fiscal year 2022. NNSA continues to work with DoD to develop a plan to maintain the required stockpile until pit production capabilities are fully established.

The fiscal year 2023 request for LANL Plutonium Modernization will support equipment installation, continue decontamination and demolition work, and mature project design for the LAP4. This includes adding equipment in Plutonium Facility 4 (PF-4) to support 30 ppy in 2026, construction of a training facility to support workforce development, and construction of a higher capacity entrance control facility.

The fiscal year 2023 funds for SRPPF will be used to continue the CD-2 work to establish a 90 percent design. CD-2 is forecast for completion in early fiscal year 2024. Additionally, the request supports early site preparation including removal of unnecessary walls and building systems originally installed for the Mixed Oxide Fuel Fabrication Facility.

Secondary Capability Modernization: NNSA is also modernizing its uranium, lithium, and tritium processing efforts necessary to fabricate nuclear weapon secondaries. NNSA's uranium strategy aims to relocate enriched uranium processing capabilities into the UPF and other enduring facilities to reduce mission dependency on Building 9212, which is over 75 years old. This will be accomplished by completing construction of UPF to provide new floor space for high hazard operations; extending the operational lifetime of buildings 9215, 9204-2E, and 9995 into the 2040s; introducing new processes to increase safety and efficiency in the new facilities; and supplying the current stockpile with purified enriched uranium metal.

UPF will provide for the long-term viability, safety, and security of enriched uranium processing capability in the United States while significantly improving worker and public safety. The construction is well underway with a peak production workforce of 3,000 people in fiscal years 2022 and 2023. Ongoing supply chain issues

and delays associated with the COVID-19 pandemic are projected to result in a delay of about 8 months beyond the scheduled completion date of December 2025. A comprehensive annual cost update is being conducted for the UPF project completion to better understand factors that could potentially affect total costs. Overall, UPF is 70 percent complete with the first three non-nuclear infrastructure sub-projects completed under budget and on schedule.

Additionally, in fiscal year 2021, NNSA initiated the Depleted Uranium (DU) Modernization Program to meet growing mission requirements. This effort will reconstitute lapsed DU alloying and component manufacturing capabilities at Y-12; invest in key new technologies to improve efficiency and reduce lifecycle costs; and increase the reliability and capacity. The DU Modernization Program request for fiscal year 2023 is \$170 million.

The U.S. no longer maintains a full lithium purification capability and relies on direct recycling as the main source of lithium for nuclear weapons systems. NNSA's Lithium Strategy will increase the supply of lithium by recycling components from dismantled systems, sustain and recapitalize existing infrastructure through a transition period, and design and construct a Lithium Processing Facility (LPF) to house processing capabilities by 2031. LPF will replace capabilities performed in Y-12's buildings 9204-2 and 9202 and will include recovery, purification, and component fabrication operations. While current capabilities can provide a sufficient lithium supply through 2035, operations take place in an aging facility with significant infrastructure challenges. LPF will alleviate those issues and reduce risk while providing capacity to meet material demands beyond 2035.

The fiscal year 2023 budget request for the Tritium and Domestic Uranium Enrichment is \$580 million, an increase of \$64 million, or 12.4 percent above the fiscal year 2022 enacted level. For Domestic Uranium Enrichment the fiscal year 2023 budget request supports HEU down-blending to extend the need date for low-enriched uranium (LEU) for tritium production to 2044, enrichment technology development, and acquisition activities to meet future enriched uranium needs. HEU downblending began in fiscal year 2019 and will continue through fiscal year 2025. NNSA is currently conducting an analysis of alternatives, which is expected to conclude in the mid-2020s that will inform a final down-select of an enrichment options. Other NNSA programs such as reactor fuel and naval propulsion fuel are also supported by this effort.

The Tritium Modernization Program's mission is to establish and operate a domestic source of tritium to meet national security requirements, which includes recycling tritium gas to maintain required inventories and sustaining reliable supply chain infrastructure and equipment. Since 2003, NNSA's tritium production has met all production, delivery, and schedule requirements. Because NNSA is currently ramping up production levels at the Tennessee Valley Authority to meet future delivery requirements, the requested budget has been increased. NNSA is also in the early phases of constructing the Tritium Finishing Facility (TFF), which will replace a 1950s-era facility. TFF will house the finishing, packing, and shipping of gas reservoirs to meet mission requirements. This major infrastructure modernization initiative will fulfill a critical mission need and enable the program to meet contemporary safety standards. The facility will house functions to receive, inspect, finish, package, and ship reservoirs. Construction of the site preparation subproject is scheduled to start in fiscal year 2024.

Non-Nuclear Component Modernization: Non-nuclear components (NNCs) include a wide array of parts that weaponize the nuclear explosive package. Examples are gas transfer systems, neutron generators, microelectronics, and power sources. NNCs make up more than half the cost of weapon modernization due to the number, complexity, and their qualification in extreme environments over the warhead lifecycle. Therefore, delivering NNCs requires an extensive foundation of capabilities for the design, development, qualification, production, and surveillance of these components. The fiscal year 2023 request includes funding to provide equipment for increased manufacturing capacity at the Kansas City National Security Campus; reconstitute thermal spray capability for weapon modernization; recapitalize radiation and major environmental test facilities at Sandia National Laboratories used to design and qualify NNCs; and tools and equipment at the Microsystems Engineering, Science and Applications (MESA) Complex at Sandia, which serves as the only approved source of trusted, strategically radiation hardened microelectronics.

Infrastructure and Operations

NNSA has been taking significant steps to modernize and recapitalize its infrastructure to meet expanding demands, reduce mission and safety risk, and draw down its deferred maintenance backlog. A well-organized, well-maintained, and modern infrastructure system is the bedrock of a flexible and resilient nuclear en-

terprise. Almost 60 percent of NNSA facilities were beyond their 40-year life expectancy at the end of fiscal year 2021 with some dating back to the Manhattan Project. Our modernization and recapitalization efforts will provide for the safety of our workforce, the communities around our facilities, and our environment. NNSA can address this challenge only with sustained, predictable, and timely funding.

The fiscal year 2023 budget request for Infrastructure and Operations is \$2.63 billion, an increase of \$144 million or 5.8 percent over the fiscal year 2022 enacted amount. This increase will enable NNSA to build on the Infrastructure Modernization Initiative, including adopting new practices that will streamline construction practices to save time and money on low-risk, non-nuclear, construction projects.

Deferred maintenance has been a key focus of both NNSA and Congress. At the end of fiscal year 2021, NNSA had \$6.1 billion of deferred maintenance and an enterprise-wide replacement plant value of \$121.5 billion. While this ratio may seem high, construction of new facilities and associated demolition of legacy facilities will have a substantial role in reducing NNSA infrastructure challenges. Approximately 90 percent of NNSA deferred maintenance is associated with facilities that are approaching or have surpassed their intended design life. NNSA is integrating its infrastructure modernization work with the Department's Office of Environmental Management supported effort to demolish high-risk excess facilities at the Y-12 National Security Complex, Lawrence Livermore National Lab, and Los Alamos National Lab. NNSA is using this intentional approach to prioritize investments based on mission risk while underscoring the need for sustained commitment to move beyond legacy infrastructure. The fiscal year 2023 budget request includes increases in Mission Enabling Construction accounts so that NNSA can address mission needs, achieve operational efficiencies, and reduce risks to safety, security, the environment, and program.

For years, NNSA has used a prioritization methodology for recapitalization investments that factors in sustainability and resilience along with safety and mission risk. In fiscal year 2023, NNSA is increasing its emphasis on climate resiliency projects through the Energy Resilient Infrastructure and Climate Adaptation (ERICA) initiative. ERICA is part of NNSA's multifaceted approach to address climate adaptation and resilience using direct- and indirect-funded infrastructure programs and alternative financing. For example, the planned Building 848 Net Zero Energy Upgrade project at Sandia will move the facility to being 100 percent powered by on-site generated electricity while also improving its operations, indoor air quality, and thermal comfort.

NNSA uses data-driven, risk informed tools and initiatives to improve decision-making, accelerate the delivery, and reduce the cost of commercial-like construction projects. For example, in fiscal year 2019 NNSA established the Enhanced Minor Construction & Commercial Standards (EMC2) pilot, which is challenging the paradigm for how NNSA executes low-risk, non-complex construction projects to accelerate delivery and reduce costs. There are 10 projects in the pilot, including the Lawrence Livermore National Laboratory's Emergency Operations Center (EOC) which is the first pilot project to be completed earlier this year. Using the EMC2 approach, the Livermore EOC was completed 13 months after receiving full construction funding in January 2021. In the first four pilot projects currently underway, estimated cost savings range from approximately 12 to 31 percent. An additional six EMC2 projects are projected to result in estimated cost savings of 17 to 38 percent.

Stockpile Research, Technology and Engineering

For Stockpile Research, Technology, and Engineering, the fiscal year 2023 budget request is \$2.89 billion, a decrease of \$83 million, or 2.8 percent below the fiscal year 2022 enacted level. The decrease results from the use of carryover balances to continue construction of the U1a Complex Enhancement Project at the Nevada National Security Site (NNSS). After adjusting for this reduction, the Stockpile Research, Technology, and Engineering request is stable from fiscal year 2022 enacted.

This portfolio provides the scientific foundation for science-based stockpile activities, including the capabilities, tools, and components needed to assess the active stockpile and to certify warhead modernization programs without the need for underground nuclear testing. NNSA's unparalleled science and technical capabilities, and commitment to their constant improvement, helps cultivate the knowledge and expertise to maintain confidence in the stockpile. The major activities in the Stockpile Research, Technology, and Engineering portfolio are:

Enhanced Capabilities for Subcritical Experiments (ECSE): ECSE will produce experimental data in underground tunnels at the NNSS that will enable high fidelity assessment of the current stockpile and certification of the future stockpile without the need to return to underground nuclear-explosive testing. ECSE experiments are

designed to remain subcritical throughout the experiment to adhere to the U.S. policy of “zero yield.”

Stockpile Responsiveness Program (SRP): SRP is responsible for exercising and enhancing capabilities across the entire nuclear weapons development and production process to improve the responsiveness of the United States to future threats, technology trends, and international developments not addressed by existing life extension programs. For example, SRP is investing in efforts to address issues in design for manufacturability, digital engineering, component, and system prototyping and testing.

Inertial Confinement Fusion (ICF) Program: The ICF Program supports the assessment and certification of the nuclear weapon stockpile by providing the facilities, scientific expertise, and experimental capability necessary to acquire data at the extreme conditions of nuclear weapon operation. The ICF program also supports research on thermonuclear fusion with the goal of reaching fusion ignition and eventually high fusion yield in the laboratory. The fiscal year 2023 request supports ICF research and facilities, enabling access to experimental data that underpin the safety, security, and effectiveness of the nuclear stockpile and continued progress toward the capabilities necessary to meet long-term stewardship needs.

NNSA Exascale Computing Initiative: The Exascale Computing Initiative (ECI) will provide NNSA with next-generation simulation capabilities to support weapons design, science-based stockpile stewardship, and stockpile certification activities. The fiscal year 2023 budget request will continue funding maturation of next-generation simulation and computing technologies and enables NNSA to meet its exascale system initial operation capability in fiscal year 2023, including transition of the next-generation, validated weapons codes to next-generation classified computing.

Academic Programs: The challenges of sustaining the nuclear deterrent long-term demand a strong and diverse base of national expertise and educational opportunities in specialized technical areas that uniquely contribute to stockpile stewardship. NNSA's Academic Programs are designed to cultivate, attract, and retain such a workforce. Funding in this area supports the Administration's Executive Order on Advancing Racial Equity and Support for Underserved Communities through the Federal Government, Academic Alliances and existing partnerships with Minority Serving Institutions, and an increase in student engagement and internship opportunities.

Secure Transportation Asset

Secure Transportation Asset (STA) supports the safe, secure transport of the Nation's nuclear weapons, weapon components, and special nuclear material throughout the nuclear security enterprise to meet nuclear security requirements. Nuclear weapon life extension programs, limited-life component exchanges, surveillance, dismantlement, nonproliferation activities, and experimental programs rely on STA to ensure safe, secure, and on-schedule transport. The fiscal year 2023 budget request for STA is \$344 million, an increase of \$13.7 million, or 4.1 percent, above the fiscal year 2022 enacted amount to increase the Federal Agent workforce to a level necessary to keep pace with the growing program deliverables.

The Office of Secure Transportation's (OST) priorities for fiscal year 2023 include modernization and sustainment of transportation assets. This includes the Safeguards Transporter (SGT) life extension program to secure its service until replacement by the Mobile Guardian Transporter (MGT), as well as the entry into service of procured 737–700 aircraft. The first MGT Production Unit is planned for completion in fiscal year 2026 and initial rate production is set to commence in fiscal year 2027. Currently, aircraft are undergoing heavy maintenance checks, painting to NNSA standards, and a major modification from a passenger jet to a FlexCombi that is configurable to carry various loads of personnel and cargo.

OST also remains focused on recruiting, stabilizing, training, and retaining the Federal Agent and staff workforce necessary to support mission requirements. OST has committed to a stable human resources strategy to achieve an optimal agent force. OST has increased staffing numbers by optimizing position qualifications and managing risk associated with the Human Reliability Program. Although COVID–19 impacted key milestones and deliverables, OST successfully accomplished every assigned mission for the previous year.

Defense Nuclear Security

Defense Nuclear Security's fiscal year 2023 budget request is \$882.3 million, an increase of \$38.2 million, or 4.5 percent over the fiscal year 2022 enacted level. The Office of Defense Nuclear Security's (DNS) primary mission is protecting the facilities, people, and assets critical to achieving NNSA's important national security

missions. The need for increasing security due to growth across enterprise from projects such as LAP4 and UPF, along with additional resources required to sustain core security, has resulted in increased program requirements for DNS. Support for the request is vital for the protection of the enterprise, its people, and its sensitive material and information. DNS remains focused on improving physical security infrastructure with several new projects and the development and deployment of new systems. Progress is also being made in countering unmanned aircraft systems. The first such platform was deployed at LANL in December 2017. Deployment at other facilities is expected to be completed in late fiscal year 2022.

Cybersecurity and Emerging Issues

The fiscal year 2023 budget request for information technology and cybersecurity is \$445.7 million, \$39.1 million, or 9.6 percent, over the fiscal year 2022 enacted amount. This request funds ongoing operations and invests in improvements across NNSA to modernize both classified and unclassified systems, improves information management and data governance, implements critical aspects of a zero-trust architecture in our networks and systems, and allows for the execution of a robust cybersecurity program. As an example, NNSA recently recapitalized its deployed cyber sensor platform, significantly improving the ability to detect and respond to malicious activity.

Maintaining a strong cybersecurity program is a critical defense mechanism and a powerful deterrence tool. To strengthen oversight of the cyber program, the budget request includes a recategorization of certain Cybersecurity program investments into the Information Technology program. As a result, the request more clearly reflects investments in cybersecurity tools and services provided to the enterprise, maintains core cyber operations at the labs, plants, and sites, and improves management and transparency of these funds.

NNSA also recently completed an enterprise-wide cybersecurity assessment, in conjunction with the Institute for Defense Analyses, aimed at evaluating the overall cybersecurity posture and developing a set of recommendations to improve the program. That review calls for increased investment in information technology and cyber infrastructure to better meet current and emerging challenges, as well as outlines strategies related to workforce development issues. NNSA has already started acting on the findings and will continue to do so with the fiscal year 2023 requested budget.

DEFENSE NUCLEAR NONPROLIFERATION APPROPRIATION

The fiscal year 2023 budget request for the Defense Nuclear Nonproliferation account is \$2.3 billion, an increase of \$274 million, or 13.2 percent, over the fiscal year 2022 enacted level. When the use of prior year balances is considered, the proposed funding level for the account increases by \$397 million, or 19.2 percent. The use of prior year balances will allow DNN programs to supplement new budget authority across its programs.

This account funds all activities in the offices of Defense Nuclear Nonproliferation, Emergency Operations, and Counterterrorism and Counterproliferation. Within these offices, this appropriation funds six nonproliferation programs, a counterterrorism and counterproliferation program, and an incident response program as part of a whole-of-government approach. Together these efforts provide policy and technical leadership to prevent or limit the spread of weapons of mass destruction (WMD) and the related materials, technology, and expertise as well as to detect and respond to nuclear terrorism or proliferation events.

Nonproliferation Efforts

For decades, Defense Nuclear Nonproliferation (DNN) has developed and implemented policy and technical solutions to eliminate proliferation sensitive material and limit or prevent the spread of materials, technology, and expertise necessary for nuclear and radiological weapons. By working with governments, international organizations, and private sector partners around the world these efforts reduce the reliance on radioactive material in commercial and research industries; better secure nuclear and radioactive material; develop capabilities to interdict material outside of regulatory control; and maintain a robust response capability for nuclear and radiological incidents at home and abroad.

The fiscal year 2023 budget request will allow the Office of Defense Nuclear Nonproliferation to better confront current and anticipated proliferation challenges including the growing nuclear programs and strategic competition with Russia and China, the impacts of Russia's full-scale invasion of Ukraine, risks related to the North Korean and Iranian nuclear programs, and disruptive technologies that lower the barrier to proliferation. Through these efforts DNN aims to restore American

leadership in nonproliferation solutions and cutting-edge technology required to address future threats.

The Material Management and Minimization (M3) program fiscal year 2023 budget request is \$451 million, an increase of \$108 million, or 31.5 percent, over the fiscal year 2022 enacted level. M3 programs reduce and, when possible, eliminate weapons-usable nuclear material around the world. The fiscal year 2023 budget request supports the conversion or shutdown of research reactors and isotope production facilities that use HEU, the use of non-HEU-based Mo-99 production, the removal and disposal of weapons-usable nuclear material, and the removal of plutonium from the State of South Carolina. Additionally, to date, nearly 7,270 kilograms of weapons-usable nuclear material from 48 countries and Taiwan have been removed or confirmed disposed, while 108 civilian research reactors and isotope production facilities have stopped using weapons-grade material in their work.

The Global Material Security program fiscal year 2023 budget request is \$504 million, a decrease of \$27.4 million, or 5.1 percent, below the fiscal year 2022 enacted level. The fiscal year 2023 request supports program efforts to prevent terrorists and other actors from obtaining nuclear and radioactive material for use in an improvised nuclear device by working with domestic and global partners. This includes improving the security of vulnerable materials and sites, promoting the adoption of alternative technologies that do not rely on radioactive sources, and increasing capacity to detect, disrupt and interdict illicit trafficking operations. Working through the RadSecure 100 Initiative, NNSA will accelerate and expand permanent risk reduction, security enhancements, and response integration with local law enforcement in the top 100 major metropolitan areas of the United States. To date, NNSA has replaced approximately 130 cesium-137 based blood irradiators with alternative technologies. The program remains on track to replace nearly all the estimated 400 such devices in the United States by 2027 as mandated in the fiscal year 2019 NDAA. In addition, NNSA is partnering with domestic advanced nuclear reactor vendors in 'security-by-design' activities to enhance the security of their systems for domestic and international use. Finally, NNSA continues to build additional partnerships with bilateral and multilateral partners focused on counter nuclear smuggling. To date, NNSA partners with 84 countries in this area and continues to expand cooperation with existing and new partners to expand global counter nuclear smuggling capabilities.

The Nonproliferation and Arms Control (NPAC) program fiscal year 2023 budget request is \$208 million, an increase of \$23 million, or 12.4 percent, above the fiscal year 2022 enacted level. The increased funding request supports two increasingly important activities: (1) policy and technology development activities for peaceful uses of nuclear energy along with support for the International Atomic Energy Agency (IAEA), and (2) policy and technology development for potential arms control agreements that extend to new types of strategic weapons as well as tactical nuclear weapons.

By focusing on ensuring the peaceful use of nuclear energy, NPAC programs strengthen nonproliferation regimes through the development and implementation of effective technologies and policies. This is especially important as nuclear energy programs expand internationally in response to clean energy implementation to address climate change. New nuclear safeguards and monitoring and verification technologies are needed to secure materials and to detect proliferation activities early. NPAC works to mature technologies and transfer them to the International Atomic Energy Agency (IAEA) and partner countries to implement. The U.S. also supplies IAEA with U.S. subject matter experts, training, and equipment advice and procurement aid. In fiscal year 2022 and fiscal year 2023 NPAC is helping establish the nonproliferation enrichment testing and training platform. This platform will be turned over to the IAEA for commissioning and operation in fiscal year 2024. On the policy side, NPAC supports the development and implementation of Section 123 agreements and the careful regulation of nuclear technology exports utilizing Part 810 Authorizations.

Approximately \$30 million funds increasing nuclear weapons verification activities. This will improve U.S. technical policy and readiness for future arms control agreements and associated verification technology. New investment in the Arms Control Advancement Initiative will strengthen NNSA's capacity to address future nuclear warhead monitoring and verification requirements through advanced technology development, robust modeling and measurements, and sustained expert engagement to maintain a pipeline of experts to help advance arms control objectives over time.

The Defense Nuclear Nonproliferation Research and Development (DNN R&D) program fiscal year 2023 budget request is \$720 million, a decrease of \$9 million, or 1.2 percent, below the fiscal year 2022 enacted level. DNN R&D is the key compo-

ment for the innovation of United States' technical capabilities to detect nuclear detonations; foreign nuclear weapons programs' activities; and the presence, movement, or diversion of special nuclear materials. The program also sustains and develops foundational nonproliferation technical competencies that ensure the technical agility needed to support a broad spectrum of U.S. nonproliferation missions and anticipate threats. Consistent with the growing nonproliferation challenges, this funding request for DNN R&D programs will expand activities that advance the development of next-generation nuclear arms control monitoring and verification technology and expertise symbiotic with the NPAC efforts.

The Nonproliferation Construction program fiscal year 2023 budget request is \$72 million, a decrease of \$84 million, or 54 percent, below the fiscal year 2022 enacted level. This decrease is due to the awarding of the long-lead procurement contracts for gloveboxes, emergency generators and HEPA filters under CD-3A Phase 2 in fiscal year 2022 and the expected fiscal year 2023 completion of design work for the Surplus Plutonium Disposition (SPD) project required for CD-2/3, Approval of Performance Baseline and Start of Construction. The fiscal year 2023 budget request supports the implementation of the dilute and dispose strategy, by continuing design for the SPD project. The SPD project will add additional glovebox capacity at the SRS to accelerate plutonium dilution and aid in the removal of plutonium from South Carolina.

NNSA is requesting the establishment of a Bioassurance Program in fiscal year 2023. The budget request is \$20 million. As the COVID-19 pandemic has shown, the United States needs better capabilities to anticipate, respond to, and mitigate threats to the bioeconomy. NNSA proposes to establish a national security bioassurance program to perform activities to anticipate and detect threats and scale response solutions to support the security of the future bioeconomy and monitor and thwart malpractice in this area. This funding supports foundational work at DOE/NNSA laboratories including the anticipation of destabilizing threats through modeling, identifying threat signatures and developing detection technologies, and rapidly developing and validating safeguards and threat mitigation approaches. NNSA will integrate its high-security work with the Department's Office of Science supported "open" science work and other government agencies, providing the full spectrum of capabilities essential for a bioassurance program informed by national security expertise drawn from parallel and analogous work on nuclear threats, risks, export controls and licensing, nonproliferation, detection, and verification.

Nuclear Counterterrorism and Incident Response

The fiscal year 2023 request for the Nuclear Counterterrorism and Incident Response (NCTIR) program is \$439 million, an increase of \$68 million, or 18.4 percent, over the fiscal year 2022 enacted amount. The NCTIR program supports two subprograms: Counterterrorism and Counterproliferation (CTCP) and Emergency Operations (EO).

CTCP is responsible for countering nuclear terrorism and nuclear proliferation, responding to nuclear incidents and accidents worldwide, advancing nuclear forensic capabilities, and building domestic and international partner capacity concerning emergency preparedness and response. CTCP's unique scientific and operational capabilities make it an integral part of the U.S. Government's layered defense against nuclear terrorism and nuclear proliferation.

CTCP manages the NEST, NNSA's multi-mission emergency response capability comprised of on-call technical specialists who are trained and equipped to respond to nuclear incidents and accidents worldwide. NEST's missions include both national security and public health and safety disciplines.

NNSA, in conjunction with the Federal Bureau of Investigation (FBI), supports regional counter-WMD teams in 14 major U.S. cities as part of the "Capability Forward" initiative. CTCP provides technology, equipment, and training in support of these teams to enhance regional capabilities to defeat nuclear and radiological devices, accelerating life-saving responses to a WMD event.

The fiscal year 2023 budget request addresses critical shortfalls in CTCP's capabilities to execute DOE's Primary Mission Essential Function (PMEF)-2, Respond to Nuclear Incidents. In coordination with interagency efforts to identify and address WMD response gaps, increased funding addresses staffing needs, ensures operational integration and full-spectrum training and exercises in accordance with interagency objectives, and supports technology development and infrastructure requirements.

Additional programmatic funding will also invest in new incident response expertise and technology; continue NEST equipment recapitalization efforts with planned procurement for replacement of diagnostic equipment and detection systems required for the public health and safety, counter-WMD, and nuclear weapon accident

response mission areas; and bolster CTCP efforts to counter nuclear proliferation through applied analysis, concept development, predictive modeling, and testing.

CTCP also contributes to the interagency National Technical Nuclear Forensics mission, a central pillar of the U.S. strategy to deter hostile States from providing nuclear material to terrorists. CTCP's fiscal year 2023 budget request includes \$43 million for this effort, including training and exercises for responders; procurement, maintenance, logistics, and technical integration of equipment; readiness to deploy pre- and post-detonation response and device assessment teams; and laboratory analysis of nuclear or radiological material.

EO provides both the structure and processes to ensure a comprehensive and integrated approach to all-hazards emergency management, thus improving readiness and effectiveness of the DOE Emergency Management System on a programmatic and performance level regardless of the nature of the emergency impacting the DOE/NNSA enterprise or its equities anywhere in the world. The fiscal year 2023 budget request supports Continuity of Operations, Continuity of Government, and Enduring Constitutional Government programs to advance the National Continuity Policy and ensure the continued performance and delivery of essential services under any circumstances. The fiscal year 2023 budget request also provides for 24/7/365 Consolidated Emergency Operations Center communications and coordination support to the DOE/NNSA Emergency Management Enterprise and Departmental Senior Leadership. The request also includes funding for investments in communications equipment and classified communications system improvements to support emergency operations and continuity infrastructure improvements.

NAVAL REACTORS APPROPRIATION

Advancing Naval Nuclear Propulsion

With over 40 percent of the Navy's major combatants being nuclear-powered, this technology remains critical to our national security posture. It provides the nation's submarines and aircraft carriers with unmatched mobility, flexibility, responsiveness, and endurance. The ability to maintain robust fleet capabilities on long-term missions is essential for the security of global trade and the security of our allies. The Office of Naval Reactors is the foundation of this national achievement in global security. Cutting edge advancements across all aspects of the Naval Nuclear Propulsion Program, from reactor plant development and design to the disposition of spent fuel, gives the U.S. Navy a decisive edge in naval warfare and enhances the security and reliability of the sea-leg of our nuclear triad.

The fiscal year 2023 budget request for Naval Reactors is \$2.08 billion, an increase of \$163 million, or 8.5 percent, above the fiscal year 2022 enacted level. The funding does not reflect the mandated transfer of \$92.75 million in fiscal year 2022 to the Office of Nuclear Energy for operation of the Advanced Test Reactor. The budget request supports the continued safe and reliable operation of the nuclear-powered fleet, and it supports investment in technology development to deliver improvements in propulsion plant performance, manufacturability, and affordability—for current and future warships. Funding also supports requirements for the office's three major projects: *COLUMBIA*-class ballistic missile submarine reactor systems development; construction of the Naval Spent Fuel Handling Facility in Idaho; and the refueling and overhaul of the S8G Prototype land-based reactor in New York for continued sailor training and technology testing.

Consistent, sustained funding is vital for the support of these projects and will allow Naval Reactors to meet current and future force needs. Close coordination with the Navy led to the start of construction of the *COLUMBIA*-class lead ship in fiscal year 2021. The S8G Refueling Overhaul is expected to reach completion in fiscal year 2023. The Spent Fuel Handling Recapitalization project at the Naval Reactors Facility in Idaho is making significant progress with an estimated completion in fiscal year 2026.

AUKUS

On September 15, 2021, Australia, the UK, and the U.S. announced the creation of an enhanced trilateral security partnership (AUKUS), focused on peace and security in the Indo-Pacific region. The three governments are currently 6 months into an 18-month consultation period to establish the most efficient path forward for the delivery of a nuclear-powered, conventional, submarine capability to Australia as expeditiously as possible. As part of the international working group developing non-proliferation and safeguards aspects of the AUKUS program, NNSA will provide technical advice to the interagency and our AUKUS partners on the full suite of requirements that underpin nuclear stewardship to implement strong safeguards measures and achieve the AUKUS objectives.

This cooperation is fully consistent with our obligations under the Nuclear Non-proliferation Treaty (NPT). The NPT does not prohibit naval nuclear propulsion. In our role in this trilateral partnership, we intend to implement the strongest possible nonproliferation standards to maintain the strength and integrity of the nuclear nonproliferation regime. Australia is not seeking, and the U.S. and UK are not and will not assist in any acquisition of nuclear weapons. Additionally, Australia has committed not to enrich uranium or reprocess spent fuel in the context of AUKUS.

FEDERAL SALARIES AND EXPENSES APPROPRIATION

The fiscal year 2023 budget request for Federal Salaries and Expenses (FSE) is \$496 million, an increase of \$32 million, or 7 percent, above the fiscal year 2022 enacted level. The increase in this account will support an additional 132 Federal Full-time Equivalents (FTE) above the fiscal year 2022 enacted level, bringing the total to 1,958. FSE increases will also support increased space and occupancy needs, travel costs, support service contractors, training, and other related expenses.

The NNSA Federal workforce is critical to the success of the Nation's nuclear security enterprise. NNSA's expanding mission requirements and pressing modernization and recapitalization needs require recruiting, training, and retaining a skilled Federal workforce with the appropriate capabilities to meet mission requirements and deliver on our objectives. This workforce represents some of the top minds on nuclear issues, consisting of a diverse team of scientists, engineers, project and program managers, foreign affairs specialists, and support staff that perform program and project management and conduct appropriate oversight of national security missions. NNSA's Federal workforce is distributed across the enterprise and can be found in eight States and Washington, DC.

NNSA currently faces two significant hurdles in achieving full staffing: retirement and private sector competition. As of fiscal year 2021 17.3 percent of NNSA FTE Federal staff are eligible to retire, a number that is expected to rise to 35.4 percent by fiscal year 2027. Additionally, in fiscal year 2021 the annual FSE attrition rate was 10.7 percent, higher than the average attrition rate of 8.9 percent over the past 13 years. NNSA also faces competition from the private sector for top talent in technical fields.

Combating these trends requires an aggressive, external hiring strategy. NNSA has utilized a renewed focus on virtual recruitment events that support hiring across the nuclear security enterprise in support of all program areas. In October 2021, NNSA initiated a pilot program for expedited hiring within 15 business days, from the time the program office selected a candidate to the time Human Resources provided an entry on duty date. NNSA is applying lessons learned from this pilot program to continue progress on a streamlined hiring effort. Finally, NNSA has expanded the effort to enlarge fellowship program candidate pools and employ available alternative hiring authorities to compress the hiring timeline for qualified candidates and increase the overall hiring rate.

NNSA's recruitment and hiring efforts will support mission and growth requirements and will continue to support the Administration's goals of promoting racial and economic equity as a way to foster scientific breakthroughs, research and development excellence, and enhanced national security.

CONCLUSION

NNSA's enduring responsibility is providing the United States with a nuclear weapons stockpile and naval nuclear propulsion systems that are the best in the world while simultaneously promoting nonproliferation and counterterrorism efforts to reduce overall nuclear risk. The President's fiscal year 2023 budget, informed by the 2022 Nuclear Posture Review, supports our efforts to keep the nuclear deterrent and naval nuclear propulsion systems safe, secure, reliable, and militarily effective. Recognizing the increasingly volatile geopolitical environment, NNSA must also stay resolute in sustaining and evolving our nuclear security, non-proliferation, and counterterrorism efforts to help offset and stay ahead of nuclear risks.

NNSA has a unique responsibility to provide an effective nuclear deterrent in a timely manner to protect our Nation and our allies. The fiscal year 2023 budget request funds the five life extension and modernization programs that support all three legs of the triad. In fiscal year 2023 the requested budget also supports significant investments in new production facilities for uranium processing and plutonium pit manufacturing at the fastest responsible pace. The budget request contains close to equal funding for stockpile management and production modernization, a true indication of the intent to accelerate activities by working on weapon design and production in parallel with infrastructure revitalization. The science and engineering support for the weapons program stays strong to allow for the continued develop-

ment of capabilities to design and certify the stockpile without testing and to stay ahead of threats.

The Defense Nuclear Nonproliferation budget request sustains our efforts to reduce nuclear risk by eliminating, minimizing, and securing nuclear and radiological materials. In addition, the DNN portfolio request recognizes the changing world by increasing support for policy and technology development aimed at the increased proliferation risks associated with the increase in nuclear energy around the world, preparing for an increasingly complex arms control and global stability environment, and by initiating a bioassurance program. Similarly, the increased budget request for the counterterrorism and counterproliferation program is responsive to the changing threat environment.

The Naval Reactors budget request recognizes the excellent stewardship provided over the years and continues to support the high priority needs to replace aging tools, build a new spent fuel handling facility, and support the *COLUMBIA*-class production schedule.

The challenges NNSA faces ahead are steep and we are mindful of the resources entrusted to it. For fiscal year 2023, NNSA scrubbed prior year balances and used available funds to offset some of the increased budget needs. NNSA, in partnership with Congress and our colleagues in the Departments of Energy and Defense, is steadfast in our commitment to fulfill vital national security mission and deliver our goals. We greatly appreciate your support.

PREPARED STATEMENT OF ADMIRAL JAMES F. CALDWELL

Chairman Feinstein, Ranking Member Kennedy, and distinguished members of the subcommittee, thank you for the opportunity to appear before you today and present the President's fiscal year 2023 budget for Naval Reactors. Your strong support for the work we do ensures our nuclear Navy can carry out vital missions around the world with agility, endurance, and firepower. As underscored by the unprecedented events currently playing out on the world stage, great power competition is here to stay, therefore it is vital for the United States that we maintain a robust naval advantage over our adversaries. Congress' support of our past efforts has allowed the Navy to maintain these advantages, and your partnership with the Navy is needed now, more than ever, as we work on the current and future endeavors in naval nuclear propulsion that are needed to protect the national security of the United States.

I have had the pleasure of serving as the Director of Naval Reactors for almost 7 years out of an eight-year tenure. Before that, I had the privilege of serving in many operational and staff roles throughout the course of my Navy career. As I reflect on these decades of service and our Navy's global standing, I am increasingly concerned that our competitive advantages over our near-peer rivals are diminishing. It is vitally important for us to focus on technology investment now; failure to do so could have catastrophic implications for our future Navy in a future fight. Rivals are pursuing military modernization programs aimed at achieving regional hegemony in the near-term and eroding United States preeminence in the long-term. All domains of the maritime environment are becoming increasingly contested, and to preserve freedom of the seas, deter conflict, defend allies, and protect our national interests, we must sustain and grow our naval warfighting capabilities at an accelerated pace.

As amplified in our latest National Defense Strategy, we cannot simply do more of what we've done in the past. New advancements and refinements in nuclear propulsion are needed as the Navy innovates to increase and expand our competitive advantage. Naval Reactors' historical investment in advanced technologies has given the nation an enviable position in the maritime environment; further investments, however, are necessary to maintain our technological edge well into the future. Our ships need to retain their advantage against future threats across multiple domains and must be affordable. We also need to be able to design and build our propulsion plants faster to ensure the Navy stays ahead of increasing demands, and we must do this more cost effectively. As the CNO has conveyed in his Navigation Plan, "there is no time to waste—our actions in this decade will set the maritime balance of power for the rest of the century." Our nation took a new step this past year when the President announced the AUKUS enhanced tri-lateral security partnership, directing a period of consultation with the objective of identifying the optimal pathway for delivering a conventionally-armed, nuclear-powered submarine capability to Australia by the earliest achievable date. This partnership creates an opportunity to amplify our naval power, strengthen a key ally and our own ship-building capability, and build the additional industrial and vendor base capacity our Nation needs. Through the consultation period, Naval Reactors is also focused on

strengthening our partnership with the United Kingdom, and ensuring Australia understands and establishes the strong foundation of capabilities necessary to properly steward nuclear submarine technology. Given the global threats we face, it is imperative that we ensure our closest allies remain relevant in the undersea domain.

Our success in the future will rest on the foundation of what we build today. Therefore, I want to highlight some of the many contributions of our nuclear fleet. Our ballistic missile submarines provide the most survivable leg of our nuclear triad and are essential to our ability to deter major warfare, and provide assurance to our allies. Our fast attack submarines operate with confidence, undetected, safeguarding vital commercial sea-lanes, and stand ready to protect American interests where needed. Our aircraft carriers provide our nation a credible, sustained ability to project combat power, deter conflict, and protect our interests around the world.

Lead ship construction for *COLUMBIA* Class is underway, which will allow the Navy to continue the seamless execution of the sea-based strategic deterrent mission that began over six decades ago. The USS *OHIO* (SSBN 726), lead ship of today's ballistic missile submarine fleet was commissioned over 40 years ago. This class will start to be replaced by the *COLUMBIA* Class in 2031 with lead boat delivery in fiscal year 2028. I remain focused on ensuring the transition between these two classes is uninterrupted—the sea based strategic deterrence mission is too important to fail. The *COLUMBIA* Class will be a bedrock of our national security posture for decades to come and will be the first submarine to operate for over 40 years on a single reactor core, an incredible testimonial to the technology investment that has occurred over the past decades.

In attack submarine shipbuilding, the Navy continues to work toward a steady cadence of *VIRGINIA* Class submarine delivery. I recently took part in sea trials on Pre-Commissioning Units (PCU) *MONTANA* and *OREGON*. This submarine class now makes up over one third of our operational attack submarines. The Navy is also assessing improvements to capability and lethality for future *VIRGINIA* Class submarines; these improvements will not only add capability to today's fleet but allow the Navy to prove candidate technologies that will influence our next-generation attack submarine. Naval Reactors is closely aligned with the Navy on all of these efforts. Along with the technologies being inserted for *VIRGINIA* Class submarines, Naval Reactors has renewed our focus and investment in advanced technologies which will pave the way for improvements in speed, energy density, and stealth for the follow on SSN(X) program. We are also focused on refueling up to seven *LOS ANGELES* Class submarines, helping to maintain our submarine force structure with boats that have the warfighting capability to contribute effectively to undersea missions.

In aircraft carrier shipbuilding, USS *GERALD R. FORD* (CVN 78) continues to make great progress and will soon be employed and operating alongside U.S. and allied forces. This phenomenal ship is ready to provide over a half century of naval presence around the globe. This past year marked a significant event in the employment of the *FORD* Class—Full Ship Shock Trials. The positive result of this testing is a tribute to the precision, rigor, and execution that go into the design, production, and delivery of the world's most capable aircraft carrier. The second ship of the *FORD* Class, the *JOHN F. KENNEDY* (CVN 79) continues propulsion plant testing and is on track for delivery to the Navy in 2024. Progress also continues on construction of *ENTERPRISE* (CVN 80) and *DORIS MILLER* (CVN 81), carriers in a two-ship buy that allows the Navy to realize important cost savings, while maintaining a steady, predictable workload within our vital industrial base.

NAVAL REACTORS OVERVIEW

This committee's support has enabled the safe operation of the nuclear fleet, substantial progress on our key projects, and our continued oversight and regulation of all areas across the Naval Nuclear Propulsion Program. Naval Reactors' budget request for fiscal year 2023 is \$2.1 billion. Your past support has allowed significant progress on our three major Department of Energy funded projects—*COLUMBIA* Class propulsion plant development and production, the refueling overhaul of our research and training reactor in New York, and the construction of the Naval Spent Fuel Handling Facility in Idaho. When I first arrived at Naval Reactors in 2015, these three projects had not yet hit their peak funding. Over the course of the past several years, these projects have been a major focus for the Naval Nuclear Propulsion Program. We have managed and lead the way through many challenges, and today, I can confidently say that the development and production of the first *COLUMBIA* Class propulsion plant is proceeding in support of lead boat construction; and the refueling of our research and training reactor will complete within fiscal

year 2023. With your support, the Program also continues to make significant progress on construction of an incredibly important Naval Spent Fuel Handling Facility. While we are staying focused on completing these efforts, we are also preparing for the future with renewed emphasis on advanced and innovative technologies.

MAJOR PROJECTS

COLUMBIA Class Propulsion Plant

The *COLUMBIA* Class ballistic missile submarine remains the Navy's number one acquisition priority. Naval Reactors is supporting lead ship construction and is delivering the life-of-ship reactor core and the electric drive propulsion system for the *COLUMBIA* Class program. The fiscal year 2023 budget includes \$53.9 million that will allow continued support for lead ship propulsion plant design and safety analysis work required for lead ship reactor testing and delivery.

S8G Prototype Refueling Overhaul

The fiscal year 2023 budget request includes \$20 million toward final execution of the refueling and overhaul of the New York land-based prototype, which will enable an additional 20 years of Naval Reactors' commitment to research, development, and initial operator training. Over the course of the past 3 years, the project has worked through performance and testing equipment challenges, and in April of last year met a key milestone—installation of the new reactor core. This reactor core, called the Technology Demonstration Core, includes *COLUMBIA* Class type fuel modules as part of testing and demonstrating the manufacturability necessary for production and delivery of the *COLUMBIA* Class reactor core. We continue to provide strong oversight to improve cost and schedule performance, and the project will complete in fiscal year 2023. I look forward to providing the final update on this multi-year project in next year's appearance before the Committee.

Spent Fuel Handling Recapitalization Project

Naval Reactors is constructing the Naval Spent Fuel Handling Facility (SFHP), located at the Naval Reactors Facility in Idaho. The facility is critical to our mission to manage naval spent nuclear fuel and support aircraft carrier and submarine fleet requirements. The fiscal year 2023 budget request includes \$398 million for continuation of this project through several key milestones. Economic conditions influenced by the COVID-19 pandemic and the discovery of unexpected bedrock conditions beneath the facility's foundations have presented significant challenges for us. To address these challenges, we evaluated actions necessary to ensure the overall Project milestones remain achievable, including additional resources (e.g., extended/added shifts, parallel and fast-tracking of work efforts) and additional funding to mitigate impacts to current and future construction subcontracts. Consistent with these actions, I approved a revision to the SFHP Performance Baseline in fiscal year 2021. Funding in fiscal year 2023 will be critical to implementing our construction sequence. I remain committed to keeping the committee informed of our progress, and actions to mitigate construction challenges, as we aggressively manage and oversee this complex and large-scale infrastructure project.

TECHNICAL BASE FUNDING

In addition to our three priority projects, Naval Reactors maintains a high-performing technical base. The technical base is the set of fundamental skills and capabilities necessary to safely and effectively support the nuclear Navy. It includes a foundation of specialists in nuclear materials, nuclear physics, thermal-hydraulic testing, acoustics, electrical design, software development, system development, refueling, and other specialized skills, along with the associated facilities and laboratories to conduct our work. The people and activities that make up our technical base are leveraged for our priority projects but also perform essential work to support the operating fleet and ensure our day-to-day technological advantage over our competitors. Specifically, the technical base: (1) addresses emergent needs and challenges of our nuclear fleet, (2) executes nuclear reactor technology research and development that supports improving today's fleet and future capabilities, and (3) modernizes critical infrastructure and reduces the Program's legacy environmental liabilities. This base also supports the lean yet highly effective Federal workforce that provides the oversight necessary to carry out this important technical work safely and efficiently. These activities provide 24-7 support to the globally deployed nuclear-powered Navy. Attracting and retaining top talent is critical to our technical base's ability to fulfill and mature our mission amidst a wide array of challenges and new demands in this era of strategic competition. The engineers and scientists

at our Naval Nuclear Laboratory and nuclear capable shipyards are national treasures, who are in high demand from other areas of our economy. We continue to work with the leadership of our labs and private shipyards to identify innovative means to stay competitive in this aggressive talent market.

Program Direction

Our small but highly skilled Federal workforce is critical to execution of our responsibilities. With the fiscal year 2023 Program Direction request, I remain highly focused on attracting, developing, and retaining a talented and diverse workforce to oversee and manage a wide array of work across the Naval Nuclear Propulsion Program to ensure mission success. The talented and dedicated people at our Washington, DC headquarters and field offices are absolutely essential to our strong centralized management and oversight of the important work we perform for our Nation.

Building ships that have over forty years of expected life requires staffing continuity to ensure the Nation has a workforce with the deep technical knowledge needed to execute Naval Reactors' cradle-to-grave responsibilities of these robust systems. I must have sufficient Federal staffing to meet the demands of sustaining and improving today's fleet while simultaneously growing our future capabilities. The cumulative effect of personnel costs growing above inflationary rates and an increase in recent senior level retirements has impeded our ability to reach this goal and challenged our ability to maintain our staffing levels. The market for this talent is exceptionally competitive. Increasingly complex systems, new and innovative research efforts, and growing cyber and other vulnerabilities require additional expertise and new perspectives that can only be gained through reaching our full personnel requirements. I will continue to communicate with the committee on our requirements and progress in reaching our related staffing goals. In concert with our renewed focus on research and development that I have highlighted over the last several years, we need to find new ways to bring the nation's top talent into Naval Reactors and retain this talent to transition technical innovations into our submarines and aircraft carriers. I respectfully request Congress' support, which will allow me to recruit, select, develop, and retain the talented workforce that was started by Admiral Hyman Rickover many decades ago and that has proved to be crucial to the success of the Program.

Research and Development

Our research and development strategy represents a renewed investment in cutting-edge technologies aimed at reversing an eroding capability gap with strategic adversaries like China and Russia. Technology investment must be reinvigorated today to have new technologies ready for future classes of ships and to lower costs and reduce construction timelines. It should be noted that these investments also enhance and improve the performance of today's fleet; this is especially important given the increasing competition in the global maritime environment. Our critical research and development is conducted by the dedicated and talented teams of people at our Naval Nuclear Laboratory sites—the Bettis Atomic Power Laboratory in Pittsburgh, the Knolls Atomic Power Laboratory and Kesselring Site in greater Albany, and the Naval Reactors Facility in Idaho.

Our first priority is always support of today's fleet. Our labs perform approximately 4,000 technical evaluations annually that enable Naval Reactors to thoroughly assess and respond to emergent issues, thereby keeping our ships mission-ready while ensuring nuclear safety. These efforts are essential to keep our ships at-sea operating abroad for longer periods of time, our carrier strike groups globally engaged, and ballistic missile and attack submarines ready to respond at any time.

Beginning with last year's fiscal year 2022 budget, Naval Reactors has embarked on a path to identify and develop new technologies for inclusion in the next generation of nuclear powered ships while simultaneously delivering the enhanced capabilities to the existing fleet mentioned earlier. We are pursuing advanced reactor core and fuel systems, advanced manufacturing and inspection techniques, next-generation instrumentation and control architectures and sensors, and asymmetrical applications of emerging technologies (e.g., advanced power conversion, artificial intelligence, data analytics, additive manufacturing, and advanced robotics). These advancements have the potential to deliver both greater capability and lower acquisition and lifecycle costs, while ensuring the Navy is constantly improving our advantage and innovating. I commit to further engagement with the committee on these advanced technology maturation efforts to enhance understanding and support for the actions described above. I take great pride in highlighting our innovative and new technologies and how we can transition them into meeting requirements for the Fleet of tomorrow.

I want to assure the committee that our investments are supported by a comprehensive and rigorous planning effort we undertake with our partners at the Naval Nuclear Laboratory. Our annual work execution plans are derived from this comprehensive alignment, and I personally review and approve each plan to ensure we are making the right investments and tradeoffs in all areas of our business.

Facilities and Infrastructure

Our Naval Nuclear Laboratory facilities and infrastructure are essential in carrying out Naval Reactors' mission. This year's budget request supports continuing our recapitalization of Naval Nuclear Laboratory facilities and infrastructure systems, many of which have supported the Program since its inception over 70 years ago. Specifically, this budget includes a consolidation and recapitalization of our thermal hydraulic testing capabilities that will advance cutting-edge technologies and improve testing efficiency. Without these recapitalization efforts, we will be unable to effectively support nuclear fleet operations and advanced research and development efforts at the level required by this complex technology. We are ramping up our efforts in decontaminating and decommissioning (D&D) older facilities that have been in existence since the start of the Program in the early 1950s. We have approximately \$8 billion in environmental liabilities requiring D&D efforts. Over one-third of this estimate is associated with the cost to remediate and demolish inactive facilities and infrastructure at the Naval Nuclear Laboratory sites. We continue to retire these liabilities in an environmentally responsible and cost-effective manner to support best use of our funding. I look forward to future engagement with the committee to discuss our specific actions and tangible examples of Naval Reactors' long-term plan to reach our goals. Through our established partnership with the Department of Energy Office of Environmental Management (DOE-EM), we are leveraging their experience in efficient, safe, and cost-effective remediation of environmental liabilities across the complex. I am pleased with the collaboration on this effort with my partners in DOE-EM.

AUKUS

In September of last year, President Biden announced an enhanced trilateral security partnership between Australia, the United Kingdom, and the United States (AUKUS). The three governments are engaging in an 18-month consultation period to seek an optimal pathway for delivering a conventionally-armed, nuclear-powered submarine capability to Australia at the earliest achievable date. Naval Reactors is playing a key leadership role in developing this plan to ensure that our nation's pre-eminent expertise is applied to the nuclear-powered submarine initiative. We are now more than 6 months into this consultation period and are focused on ensuring Australia understands the full scope of capabilities necessary to design, build, operate, and maintain a nuclear navy, as well as properly dispose a nuclear powered ship at the end of service. This includes an in-depth analysis of the trilateral partners' existing regulatory frameworks, as well as the existing educational, industrial, and technical capabilities, and capacities needed to identify the optimal path forward. This effort involves emphasizing to Australia the key leadership roles, labor talent, and infrastructure investments they will need to contribute to bring this to reality. In February, I along with a team of subject matter experts from Naval Reactors and the United Kingdom traveled to Australia to assess their current capability. During this trip, I met with senior Australian government officials. As part of our discussions, we emphasized that obtaining a nuclear powered submarine capability is a long road which requires steadfast commitment to the highest levels of stewardship. While my number one priority is supporting our current and future nuclear fleet, the AUKUS efforts are being supported by a small cadre of experts who are responsible for ensuring the critical facets of this consultation are completed effectively. The foundation on which this effort is built is made up of our people, our technology, and the facilities that support our own Naval Nuclear Propulsion Program. While Australia is funding this consultation period, Congress' support of Naval Reactors' fiscal year 2023 budget request is vital to support our primary mission and allow the Naval Reactors leadership team the ability to support key activities during the consultation period.

CONCLUSION

The Navy's ability to maintain mastery of the undersea domain and sustain a formidable forward presence and its resultant value cannot be simply assumed. Naval nuclear propulsion is an incredible but unforgiving technology, and must be treated appropriately, with a constant focus on safe operation. Naval Reactor's cradle-to-grave responsibility to manage this technology is paramount, and I assure this committee that I will balance investments in today's fleet with the requirements of a

future fleet, carefully steer future cooperation efforts, and preserve the focus on providing effective naval nuclear propulsion for the United States Navy. I appreciate the strong support this program receives from Congress and respectfully urge your support for our fiscal year 2023 budget request.

B83 MEGATON NUCLEAR BOMB

Senator FEINSTEIN. Thank you very much.

We'll proceed with the questions then. Deputy Secretary Adams, in 2018,—excuse me—I wrote to then Secretaries Mattis and Perry about my concern with the Trump Administration's plan to retain the B83 Megaton Nuclear Bomb. In short, it appeared to me to be unnecessary.

While this Administration did request funding to retain the B83 in fiscal year 2022, I was pleased to see its planned retirement in the fiscal year 2023 budget request, which mirrored the Biden Nuclear Posture Review.

Deputy Secretary Adams, what is the current plan for the B83's retirement?

Dr. ADAMS. So the current plan, first of all, is to ensure the safety of that weapon while it is still in the field. We will be spending appropriately on that.

The second part of the plan is to retire it as soon as practical in accordance with the Nuclear Posture Review.

Senator FEINSTEIN. Well, I think there was some adequate notice last year that at least I was concerned with it. What is the plan for that weapon?

Dr. ADAMS. The plan is to retire it.

Senator FEINSTEIN. And when would that be?

Dr. ADAMS. I don't have the details, but I can certainly take that for the record.

[The information follows:]

The 2022 NPR, led by the U.S. Department of Defense, concluded that the B83-1 should be retired without executing a program to extend the system's life. A cost-benefit analysis was conducted, and the NPR determined the combined age and complexity of the weapon outweighed the benefits of retaining the weapons in inventory. The specific retirement date of the B83-1 is classified and will be provided to the committee through the appropriate means to transmit classified information.

Senator FEINSTEIN. Well, if you would take it and just make note that I'm interested in it. I will follow it. It seems to me this is a weapon that should be retired or a bomb that should be retired. So I'd appreciate that.

NON-PROLIFERATION PROGRAMS

Administrator Hruby and Deputy Secretary Hinderstein, the Nonpro Programs have a good deal to accomplish. This budget request doesn't adequately fund these essential programs and NNSA recently announced it plans to reassess Nonproliferation's priorities.

Administrator Hruby and Deputy Secretary Hinderstein, can you each describe your vision for the future of NNSA's Nonproliferation Program?

Ms. HRUBY. Thank you, Senator. I'll start and then ask Corey to add.

So we have some big challenges, as you mentioned. We have to figure out a new approach to Russia and China. We have to reas-

sure our allies and partners that the Nonproliferation Regime is still working, and we have to look at emerging threats, especially in light of North Korea's actions, Iran's potential not re-entry into the JCPOA (Joint Comprehensive Plan of Action), and other activities around the world.

So we think we have a solid budget request to do that. We're starting some new programs, including programs that focus more on nuclear energy around the world to make sure that it isn't a proliferation risk, and I'll let Corey talk about that, and we also have a small request for a new bio-assurance program.

Ms. HINDERSTEIN. Thank you, Madam Chairwoman.

I think it's really important when we look around the world to recognize that we have invested and will and must continue to invest in our nonproliferation, nuclear security and counter-proliferation programs.

We feel like we have placed a budget request in front of you that meets our most pressing needs, but we also recognize that the world in this space is changing quite quickly.

As the Administrator said, we are focused on making sure that the threats that we understand can be met and countered and that we are anticipating the next threats. We cannot just look at what the problem was before, we have to look at what the problem's going to be tomorrow and for that reason, we're investing in our science and technology base, our research and development base, and our partnership with allies and other partners around the world, including the important international organizations that are able to be operationalized both every day and in the moment of crisis, such as what we've faced with Russia's invasion of Ukraine and their reckless behavior in Ukraine around nuclear facilities.

Senator FEINSTEIN. Thank you very much.

Senator Kennedy.

COLUMBIA CLASS BY 2026

Senator KENNEDY. Thank you, Madam Chair.

Thanks again to all of you for being here. Admiral, Columbia Class, we need it. We need it by 2027 which is when we're supposed to have it. Are we on schedule? Tell me we're going to have it by 2026.

Admiral CALDWELL. Yes, sir. Thanks for the question and thanks for the support of this subcommittee for my programs. It allows me to deliver what I need to for the U.S. Navy.

We are on pace to deliver Columbia on schedule. Now my responsibilities there include the reactor plant and the propulsion plant. On the reactor plant I'm responsible for designing and delivering the reactor core, which is designed to last for over 40 years. That's a pretty heavy technological lift. That core is under manufacture right now and we are on pace to deliver that core in advance of the need for the shipyard's construction schedule.

I'm also responsible in the reactor plant for delivering the heavy components, the large steam generators, reactor vessels, things like that, and thanks to the prior support of this subcommittee I was able to complete the designs and order those materials on schedule in fiscal year 2019. In fact, we're on pace to deliver those to support the construction of Columbia.

In fact, recently I saw the reactor vessel in the shipyard already up there.

There's a lot of other work that goes on to the reactor safety analysis and the manuals that go with the reactor plant. Those are all on the pace that we need to.

The other part of my responsibility is the Department of Navy-funded responsibility to deliver the electric drive. This ship will have——

Senator KENNEDY. Excuse me, Admiral. Give me about 30 more seconds.

Admiral CALDWELL. Yes, sir.

Senator KENNEDY. I'm sorry to interrupt you, but I've got some questions for——

Admiral CALDWELL. All right, sir. Anyway, we're on pace, sir, and thanks to you for your support.

NUCLEAR-ARMED SEA-LAUNCHED CRUISE MISSILE (SLCM-N)

Senator KENNEDY. Okay. I don't know whether to call you Madam Secretary or Madam Administrator.

Madam Secretary Administrator, how about that, tell me why you want to cancel the submarine launch cruise missile.

Ms. HRUBY. Senator, the decision to cancel the SLCM (submarine-launched cruise missile) was made in the 2022 Nuclear Posture Review by the Department of Defense. Our job is to support, you know, to deliver warheads for the Department of Defense, and our budget request is consistent with that.

Senator KENNEDY. You agree with the decision?

Ms. HRUBY. Well, it's not my job to agree or to disagree with the decision. I think there are solid arguments on both sides of this decision——

Senator KENNEDY. Well, you don't have to follow it, do you?

Ms. HRUBY [continuing.] And that the capability——

Senator KENNEDY. You're not bound by what they're recommending, are you?

Ms. HRUBY. My program of record has to be consistent with what the Department of Defense wants in their Nuclear Program.

Senator KENNEDY. Mm-hmm. So you can't call them up and say I think you're making a big mistake here? What are they going to do? Hang up on you? No, I don't think so.

Ms. HRUBY. Well, I think they will tell me that's not my job.

B-83 MEGATON BOMB

Senator KENNEDY. Mm-hmm. I think you can handle yourself, Madam Secretary. I believe you could.

Why do you want to retire the B83 early?

Ms. HRUBY. Again, a similar answer that was the decision in the 2022 Nuclear Posture Review. It is a very old weapon and the decision was made to immediately retire it in the Nuclear Posture Review and the NNSA intends to do that as the Administration decided.

Senator KENNEDY. Are there any strategic targets for which only the B83 can destroy?

Ms. HRUBY. My understanding, and again this is not the heart of my job, but my understanding is that the number of targets the

B83 is credible for has been shrinking and any more than that would need to be in another session.

Senator KENNEDY. An underground nuclear facility could be targeted by B83, couldn't it?

Ms. HRUBY. Again, I don't think that's a discussion we can have in this forum.

PLUTONIUM PIT PRODUCTION

Senator KENNEDY. Yes. All right. Talk to me about the plutonium pit production capability. Our stockpile's aging. What are we going to do?

Ms. HRUBY. That's the heart of why we're developing the capability to produce plutonium pits again and we're doing this in a new manner. We're doing it at two sites, at the Los Alamos National Laboratory and also at the Savannah River Site.

We think this approach will provide the resilience we need going forward and the adaptability that we'll need going forward, but it's a big lift to build a production facility for nuclear materials and we are making good progress on that at Los Alamos and we're finishing the design for Savannah River.

Senator KENNEDY. I'm just going to close with this comment. Sometimes people lie and sometimes they run countries and I think the Ayatollah in Iran habitually lies and if you get rid of that B83 that you want to eliminate, I think you're going to make him smile and I don't think that's in America's interests and I really think you need to reconsider.

Madam Chair, I'm done.

Senator FEINSTEIN. Thank you very much.

Senator Heinrich.

LOS ALAMOS NATIONAL LAB

Senator HEINRICH. Thank you, Madam Chair.

Administrator Hruby, as I know you're aware, yesterday the Cerro Pelado fire was finally over 70 percent contained, a real dramatic improvement from a couple weeks ago, when, given wind conditions, we were all concerned about a run towards Los Alamos.

Can you talk to me about the ongoing efforts between NNSA, the county, the Forest Service, and the Park Service to just coordinate efforts and make sure that we have the maximum defensible space for the lab?

Ms. HRUBY. Yes, Senator Heinrich. Thank you for that question.

We have paid close attention and continue to pay close attention to the fire around Los Alamos. I'm happy to say over the last 3 or 4 years Los Alamos has done a terrific job of clearing fuel on the laboratory property and as a result of this fire actually lent the machines to help clear fuels to the Forest Service and other areas that would provide even a greater barricade to the fire taking hold at Los Alamos.

Senator HEINRICH. I was there on Friday and noticed a lot of work being done sort of in the moment and I think that to the extent that we can make sure that we have those treatments done well before we have an acute event and that means also coordinating with other agencies to make sure that those interagency boundaries are treated.

COMPETES/USCIA (CHIPS AND SCIENCE ACT)

As you know, we're in the middle of trying to resolve differences now between the House and Senate-passed competitiveness bills, COMPETES or USICA or whatever we decide to call them, but the COMPETES bill includes the Restore and Modernize our National Labs Act which authorized just a little over \$30 billion for infrastructure in the labs.

Talk to me about why that's important, what the infrastructure needs are, and why we need to keep that in the legislation as we go through conference, what it will actually mean for American competitiveness and the labs specifically.

Ms. HRUBY. Thank you, Senator Heinrich, for that question.

As has already been said at this hearing, but we are spending a lot of money on revitalizing our production capabilities and we don't want to make the mistake that we made before where we paid a lot of attention to the labs and we didn't pay attention to production. We in fact want a balanced program, but it's hard to do that within the constraints of the budget that we have today.

So this bill that you're talking about would provide us the ability to actually reinvest in the laboratory science capabilities for our NNSA programs and there are many things that we need to do and want to do.

We're currently working hard at the Nevada National Security Site to build new capabilities for sub-critical experiment, but we know we need reinvestment in our inertial confinement fusion programs. We know we need investments in combined radiation experiments at Sandia and so such a bill would be tremendously beneficial to keep our R&D programs second to none.

INERTIAL CONFINEMENT FUSION

Senator HEINRICH. I have heard concern from the labs regarding the fiscal year 2023 request in inertial confinement fusion as well as super-computing and sub-critical experiments.

Are you concerned with the budget levels in any of those areas and the potential impact on the ability of the lab to fulfill any of its basic missions in those areas?

Ms. HRUBY. The answer is yes. This is something that Marv and I talk a lot about, how we create room for investment in science given all the deliverables. At the same time we think that the budget is adequate to do what we have to do, the main deliverables in 2023, but we have to make sure that we have a long-term stable plan and it's a lot easier to invest now than it will be after we get past the point that investment can help, and I don't know if Dr. Adams wants to say anything.

Dr. ADAMS. Very quickly, I'll add that we are looking to develop a long-term plan for the ICF capabilities that will involve judicious reinvestments in existing facilities to upgrade them. It involves maintaining them so that they can continue to deliver for stockpile stewardship, but in the longer term, some of these facilities need to be replaced and developing that long-term strategy is where we're focusing right now. At that point then we'll know how and where to invest.

Senator HEINRICH. Thank you.

PLUTONIUM PIT PRODUCTION

Senator FEINSTEIN. Administrator Hruby, in April I believe you testified that NNSA is still working with the Department of Defense to decide whether 80 plutonium pits per year by 2030 is the correct number we'll need to meet strategic need.

In the meantime, I'm told we're not going to be able to produce 50 pits annually at the Savannah River site until 2032 or 2035 at the earliest.

You've also said that no amount of money will achieve the 80 plutonium pit per year capability faster.

So here's the question. In light of these challenges, what steps is NNSA taking to strengthen pit production management?

Ms. HRUBY. Everything you said is true, although we're not re-examining the requirement for 80 pits per year by 2030. That's a requirement that's given to us by the Department of Defense and the Nuclear Weapons Council.

The things that we're doing, we are trying to make sure that we understand the supply chain issues that may slow construction when we're ready to begin construction. So we are asking to pull money in from out years earlier so that we can buy materials that we know might be supply chain issues, for example, glove boxes, and so that as soon as we complete design, we think we can move apace to do the construction.

Senator FEINSTEIN. Thank you.

Senator Kennedy.

Senator KENNEDY. I'm going to defer, if it's okay, Madam Chair, to my colleague from Tennessee.

Senator FEINSTEIN. Senator, please go ahead.

URANIUM PROCESSING FACILITY

Senator HAGERTY. Thank you, Senator Feinstein, Senator Kennedy. Thank you for holding this hearing.

To our witnesses, thank you for being here, all of you.

I'd like to start out with a question about the Uranium Processing Facility, something that I've been aware of, underway for many years in my home State of Tennessee. It's one of the Federal Government's largest construction projects and over the past 8 years this subcommittee has provided significant funding, including \$600 million in fiscal year 2022, that was \$75 million above the President's budget request.

This year your budget requests \$62 million to continue the construction of UPF (Uranium Processing Facility) and the project has a long history which includes review teams and the Government Accountability Office. The project was originally supposed to be delivered by 2025. Now I understand the new delivery date has been pushed out to August of 2026, is that correct, Ms. Hruby?

Ms. HRUBY. That is correct.

Senator HAGERTY. And what will the impact then be on the goal of having it cost no more than \$6.5 billion if we're going to extend the project timeline out into another year?

Ms. HRUBY. we have a review going on right now to look at what the cost implications will be for the extension and we should have those numbers later this summer.

I do want to say this about the UPF. It's a very large long-term construction project that's very difficult to do and we were doing that during COVID. The heart of that construction occurred during COVID. So I just want to say that I think given the one-of-a-kind construction for a large \$6.5 billion facility that occurred over 8 years that an 8-month construction delay and what we anticipate to be a relatively minor cost increase is a commendable accomplishment.

I mean, obviously we'd like to be exactly on time,—

Senator HAGERTY. Sure, sure.

Ms. HRUBY [continuing.] But given the conditions that we were working in, I still think this is a tremendous success for the country.

Senator HAGERTY. The scale of the project has concerned me for many years. I was Commerce Secretary in my home State when the planning process was going on for this, an ambitious project, one that needed to be done. I'd love to hear your thoughts on the importance of the project now in terms of completing it because I think it'll be good to have on the record.

Ms. HRUBY. Yes. The Uranium Processing Facility, when it's complete, will allow us to take down buildings that are 70 years old and that really are not safe to operate well into the future. We would have to invest an incredible amount of money in them.

So this is really about modernizing an infrastructure that we anticipate needing to use for generations to come.

Senator HAGERTY. I think we're excited in our home State about the potential for that space as it frees up because it has great economic development potential and I think it will help us yield a lot more economic activity from that site, as well.

One of the things that I wanted to talk with you about is the management of the project. I know this is a long-term project, one that is unique, but my understanding is that you currently have a group of independent project management experts that oversee the project and they report directly to you.

I think this group is one of the key reasons that the NNSA construction projects were removed from the GAO's (Government Accountability Office) High-Risk List. Now I understand from the budget request that you're going to reorganize this, get away from that structure and go back to a structure where you don't have this accountable group on top of it.

Can you explain to me the thought process there and how you're going to obtain accountability to see this project through to the end?

Ms. HRUBY. Well, the reorganization that you're referring to is intended to actually increase our attention to construction projects. We're going to have some of the largest construction projects in the U.S. Government not only now but into the future and I want a continuous stream of infrastructure and construction project management that we will have in the new organization and as you know, the person who's been managing that is about to retire. I want to attract the absolute best construction manager in the U.S. Government to that job and I've created a position that I think will allow us to do that. It will still have the same reporting chain.

Senator HAGERTY. Okay. So it'll report directly to you. They'll still have direct oversight. That's my parochial interest here is just making sure that we have the type of talent you describe watching this project as carefully as they have been to make sure that now the new delivery date in August of 2026 is met.

Thank you very much. Thank you, Madam Chair.

Senator FEINSTEIN. Would you like to have another round?

COLUMBIA CLASS SUBMARINE

Senator KENNEDY. I would. I just have a couple more questions,——

Senator FEINSTEIN. All right.

Senator KENNEDY [continuing.] Madam Chair, if that's okay.

Senator FEINSTEIN. Why don't you go ahead?

Senator KENNEDY. Okay. Admiral, I had to cut you off for the sake of our time constraints. I want to let you finish, but I do want to ask you one more question about the Columbia Class submarine.

Can you just briefly explain the importance of that, particularly in light of our new working relationship with Australia and others?

Admiral CALDWELL. Well, sir, first off, the Columbia Class submarine recapitalizes our Trident Ballistic Missile Submarine Force. Today, we have 14 of those and we will recapitalize it with 12 Columbia Class submarines.

The fact that I'm building a life of ship core means that I can do the mission with 12 ships versus 14. That saves the U.S. Government \$40 billion in total ownership costs. That's huge, but importantly that is the foundation for our national defense.

It is the Number 1 investment priority in the U.S. Navy and it is the foundation for our strategic deterrent force.

Now specifically that doesn't pertain directly to Australia but all of the things that I do to deliver the Columbia Class submarine to provide the nuclear stewardship to provide the material and all that expertise, that all enables the support that my program provides to the U.S. Navy as well as the U.K. Navy because we're heavily involved in supporting the Dreadnought work that goes on to recapitalize their SBN and that will all be leveraged to support our new and evolving relationship with the Australians.

Senator KENNEDY. You were about to go into a new topic when I rudely interrupted.

Admiral CALDWELL. I'll hit it real quickly, sir.

Senator KENNEDY. You go right ahead.

Admiral CALDWELL. The Columbia is going to be powered with an electric drive motor versus a steam turbine on earlier ships. That electric drive motor, we know that was a big important step. So we took a lot of steps to derisk that and my team built a facility that has all the major components of the engine room, full size, prototypical, and we've run that.

In August of 2020 we ran that at full power and got a heat run and it performed superbly, and then we've had a 100-hour endurance run.

With that effort, we now have taken the final design turn and we are building the electric drive motor and the supporting components and they will be delivered to the shipyard to support the con-

struction and again that's all enabled by the support of Congress. Thank you, sir.

Senator KENNEDY. Okay. Is there anything else anybody would like to share with us? You've been well coached there. I understand never volunteer. I don't mean that as a criticism.

When I was a young lawyer, I lost a couple cases that I would have won if I would have just shut up.

I want to thank you all for coming. We're looking forward to working with you. I appreciate all the hard work that went into this budget, this proposed budget, but I really think we need to sharpen our pencils and do some more, and I do have some concerns in light of the changing circumstances in terms of geopolitical risk.

Thank you, Madam Chair. I am done.

Senator FEINSTEIN. Well, thank you.

I want to say thank you to Administrator Hruby, Deputy Administrators Adams and Hinderstein, and Admiral Caldwell. We appreciate your being here.

ADDITIONAL COMMITTEE QUESTIONS

The hearing will remain open for 10 days. Senators may submit additional information or questions for the record within that time if they would like and the subcommittee requests that all responses to questions for the record be provided within 30 days.

[The following questions were submitted to the Department, but the questions were not answered by press time.]

QUESTIONS SUBMITTED TO HON. JILL HRUBY

QUESTIONS SUBMITTED BY SENATOR JEFF MERKLEY

Question. What work has been completed and is planned on the low enriched uranium (LEU) research and design program that with the funding Congress has already provided? In 2016, NNSA submitted to Congress a conceptual plan with a 15-year timeline from fiscal year 2018–fiscal year 2032. Since then, which activities in the timeline (e.g., irradiation of HEU fuel samples and/or LEU fuel samples, and post-irradiation examination) has NNSA completed, and how much has that shortened the remaining timeline for Navy LEU fuel system development, if Congress were to provide sufficient funding?

What more needs to be done to complete Navy LEU fuel system development? What is the timeline for completion of an LEU fuel system? What is the total estimated cost for development of a Navy LEU fuel system?

Have the Office of Naval Reactors (NR) and Office of Defense Nuclear Non-proliferation (DNN) resolved any obstacles to information sharing between them that is necessary for DNN's research and development of Navy LEU fuel? If not, what obstacles remain, what is planned to overcome them, and what additional resources are necessary to do so?

What discussions has the NNSA had as part of the Australia-United Kingdom-United States (AUKUS) security pact about providing LEU naval reactors to Australia? Have any concrete plans or steps been taken to provide LEU naval reactors to Australia?

QUESTIONS SUBMITTED BY SENATOR JOHN HOEVEN

W80-4

Question. The budget request includes significant funding for the W80-4, which is the warhead that will be placed in the Long Range Stand Off weapon, or LRSO, that the Air Force is developing.

Can you provide an update on the schedule for the W80-4?

Are you able to keep up with the schedule the Air Force is using to develop the LRSO missile?

W87-1

Question. The W87-1 will support the deployment of the Air Force's next intercontinental ballistic missile, now known as the Sentinel. The W87-1 will require the production of new plutonium pits, so the investments we are making in pit production directly support the development and deployment of this warhead.

Do you expect that we will be manufacturing new plutonium pits in time to support the initial deployment of the Sentinel?

Plutonium Pit Production

Question. Congress mandated a goal of producing 80 new plutonium pits per year by 2030 in order to support our nuclear modernization efforts and ensure that we have the capability to replace our aging stockpile. NNSA has stated publicly that it will not meet the goal of producing 80 new pits per year by 2030 for a variety of reasons.

What support do you need from Congress to accelerate progress toward the production of 80 pits per year?

Sea-Launched Cruise Missile-Nuclear (SLCM-N)

Question. The administration has elected to cancel the sea-launched nuclear cruise missile, despite the importance that program would have in deterring Russia and China. The budget request also does not include any funding for development of a warhead that would be placed on that missile, even though this committee provided \$10 million to begin that project in fiscal year 2022.

How much money would be required in fiscal year 2023 to keep the warhead for a sea-launched cruise missile on schedule, should Congress decide to retain the sea-launched cruise missile program?

QUESTIONS SUBMITTED BY SENATOR BILL HAGERTY

Question. On Monday, May 16, 2022 NNSA announced that it canceled the solicitation for the management and operations of Y-12 and Pantex, terminated the award announcement it made in November 2021, and intends to hold new competitions for separate management contracts of the two facilities individually.

I want the experts at NNSA to make the decision based on the best information available while following all applicable laws and regulations. From the beginning of my term, my only advocacy has been for that decision to be made as quickly as possible.

This is a big decision, one that my constituents have been waiting on for a long time.

Administrator Hruby, can you further elaborate on your decision to separate these two contracts and how it will improve management, specifically at Y-12 National Nuclear Security Complex?

Administrator Hruby, can you discuss what the new timeline, based on Monday's announcement, looks like for awarding a final Management & Operations Contract at Y-12?

What effect, if any, will this decision have on the 5 life extension programs NNSA is currently undertaking?

Finally, can you discuss what budgetary implications this decision will have at Y-12 in the coming years?

CONCLUSION OF HEARINGS

Senator FEINSTEIN. Thank you for being here, and we will stand adjourned. Thank you. The meeting is adjourned.

[Whereupon, at 10:44 a.m., Wednesday, May 18, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2023

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

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—The subcommittee was unable to hold hearings on nondepartmental witnesses. The statements and letters of those submitting written testimony are as follows:]

PREPARED STATEMENT OF THE AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY

Chair Feinstein, Ranking Member Kennedy, and members of the subcommittee, the American Council for an Energy-Efficient Economy (ACEEE) appreciates the opportunity to provide written testimony on the appropriations and activities of the Federal agencies under the subcommittee's jurisdiction. ACEEE, a nonprofit research organization, develops transformative policies to reduce energy waste and combat climate change. With our independent analysis, we aim to build a vibrant and equitable economy—one that uses energy more productively, reduces costs, protects the environment, and promotes the health, safety, and well-being of everyone. While we strongly support funding for a wide variety of energy efficiency programs as detailed in a joint letter, this testimony focuses on more details on funds needed for the Department of Energy's Advanced Manufacturing Office (AMO) and other priority areas to further much needed industrial decarbonization efforts. For the Fiscal Year 2023 budget ACEEE recommends that funding for the Department of Energy's Advanced Manufacturing Office (AMO) be increased to \$600 million from \$416 million in FY22 to accommodate the more ambitious agenda of decarbonizing US manufacturing by midcentury, supported by the enactment last Congress of the Energy Act of 2020 and the Clean Industrial Technology Act. This goal also requires funding for industrial decarbonization activities in offices beyond AMO in light of the ongoing departmental reorganization. Thus we also seek \$200 million for transformative technology adoption at the Office of Clean Energy Demonstrations (OECD) and funding for two programs within Manufacturing and Energy Supply Chains (MESC): \$30 million for Industrial Assessment Centers and \$40 million for the establishment of a Flex-Tech program.

Advanced Manufacturing Office (AMO): \$600 million to enable the research, development, demonstration and deployment of industrial energy efficiency and advanced manufacturing technologies. This level of funding is intended to accommodate an ambitious agenda of decarbonizing US manufacturing by the midcentury. This goal of dramatic reductions requires increases in activity levels across the office and some important changes in the orientation of the office's goals. AMO should expand its efforts from promoting energy efficiency to include reducing carbon emissions for manufacturing and reducing the embodied carbon in manufactured products more broadly. We expect DOE to release its long-delayed industrial decarbonization road-map very soon, and as AMO rebuilds its staffing, the office should focus on adding expertise in important decarbonization technology areas identified in its research road mapping.

While we support providing AMO increased flexibility in funding in order to reorient the office to the challenge of industrial decarbonization most effectively, we think the following programs and objective should be part of the office's direction and have included our estimate of FY23 funding needed:

—*Technical Assistance and Workforce Development:*

- Strategic Energy Management*: AMO should promote Strategic Energy Management practices and establish a program to provide competitive grants to companies for the hiring or designation of plant energy managers. Strategic Energy Management is especially important for small and medium-sized manufacturing plants. (\$15 million)
 - Save Carbon Now*: AMO should expand the Better Plants program to offer comprehensive assessments and engagements to the 1,500 largest energy using and greenhouse gas emitting manufacturing facilities in order to address natural gas shortages and assist decarbonization. These engagements should include, but not be limited to, targeted assessments of energy-saving and emissions reduction opportunities, staff training, technical assistance and analyses, and education. The enhanced Save Energy Now program run by the Department of Energy from 2008 to 2011 achieved CO₂ emissions reductions of about 1.8 million metric tons per year and natural gas savings of about 98 TBTu per year.¹ (\$55 million)
 - Smart Manufacturing*: AMO should support the development and adoption of smart manufacturing practices (the use of automated controls to achieve large process efficiencies) directed towards small and medium-sized manufacturers. This includes, but is not limited to, extending and expanded funding for the Clean Energy Smart Manufacturing Innovative Institute (CESMII) to increase educational and technical assistance activities directed toward smart manufacturing adoption. (\$30 million)
 - Industrial Process Heat Decarbonization R&D*: AMO should support industrial process heating decarbonization through the establishment of a research, development, and deployment effort by AMO to promote the adoption of technologies that can dramatically reduce the GHG emissions from process heating applications, the largest source of industrial emissions.² (\$55 million)
 - Office of Clean Energy Demonstrations (OCED)*: \$200 million for transformative technology adoption through the establishment of a grant program that provides cost-share payments to manufacturing facilities that make the first at-scale implementations of transformative technologies to reduce GHG emissions in intensive manufacturing processes. The high cost of implementing new technologies at an industrial scale is a key barrier to the process transformations needed for competitive, decarbonized, domestic manufacturing.
- Manufacturing and Energy Supply Chains (MESC)*:
- Industrial Assessment Centers*: \$30 million for the Industrial Assessment Centers (IAC) program to expand the program in order to increase the number of university-based centers to 40; to establish satellite centers at community colleges, technical schools, and union training facilities; and to establish an apprenticeship program with matching funding for IAC students at facilities that have received assessments in the recent past to facilitate the implementation of recommendations.
 - Flex Tech*: \$40 million for the establishment of a Flex-Tech program that provides grants to States and Tribal governments partnered with educational institutions and trade associations to provide energy and greenhouse gas reduction assessments and loans to implement identified measures at small and medium-sized manufacturers.

Thank you for the opportunity to share these recommendations, and please let us know if we can provide additional information.

[This statement was submitted by Alexander Ratner, Federal Policy Manager, American Council for an Energy-Efficient Economy.]

PREPARED STATEMENT OF THE AMERICAN NUCLEAR SOCIETY

On behalf of the 10,000 men and women of the American Nuclear Society¹ (ANS), I am pleased to provide recommendations for fiscal year 2023 appropriations levels

¹Wright, A., M. Martin, and S. Nimbalkar. 2010. Results from the U.S. DOE 2008 Save Energy Now Assessment Initiative: [sic.] DOE's Partnership with U.S. Industry to Reduce Energy Consumption, Energy Costs, and Carbon Dioxide Emissions. Oak Ridge, TN: Oak Ridge National Laboratory. info.ornl.gov/sites/publications/files/Pub25190.pdf faceee.org/research-report/ie2201.

²Rightor, E., P. Scheihing, A. Hoffmeister, and R. Papar. 2022. Industrial Heat Pumps: Electrifying Industry's Process Heat Supply. Washington, DC: American Council for an Energy-Efficient Economy. aceee.org/research-report/ie2201.

³The American Nuclear Society is the premier organization for those who embrace nuclear science and technology for their vital contributions to improving people's lives and preserving

for nuclear programs under the subcommittee's jurisdiction. The American nuclear community is grateful to the Committee for its continued, bipartisan support for Federal investments to sustain our existing nuclear fleet and accelerate the near-term development and deployment of new nuclear energy technologies. Our recommendations are aligned toward a commercial scale-up of advanced nuclear reactors in the 2030 timeframe and consistent with the 2021 ANS report, "The U.S. Nuclear R&D Imperative."² For Fiscal Year, 2023, ANS recommends a minimum of \$2.2 billion for Department of Energy (DOE) Office of Nuclear Energy (NE) programs. We recognize this level of funding will present a challenge to the committee given its current 302(b) allocation. However, the Russian invasion of Ukraine has laid bare the immediate U.S. national security interest in strengthening our nuclear supply chain and reducing our reliance on Russian sources of nuclear fuel and R&D capabilities.

DOE OFFICE OF NUCLEAR ENERGY

Directed R&D and University Programs

(Fiscal Year 2023 Recommendation: \$161 million)

ANS strongly supports the administration's request for this new programmatic structure, which consolidates NE funding for universities (and small businesses) into a unified program that will provide stewardship for university-based nuclear education programs, campus research reactors, and start-up companies. While still tightly aligned with Departmental missions, this new structure will eliminate the need to "tax" existing NE programs to provide the funding needed required for effective stewardship of nuclear education and research at U.S. universities.

ANS STRONGLY opposes the inclusion of any congressional earmark in this account. While we are mindful of Congress' power of the purse, the inclusion of project-specific earmarks at this time would effectively gut this new program before it has a chance to become established, negatively impacting existing competitively awarded projects, and inflicting tangible damage to America's overall nuclear competitiveness.

Advanced Reactor Demonstration Program (ARDP)

(Fiscal Year 2023 Recommendation: \$245 million)

For fiscal year 2023 ANS recommends \$140 million for Risk Reduction for Future Demonstrations, \$85 million for NRIC, \$15 million for Regulatory Development, and \$5 million for Advanced Reactor Safeguards.

Advanced Nuclear Fuel Availability Program

(Fiscal Year 2023 Recommendation—\$360 million: \$300 million for commercial enrichment and deconversion capacity and \$60 million for downblending of HEU)

Consistent with the Energy Act of 2020, it is imperative that DOE establish a competitive commercial high-assay low-enriched uranium (HALEU) fuel supply chain in the U.S. The urgency is real. Russia can no longer be considered a feasible HALEU supplier. Without a reliable HALEU supply, lead commercial customers will be less likely to make commitments to build advanced reactors. We recognize the administration has not yet submitted a comprehensive plan to address HALEU needs, but there is increasing consensus within the U.S. nuclear community that a \$300–400 million level of investment will be required to stimulate sufficient commercial interest. Therefore, ANS requests \$300 million for fiscal year 2023 to support the deployment of a U.S. commercial HALEU supply chain and \$60 million for the fresh HEU downblending bridge program.

High Enriched Uranium Recovery for HALEU (EBR-II)

(Fiscal Year 2023 Recommendation: \$25.75 million)

ANS recommends \$25.75 million to transition EBR-II spent fuel processing operations in order to meet the increasing needs of industry.

the planet. ANS membership is open to all and consists of individuals from all walks of life; including engineers, doctors, students, educators, scientists, soldiers, advocates, government employees, and others. ANS is committed to advancing, fostering, and promoting the development and application of nuclear sciences and technologies to benefit society.

²ANS Task Force on Public Investment in Nuclear Research and Development (Feb. 2021). The U.S. Nuclear R&D Imperative (pp. 1–39, Rep.) <https://www.ans.org/file/3177/2/ANSpercent20RnDpercent20Taskpercent20Forcepercent20Report.pdf>.

*Fuel Cycle R&D; Fuel Cycle Laboratory R&D**(Fiscal Year 2023: Recommendation \$35 million)*

ANS recommends not less than \$20 million for metallic fuels and \$15 million for additional fuel cycle laboratory R&D.

*Accident Tolerant Fuels**(Fiscal Year 2023 Recommendation: \$165 million)*

ANS recommends \$120 million for continued participation of the industry-led teams in the cost-shared R&D program including support for testing, code development, and licensing of ATF with higher fuel utilization. ANS also recommends \$10 million to continue silicon-carbide development and \$35 million for laboratory specific work in support of ATF.

*TRISO Fuel and Graphite Qualification**(Fiscal Year 2023 Recommendation: \$37 million)**Versatile Test Reactor**(Fiscal Year 2023 Recommendation: \$45 million)*

Currently, the only fast research reactor available is located in Russia. While the VTR may not be necessary for near-term licensing of certain advanced reactors, the Committee must recognize that a fast neutron irradiation facility remains mission critical for sustaining U.S. advanced nuclear energy in the long-term. We believe NE should use some portion of the requested funding to explore the potential cost savings of aligning VTR component fabrication with Sodium ARDP project and, in concert with the DOE Office of Science, assess opportunities for producing isotopes for which the U.S. currently relies on Russia for significant supply.

*Light Water Reactor Sustainability**(Fiscal Year 2023 Recommendation: \$62 million)*

ANS recommends \$62 million to enable this program to accelerate LWR modernization efforts while continuing to support hydrogen demonstrations. ANS also requests that no less than \$12 million be used to support new or previously awarded hydrogen demonstration projects.

*Advanced SMR R&D Support**(Fiscal Year 2023 Recommendation: \$211 million)*

Demonstrating the next generation of advanced light water small modular reactors will support both domestic deployment and export of U.S. technology and enable broad U.S. leadership in new technologies.

*Nuclear Waste Disposal/Integrated Waste Management**(Fiscal year 2023 Recommendation: \$53 million)*

ANS supports the requested level for these programs. We strongly urge the Committee to reject any attempt to limit DOE's authority to direct funding to particular States or localities. The U.S. is in the beginning stages of rebuilding a used nuclear fuel management program that has been dormant for far too long. Now is not the time to foreclose on any option which can help the U.S. manage its fuel resources more effectively.

*Program Direction**(Fiscal Year 2023 Recommendation: \$100 million)*

The management responsibilities that come with DOE NE program additions have increased substantially over the past several years while staffing levels have reduced and Program Direction funding has remained consistent. This convergence has created challenges in many areas, including contracting management and program execution. ANS recommends \$100 million for fiscal year 2023 which will allow DOE NE to add experienced staff and address current staffing deficiencies.

*Advanced Reactor Technologies**(Fiscal Year 2023 Recommendation: \$70 million)*

The Advanced Reactor Technologies subprogram conducts essential R&D activities to reduce technical risks associated with advanced reactor technologies and systems. The subprogram R&D scope reflects input from advanced reactor stakeholders with a goal of enabling industry to mature and ultimately demonstrate advanced reactor

technologies by the 2030s. ANS recommends \$70 million total for the subprogram, with \$16 million for the microreactor program and \$20 million for the MARVEL reactor. The MARVEL reactor will support fuel acquisition and construction in fiscal year 2023. ANS also recommends \$15 million for the ARC-20 program.

International Nuclear Energy Cooperation

(Fiscal Year 2023 Recommendation: \$8 million)

DOE OFFICE OF CLEAN ENERGY DEMONSTRATIONS

Advanced Reactor Demonstrations

(Fiscal Year 2023 Recommendation: \$70 million)

While passage of the 2021 Infrastructure and Jobs Act provided funding for the Advanced Reactor Demonstration Program (ARDP); the bill did not entirely fund both demonstration projects. ANS recommends an additional \$70 million for continued ARDP support.

DOE OFFICE OF SCIENCE

Isotope R&D and Production Program

(Fiscal Year 2023: \$102 million)

ANS strongly supports DOE's Isotope program and its missions to produce isotopes in short supply, manage DOE inventories of stable and long-lived isotopes, and conduct research and development activities on new isotope applications in medicine and industry. In addition to isotopes produced in DOE reactors and accelerators, there are new opportunities to use DOE legacy materials, such as strontium 90 for space and undersea applications, that were once considered waste. The DOE Isotope office should have the authority and resources it needs to facilitate the beneficial commercial use of these materials.

Low-Dose Radiation Program

(Fiscal Year 2023 Recommendation: \$20 million to support low-dose radiation research activities)

Through recent congressional direction, the Department of Energy's Office of Science Biological and Environmental Research is to re-establish a research program devoted to the human health effects of low-dose radiation at a funding level of no less than \$5 million. To maintain progress in fiscal year 2023, and with the imminent release of the National Academies of Sciences guidance report on the development of a long-term strategy for low-dose radiation research in the U.S., ANS recommends \$20 million for the program.

Expanded funding will allow for new technologies and approaches for examining biological mechanisms by which ionizing radiation produces cancer and non-cancer health outcomes, and the integration of mechanistic biological insights with epidemiological data. This funding is also needed to support interdisciplinary training and integrated cross-professional research programs devoted to understanding and quantifying radiation health effects at low doses. The program will also support education and outreach activities to disseminate information and promote public understanding of low-dose radiation.

[This statement was submitted by Craig H. Piercy, Executive Director/CEO, American Nuclear Society.]

PREPARED STATEMENT OF THE AMERICAN SOCIETY FOR MICROBIOLOGY

The American Society for Microbiology (ASM) appreciates the opportunity to submit outside witness testimony for the fiscal year 2023 Energy and Water Development, and Related Agencies appropriations bill in support of increased funding for the Department of Energy Office of Science. The American Society for Microbiology (ASM) is one of the largest professional societies dedicated to the life sciences and is composed of 30,000 scientists and health practitioners. ASM's mission is to promote and advance the microbial sciences.

The Department of Energy (DOE) Office of Science is a leader in advancing critical industries of the future, including quantum information science, artificial intelligence, high performance computing, advanced communications networks, future energy technologies, and engineering biology. As we rise to meet the challenges of the 21st Century, microbial science funded by the DOE Office of Science remains

vitally important. ASM urges Congress to fund the DOE Office of Science at \$8.8 billion in fiscal year 2022, an increase of 18 percent above fiscal year 2022 and consistent with the bipartisan House and Senate DOE Science for the Future Act.

Funding from the DOE Office of Science through the National Laboratories, universities, and other programs has generated some of our most economically important innovations and is the primary driver of basic research, including critical areas of genome-scale, quantitative analysis of microbial research. This support has enabled researchers to use microbes to solve energy and environmental problems, and to bring those solutions to scale by developing empirical, computational, and mechanistic modeling tools.

Office of Science funding led to the creation of the Bioenergy Research Centers, which support research into viable and sustainable domestic biofuel and bioproducts industries. Each of the four Centers is led by a DOE national laboratory or university, and each takes an innovative approach to improving and scaling up advanced biofuel and bioproduct production processes. Recent investments in the Joint Genome Institute and the National Microbiome Data Collaborative will lead to more effective analysis of microbiome data and better coordination of multidisciplinary microbiome research across the Federal Government. DOE National Laboratories were effectively deployed in the fight against COVID-19, using their supercomputing and modeling capabilities to both understand components of the virus and to find drug compounds to treat it. Thousands of projects funded by NIH (National Institutes of Health) and NSF (National Science Foundation) utilize DOE facilities each year, and more than fifty Fortune 500 companies and many small businesses use these facilities to conduct the underlying research required to develop innovative technologies and products that drive the economy, including the growing bioeconomy.

Microbial Research is Needed to Face 21st Century Challenges

Our society faces several large, complex, and interconnected challenges, many of which can be addressed through microbial research. Inexpensive renewable sources of energy, fuels, and chemicals are essential for continued economic growth, but the environmental tradeoffs of increased energy production must also be considered. Microbial science funded by DOE Office of Science can lead the way in developing sustainable strategies to feed an ever-growing population by increasing plant and agricultural productivity and quality; by providing strategies to ensure that future U.S. citizens enjoy clean air, water, and a high standard of living; in transforming human health by providing everything from new pharmaceuticals, reagents for precision medicine, and next generation antibiotics; and by producing cost-competitive fuels, chemicals, and materials from abundant renewable resources. These and other advances in decarbonization, the production of biomaterials or bio-based polymers, and others based on new microbial catalysts will only happen with strong, stable investments in the Office of Science.

The Office of Science currently funds four Bioenergy Research Centers (BRC), which support research into viable and sustainable domestic biofuel and bioproducts industries. These four Centers are developing viable and sustainable domestic biofuels and bioproducts derived from non-food plant biomass, such as poplar, switchgrass, and sorghum. This research will lead to lower greenhouse gas emissions, bring jobs to rural areas, and boost our energy security, and we strongly encourage Congress to continue fully funding the Bioenergy Research Centers.

DOE-Funded Microbiome Research Spurs Innovation

In its stewardship of innovation at DOE's National Laboratories, universities, and other programs, the Office of Science is a critical partner in advancing areas of national need, supporting research in key emerging areas including artificial intelligence and microbiome research. The Biological and Environmental Research (BER) Directorate at DOE explores the frontiers of genome-enabled biology, deepens our understanding of physical and biogeochemical Earth processes, and enables innovation and discovery through their user-facilities. Funding is crucial not only for the continuation of research for existing programs within the BER, but also for new initiatives such as the National virtual climate lab and the Biopreparedness Research Virtual Environment (BRaVE).

Microbiome science aims to advance understanding of microbial communities (microbiomes) for applications in areas such as health care, food production, and environmental restoration to benefit individuals, communities, and the environment. Scientific understanding of the microbiome has evolved significantly since the concept of the human microbiome emerged two decades ago. We now know that microbial communities exist everywhere, making the microbiome relevant to all living things. Yet, there remains much to discover regarding how microbiomes function as

communities, interact with their hosts and environment, and their overall potential to improve health and ecosystems. The rapid pace of discovery has led to greater technology needs and data sharing infrastructure.

The Interagency Strategic Plan for Microbiome Research, fiscal year 2018–2022, developed by the Microbiome Interagency Working Group (MIWG), provides recommendations for improving coordination of microbiome research among Federal agencies and between agencies and non-Federal domestic and international microbiome research efforts. The 5-year Strategic Plan coordinates microbiome research activities across 21 government agencies, describing the interagency objectives, structure and operating principles, and research focus areas. As noted in the Interagency Strategic Plan for Microbiome Research, microbiome data is “Big Data,” which requires consistent and reliable database and resource coordination to facilitate data collection, analysis, interoperability, and data sharing. The NMDC (National Microbiome Data Collaborative) is aimed at empowering this type of microbiome research. Spearheaded by Lawrence Berkeley National Laboratory, in partnership with Los Alamos, Oak Ridge, and Pacific Northwest national laboratories, the NMDC is leveraging DOE’s existing data-science resources and high-performance computing systems to develop a framework that facilitates more efficient use of microbiome data for applications in energy, environment, health, and agriculture.

Our nation’s ability to make significant advances in solving energy and environmental problems depends on advances in the microbial sciences. This will only be possible if Congress continues its commitment to robust and sustained funding increases for the Department of Energy’s Office of Science.

[This statement was submitted by Allen Segal, Director of Public Policy and Advocacy, American Society for Microbiology.]

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

On behalf of the American Society of Plant Biologists (ASPB), we submit this written testimony to support \$8.8 billion for the Department of Energy’s (DOE) Office of Science in fiscal year 2023. Within this amount, ASPB supports proportional increases in funding for the Office of Basic Energy Sciences (BES) and the Office of Biological and Environmental Research (BER). ASPB also supports at least \$575 million for the Advanced Research Projects Agency-Energy (ARPA-E) in fiscal year 2023.

The following testimony highlights the importance of biology-particularly plant biology, which is a major backbone of efforts to enhance bioenergy production-as the Nation seeks to address energy security and other vital issues. We 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, founded in 1924 as the American Society of Plant Physiologists, was established to promote the growth and development of plant biology, to encourage and publish research in plant biology, and to promote the interests and professional advancement of plant scientists in general. ASPB members educate, mentor, advise, and nurture future generations of plant biologists; they work to increase understanding of plant biology, as well as science in general, in K–16 schools and among the general public; they advocate in support of plant biology research; they work to convey the relevance and importance of plant biology; and they provide expertise in policy decisions world-wide.

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 essential to life on Earth. 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.

Plant biology is at the center of numerous scientific breakthroughs in the increasingly interdisciplinary world of alternative energy research. For example, researchers at National Renewable Energy Laboratory (NREL) published research that demonstrates the ability to convert wet waste carbon (food waste derived from fatty acids) to sustainable aviation fuels-highlighting the potential to meet aviation needs and environmental challenges. 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.

Even though 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 to understand the basic function and mechanisms of plants. Strong investments in plant biology research are important considering the significant positive impact crop plants have on the Nation's economy and in addressing some of our most urgent challenges, like energy and food security. For example, continued basic and applied research in fields like synthetic biology will enable the creation and production of more energy dense, carbon neutral fuels and expand the production of energy-efficient biomass.¹

Securing the Plant Science Talent Pipeline

As discussed above, many of the challenges brought by a changing world will be addressed specifically by plant scientists. A significant increase in crop productivity will be needed to match the demand for food expected from the rate of population growth. At the same time, climate change will present new trials for crops and other plant ecosystems. These challenges will require efforts to increase productivity beyond current practices, including improvement in crop water use efficiency and enhanced crop photosynthesis efficiency and performance, to name just a few approaches. More knowledge and innovation will be needed to replace chemicals from non-renewable sources (from fuels to biomedical applications) with plant-derived metabolites. These types of innovations will require contributions from basic and applied plant science fields and collaboration from other sciences and engineering.

To tackle these challenges, a strong and diverse community of plant scientists, with increased involvement from women and minority scientists, will be needed. However, the current training pipeline is not primed to ensure the availability of this workforce. Plant science doctoral degrees, both basic and agronomy-related, have remained stagnant over the past two decades. A strong investment in plant science research, both basic and applied, renewed efforts to transform public perception of plant biology and plant biologists, and a push to increase the number of students entering the pipeline leading to plant science degrees are necessary to change these trends. Developing the workforce that will contribute the solutions to future challenges is urgent. With this need in mind, ASPB applauds the awards DOE has made in training the next generation of scientists. However, more efforts, including outreach to and investments in women and minority researchers, is vital for the US to maintain its energy leadership.

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 respect to recommendations for bioenergy research funding through DOE's Office of Science.

The BER and BES programs within the Office of Science are crucial to understanding how basic biological processes work. Sustained funding for these programs is vital because the discoveries made in these areas will ultimately be the foundation for the next fuels and technologies we use in our daily lives. Support from ARPA-E is critical to advancing plant synthetic biology technologies, and ASPB implores the committee to include sustained, targeted funding for synthetic biology research in the program.

In addition:

- We commend the DOE Office of Science, through its programs in BES and BER, for having funded the Bioenergy Research Centers and the Energy Frontier Research Centers. ASPB strongly encourages additional funding for the DOE Office of Science that would specifically target funding toward individual and small-group grants for bioenergy and plant growth research.
- Considerable research interest is now focused on processing 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

¹ <https://roadmap.ebrc.org/energy/>.

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.

[This statement was submitted by Crispin Taylor, CEO, American Society of Plant Biologists.]

PREPARED STATEMENT OF THE ASSINIBOINE AND SIOUX RURAL WATER SUPPLY
SYSTEM AND DRY PRAIRIE RURAL WATER SYSTEM

BUREAU OF RECLAMATION

1. Fiscal Year 2023 Budget Request

The Assiniboine and Sioux Rural Water Supply System and Dry Prairie Rural Water System respectfully request fiscal year 2023 appropriations of \$6.808 million, part of the Bureau of Reclamation Rural Water Program (Table 1).

The fiscal year 2023 Federal funding request is \$1.799 million for the Assiniboine and Sioux Rural Water Supply System (ASRWSS) and \$5.009 million for the Dry Prairie Rural Water System (DPRWS) to fully complete project construction at a combined cost of \$6.808 million, including projected 5 percent inflation during fiscal year 2022. The request completes all elements of the Fort Peck Reservation Rural Water System, Montana, (PL 106–382, October 27, 2000). Future requests will be limited to inflation on projects initiated in fiscal year 2023 and fiscal year 2024 that are not covered by the 5 percent projected inflation in fiscal year 2022.

TABLE 1
FY 2023 FUNDING REQUEST FORT PECK RESERVATION RURAL WATER SYSTEM (PL 106–382)

Sponsor/Project Feature	Federal
Assiniboine and Sioux Rural Water Supply System	
Complete Project Improvements	1,798,886
Subtotal	\$1,798,886
Dry Prairie Rural Water System	
Outlook Branches	5,009,199
Subtotal	\$5,009,199
Total	\$6,808,085

The project expresses the greatest appreciation to the Chair and subcommittee for their unwavering support during the construction of this vital infrastructure in a vast area of Montana only slightly smaller than the state of Massachusetts.

2. Project Status and Funding Needs

The project was greatly assisted by fiscal year 2022 appropriations of \$17.191 million and fiscal year 2022 allocations of \$39 million by the Bureau of Reclamation from the Bipartisan Infrastructure Law (BIL) as shown in Table 2.

Considerable project inflation through fiscal year 2021 in PVC pipe material prices, an increase of more than 100 percent, triggered a re-pricing of the project by the Reclamation Technical Service Center in Denver. The re-pricing was completed on March 31, 2022, and resulted in an increase in the authorized construction ceiling for ASRWSS from \$220.026 million to \$229.456 million or an increase of \$9.430 million. Similarly, the authorized construction ceiling for DPRWS was increased from \$132.367 million to \$172.617 million an increase of \$40.250 million of which \$30.950 million was Federal and \$9.660 million was non-federal.

After applying funds as shown in Table 2 to all remaining projects in fiscal year 2022, a cost of \$6.484 million remained to complete both projects within the Reclamation-adjusted authorized ceilings. That amount was increased by 5 percent for projected fiscal year 2022 inflation to arrive at the request for fiscal year 2023 of \$6.808 million. PVC pipe material prices in fiscal year 2022 have soared an additional 19 percent.

TABLE 2
FUNDS NEEDED TO COMPLETE PROJECTS GIVEN FISCAL YEAR 2022 ALLOCATIONS

Remaining Costs and Available Funding	ASRWSS	DPRWS	Total
FUNDING TO COMPLETE PROJECTS			
TSC Remaining Project Costs (– 15 percent for Design contingencies + TERO/GRT) and Post-October 201 remaining Costs in Master Plan	\$41,223,447	\$83,698,704	\$124,922,151
Available Funding			
FY 2021 Carryover	\$22,510,222	\$29,123,079	\$51,633,301
FY 2022 Appropriations	17,000,000	191,000	17,191,000
BIL			
Initial Allocation	0	7,000,000	7,000,000
Reserve (Requires Concurrence of Boards)	0	32,000,000	32,000,000
Subtotal	\$39,510,222	\$68,314,079	\$107,824,301
Needed to Complete Remaining Projects			
Total	\$1,713,225	\$15,384,625	\$17,097,850
Federal	1,713,225	4,770,665	6,483,890
Non-Federal	0	10,613,959	10,613,959
CEILING AND REPRICING ADJUSTMENTS			
October 2021 Indexed Authorized Ceiling			
Total	\$220,026,000	\$132,367,105	\$352,393,105
Federal	220,026,000	100,599,000	320,625,000
Non-Federal	0	31,768,105	31,768,105
Re-priced Authorized Ceiling (From October 2021 Master Plan Adjusted for TSC Pricing).			
Total	\$229,455,857	\$172,617,259	\$402,073,116
Federal	229,455,857	131,189,117	360,644,974
Non-Federal	0	41,428,142	41,428,142

The recognition, cooperation, collaboration, and focus of the Bureau of Reclamation at the National, regional, area, and project level were extraordinary during the inflationary crisis, and both projects are grateful.

Note that the decisions by Reclamation on the allocation of fiscal year 2022 appropriations, BIL funding, and remaining work to be completed within both projects have been discussed extensively with Reclamation but are not formalized at the time of this writing. Table 2 is based on the expectations of both projects based on discussions, but not formal allocations, which are still coming.

With fiscal year 2023 appropriations as requested and future adjustments for inflation, both projects can be successfully completed as originally envisioned. Both projects will serve their water users with safe, adequate, and reliable water supplies for the foreseeable future without shortage in supply or deficiency in quality.

ATTACHMENT A

[illegible]

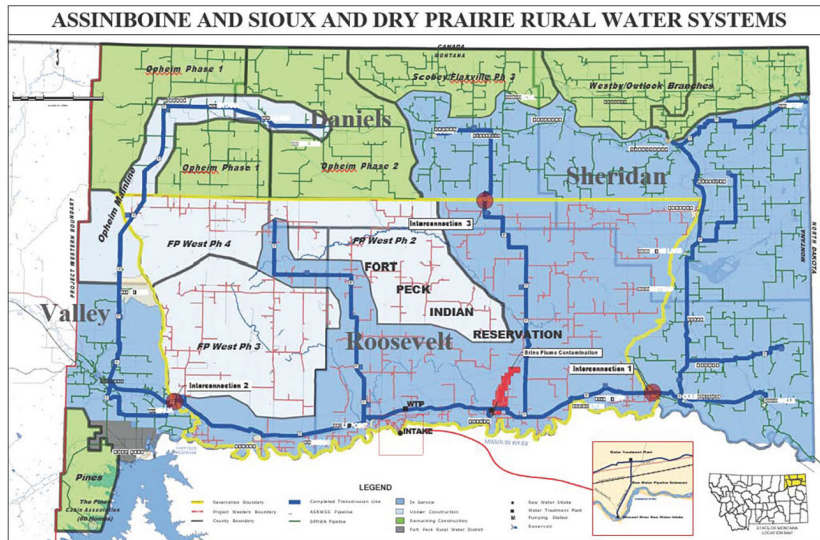
ATTACHMENT A

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ATTACHMENT A

A	B	C	D	E	F	G	H	I	J	K	L
FY 2022 MASTER PLAN UPDATE											
ASSINIBOINE SIOUX AND DRY PRAIRIE RWBs											
MASTER PLAN, OCTOBER 2021 \$											
Authorized Funds											
FY 2022						FY 2022 Work Plan					
	Original	Indexed	(Oct 2021 \$)	Spent	Remaining	Use of	Balance				
	Cost	Cost	Totals	To Date	To Date	Funds	To Date				
Segment	(Oct 1999 \$)	(Oct 2021 \$)	Cost Overrun	9/30/2021	Camperov	Funds Complete	FY 2023 Tot.				FY 2023 Tot.
ASPIRWS (All Federal)	124,000,000	229,455,857	229,455,857	189,232,410	22,510,222	17,000,000	1,713,225	1,713,225	229,455,857		229,455,857
Dry Prairie	67,105,000	132,367,105	172,617,239	89,918,555	29,123,079	39,191,000	15,384,625	15,384,625	172,617,239		172,617,239
Federal	51,000,000	909,859,000	151,189,117	16,104,372	29,123,079	4,770,866	4,770,866	4,770,866	151,189,117		151,189,117
Non-Federal	16,105,000	31,768,105	41,428,142	30,814,183	0	0	10,613,959	10,613,959	41,428,142		41,428,142
Total Project	181,105,000	361,822,962	402,073,116	0	277,150,965	51,833,301	56,191,000	17,097,849	17,097,849	402,073,116	
Federal	175,000,000	330,054,867	360,644,974	0	246,336,782	51,833,301	56,191,000	6,483,990	6,483,990	360,644,974	
Non-Federal	6,105,000	16,105,000	41,428,142	0	30,814,183	0	0	10,613,959	10,613,959	41,428,142	
								\$4,575,825			
Funds over Construction Ceiling			0	0	0	0					15,384,625
Federal			0	0	0	0					
Non-Federal			0	0	0	0					

ATTACHMENT B



PREPARED STATEMENT OF THE ASSOCIATION OF STATE FLOODPLAIN MANAGERS

The Association of State Floodplain Managers (ASFPM) appreciates the opportunity to provide this Outside Witness Testimony for the Committee's record for the fiscal year 2023 Energy and Water Development Appropriations legislation. ASFPM has a membership of 20,000 members, including members in 37 state chapters. Our members are largely State and local officials, but also include many engineers, planners, and other professionals supporting local communities' efforts to reduce flood risk and wisely manage floodplains and flood-prone areas within their jurisdictions. Our membership additionally includes members of research and academic institutions, and the insurance and lending industries.

Recommendations in ASFPM's OWT testimony pertain to the following Corps of Engineers programs: Section 22 Planning Assistance to States (PAS) \$15 million; Flood Plain Management Services (FPMs) \$25 million; National Flood Risk Management Program (NFRMP), including Silver Jackets (\$10 million), and support for planning and technical assistance for nonstructural, natural feature, and nature-based feature alternatives within all Corps flood risk management program planning, as emphasized in WRDA 2020; and support for two studies directed in WRDA 2007 Water Resources Priorities Study (Sec. 2032) and WRDA 2014 Review of Emergency Response Authorities (Sec. 3029).

Increase Funding for Corps of Engineers Technical Assistance.

ASFPM has long supported the technical assistance programs of the Army Corps of Engineers Civil Works Program. In these programs, the Corps of Engineers can provide expertise and assistance to communities in developing solutions to flood challenges that can help make major strides toward reducing flood losses—often at considerably less costs, and without multi-million-dollar taxpayer investments in large Corps projects. The Corps’ technical assistance programs include: Section 22 Planning Assistance to States (PAS) (WRDA 1974, (PL 93–251), as amended); Flood Plain Management Services (FPMS) (Section 206, 1960 Flood Control Act (PL 86–645), as amended), National Flood Risk Management Program (NFRMP), and the Silver Jackets program. Appropriations for these programs are made through the Investigations—Remaining Items section of the Energy and Water Development Appropriations.

While these programs represent a relatively small portion of the total Army Corps budget, they provide a high return on investment. Many smaller jurisdictions, including lower-income and economically-disadvantaged and rural communities that generally would never qualify for a major Corps project or be able to afford the long-term Operations and Maintenance costs for major projects, especially through provision of key technical assistance, can develop smaller projects which can utilize non-structural, natural, or nature-based features, or a combination of structural and non-structural measures. In addition, the Army Corps’ Silver Jackets program has the special advantage of being able to bring together numerous other programs from within the Federal family as well as State and locally-based programs to assist in addressing flood-related challenges. Also, WRDA 2020 has enhanced FPMS authority (see Sec. 111) and has broadly encouraged the Corps to utilize these techniques and approaches in flood risk management and community resiliency. Silver Jackets especially is continuing to build key linkages across governments that enhance cooperative approaches.

ASFPM members strongly urge that these technical assistance programs be funded at considerably higher levels than in the past. The fiscal year 2022 final appropriations included \$9 million for Planning Assistance to States (PAS), \$12 million for Flood Plain Management Services (FPMS) and \$6.5 million for the National Flood Risk Management Program (NFRMP). The Silver Jackets funding is included in the funds for the NFRMP. We note that the Infrastructure Investment and Jobs Act included a one-time \$30 million and \$45 million appropriation for PAS and FPMS, respectively, to increase Corps technical assistance capability in the short term. We would urge a base level of funding for PAS at \$15 million, FPMS at \$25 million, and \$10 million for NFRMP in fiscal year 2023 to expand the use and availability of these important authorities and assistance.

We also strongly recommend expanding Corps engagement with such programs for their major value in helping States and communities to reduce future losses due to flooding, especially where watershed development and effects of climate change are increasing flooding risks and costs. Many communities in many coastal and inland areas across the Nation are already experiencing and are anticipating increased flooding, erosion problems, and deteriorating water supplies from more frequent and intense rainfall events and coastal storms, rising sea levels, and increasing stormwater runoff and urban flooding from changing climate and land use changes in watersheds. To address these flooding problems, many communities need expert engineering, economic, environmental, and planning assistance and data to assess and help identify potential structural and/or non-structural solutions to their flooding problems.

Many smaller communities simply cannot afford to maintain such expertise in their local governments on a permanent basis and can benefit greatly from Corps of Engineers technical support. We note that only a few Corps Districts across the country have made use of these opportunities to bring Corps expertise to their communities outside the context of major Corps construction projects. Large numbers of communities lack the advantage to tap Corps expertise and support where and when it is often most needed and would be helpful and beneficial. We urge that Corps technical assistance be prioritized with dedicated staffing in each Corps District. We would urge the subcommittee to consider report language supporting efforts at Corps Headquarters to educate Corps Districts regarding these programs and to encourage their use.

National Flood-Related Study Provisions. We would also urge the subcommittee to provide funding for two important WRDA-authorized studies. The Corps’ Water Resources Priorities Study, begun in 2016, but thus far not complete, will assess the Nation’s flooding vulnerabilities across all regions of the U.S. and analyze the effectiveness of programs, authorities, policies, roles, and activities for flood damage and flood risk reduction. This unique study, originally authorized in WRDA 2007 (Sec-

tion 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 have clearly witnessed an enormous increase in the Nation's flood disaster impacts and costs. Average annual costs have grown from approximately \$4 billion in the 1980's to \$17 billion (2010—2018), and FEMA has recently estimated that total average national flood damages have risen (2009—2019) to \$39.3 billion, including both coastal and riverine impacts. Obviously, some years have witnessed damages far exceeding these levels. ASFPM believes such a study may be even more necessary today than when it was first authorized.

Additionally, for many of the same reasons, we would also urge the Committee to consider including funds for the Corps' Review of Emergency Response Authorities study, authorized in Section 3029(b) and (c) of WRDA 2014, including providing Congress and the public with required biennial reports on emergency repair and rehabilitation expenditures under the Public Law 84-99 program. We are increasingly concerned that there are many situations where Federal taxpayers are repeatedly paying for the same levee and other flood control project repairs, and where improved flood damage reduction plans, such as voluntary buyout plans, identification of floodways, and levee setbacks and realignments, are necessary. These actions can make room for increasingly large flood volumes being experienced and should be developed to reduce disaster costs and improve floodplain and environmental management, simultaneously.

Once again, thank you for considering the views of the Association of State Floodplain Managers. If you have questions or would like further information, please contact Chad Berginnis, ASFPM Executive Director.

[This statement was submitted by Chad Berginnis, Executive Director, Association of State Floodplain Managers.]

PREPARED STATEMENT OF THE BUSINESS COUNCIL FOR SUSTAINABLE ENERGY

Chairmen Leahy and Feinstein and Ranking Members Shelby and Kennedy:

The Business Council for Sustainable Energy appreciates the opportunity to submit testimony in support of funding for the clean energy programs at the Department of Energy in the Fiscal Year 2023 Energy and Water Appropriations Bill.

The BCSE is a coalition of companies and trade associations from the energy efficiency, energy storage, natural gas, renewable energy, sustainable transportation and emerging decarbonization technology sectors. It includes independent electric power producers, investor-owned utilities, public utilities, equipment manufacturers, commercial end users and service providers in energy and environmental markets. Founded in 1992, the coalition's diverse business membership is united around the revitalization of the U.S. economy and the creation of a clean, secure, and reliable energy future in America.

The BCSE is pleased to have an independent small- and medium-size businesses initiative under its banner, the Clean Energy Business Network (CEBN). Together, the BCSE and CEBN represent a broad range of the clean energy economy, from Fortune 100 companies to small businesses working in all 50 States and over 350 Congressional districts. On a national basis, these industries support over 3 million U.S. jobs.

Our organizations were encouraged to see Congress enact the Infrastructure Investment and Jobs Act (IIJA), Public Law 117-58, to provide an influx of funding for clean energy and energy efficiency programs at DOE in areas such as weatherization and State energy programs, hydrogen hubs, and the new DOE Office of Clean Energy Demonstrations. Congress has recognized the United States of America must lead the world in clean energy and energy efficiency technologies to meet the need for energy security and grid reliability and safety, while boosting economic growth and reducing environmental impacts. While the IIJA investment is monumental, it does not negate the need for sustained, year-on-year increases to all of DOE's clean energy, energy efficiency, and innovation activities.

We urge Congress to continue to adequately fund Department of Energy (DOE) clean energy programs for the offices of Energy Efficiency and Renewable Energy (EERE), Fossil Energy and Carbon Management (FE), Electricity Delivery and Energy Reliability (EDER), Advanced Research Projects Agency-Energy (ARPA-E) and other essential DOE clean energy programs. These Federal research development and deployment funds can be used to leverage business investment to accelerate deployment and emissions reductions in all sectors of the economy.

The 2022 Sustainable Energy in America Factbook recently released by the BCSE and BloombergNEF shows that despite the lingering pandemic, global supply chain

bottlenecks, rising inflation, and considerable uncertainty in 2021, the clean energy and energy efficiency transition continued, with a record-breaking year for deployment of renewable power, battery storage and sustainable transportation, and an unprecedented injection of new capital into companies, technologies and projects. We encourage you to build upon this momentum with sustained support for clean energy programs in fiscal year 2023.

The Council welcomes the opportunity to share information from the Factbook and we look forward to working with you throughout the fiscal year 2023 budget cycle. Please feel free to reach out to Ruth McCormick at rmccormick@bcse.org with any questions.

A document containing fiscal year 2023 clean energy industry funding requests for BCSE members in the renewable energy, energy efficiency, energy storage, and natural gas sectors can be found here for your reference.

[This statement was submitted by Lisa Jacobson, President, Business Council for Sustainable Energy.]

PREPARED STATEMENT OF THE CARBON UTILIZATION RESEARCH COUNCIL

Summary of CURC Fiscal Year 2023 Recommendation: The Carbon Utilization Research Council (“CURC”) is an industry coalition focused on technology solutions for the responsible use of our fossil energy resources in a balanced, low carbon generation portfolio.¹ CURC recommends \$1,388,250,000 for the CCUS & Power Systems Program, funded by the Fossil Energy Research and Development (FE R&D) budget.

Benefits of Investment in Carbon Management Technologies: Deployment of carbon management technologies including carbon capture, utilization, and storage (CCUS) will have emissions reductions benefits, contribute to a growing economy, and play a critical role in the ongoing energy transition. In addition to providing low-carbon, dispatchable electricity to load follow intermittent renewables on the electric grid, CCUS provides a mean to reduce emissions from hard-to-decarbonize industrial processes including cement production and steelmaking and can help to create low- and zero- carbon fuels including hydrogen that have a wide variety of applications to decarbonize transportation, hard-to-abate industries, and provide long term, seasonal storage for the grid. International climate authorities like the International Energy Agency have determined that reaching economywide net-zero emissions in any scenario is “virtually impossible” without CCUS.

Federal investment in CCUS RD&D will also substantially benefit U.S. economic competitiveness, as the technology will allow us to maintain existing jobs and expertise in incumbent industries in addition to creating new, high-wage jobs in the energy and manufacturing sectors.

CURC-EPRI Roadmap: CURC and the Electric Power Research Institute (EPRI) continuously evaluate technology needs that reflect changing markets and policies that impact fossil fuel use in the electric sector, which are communicated through an Advanced Technology Roadmap. The Roadmap identifies a suite of CCUS technologies that, if implemented, can deliver low carbon emission, fossil-fueled power plants between 2025–2035 that are cost-competitive with other sources of electricity. Several technologies identified in the Roadmap are readying for large-scale pilot testing while others are preparing for commercial demonstration. It is critical that a program is implemented to successfully commercialize these technologies to successfully meet any proposed net-zero objectives. This means annual Federal budgets must increase to support the scale-up effort.

Federal Support of RD&D: The U.S. has been a leader in the development of fossil energy technology with the support of the DOE’s world class CCUS RD&D programs. In 2020, Congress recognized the need for expedited development and deployment of these technologies through the enactment of Public Law 116–260, which authorized approximately \$6.7 billion over 5 years for carbon management RD&D. These authorizations are in alignment with the recommendations of the CURC–EPRI Roadmap and will allow DOE to continue to make substantial progress in the development and commercialization of CCUS technologies for applications across sectors, including electric power.

¹For more information, please visit www.curc.net.

CCUS & POWER SYSTEMS PROGRAM FISCAL YEAR 2022 SPECIFIC BUDGET
RECOMMENDATIONS

CURC recommends full funding of the authorization levels for Carbon Management activities included in Public Law 116–260. However, CURC has several overarching comments regarding fiscal year 2022 funding for the CCUS and Power Systems Program:

1. Any additional funding provided by Committee for new program activities should not come at the expense of existing initiatives, for which the Department has already made substantial progress to commercialize technologies.

2. Funding for selected projects under the Coal FIRST Initiative should be provided to construct project facilities, as each project is intended to demonstrate technologies that will result in net-zero carbon electricity and hydrogen production and are in line with the objectives of this Administration.

3. Continued funding should be directed to the Department to retrofit existing coal- and natural gas-fired electric power facilities, which will be critical to achieve the Administration's electric sector decarbonization objectives.

4. Substantial investment is needed to enable large-scale carbon storage, which underpins the entire value proposition of electric power and industrial sector carbon capture as well as negative emissions carbon capture technologies.

Carbon Capture Commercialization: CURC recommends \$500M. CURC recommends funding for the Department to initiate a Carbon Capture Commercialization Program consistent with commercial demonstration objectives authorized in PL 116–260 and recommends that expanded funding for the Department be used to fund commercial-scale applications of carbon capture technologies for coal, natural gas, and industrial applications.

Carbon Capture: CURC recommends \$205M. Consistent with the objectives of Public Law 116–260, CURC's recommendation includes funding to support research, development, large-scale pilot projects, and carbon capture test centers for a variety of transformational carbon capture technologies to improve the efficiency and lower the cost of carbon capture in both power and industrial sector applications. Funding for carbon capture should also be applied to new transformational technologies that are part of the DOE's Advanced Energy Systems program (addressed below), as intended by the carbon capture program authorization in the Energy Act of 2020, as those technologies inherently include carbon capture as part of the overall process. CURC supports efforts to evaluate industrial carbon capture and negative emissions technologies, but not at the expense of critical existing R&D for post- and pre-combustion capture technologies. CURC recommends full funding for the National Carbon Capture Center (NCCC), which is a critical path for testing and scaling up new technologies.

Front-End Engineering and Design: CURC recommends \$50M for a front-end engineering and design (FEED) program on coal, natural gas, and industrial applications of carbon capture technologies, consistent with objectives authorized in Public Law 116–260, which will provide technical and economic data necessary to accelerate CCUS project deployment. Funds within this appropriation should also be utilized to conduct FEED studies of carbon dioxide storage complexes that may be part of the carbon capture projects selected for a DOE award.

Carbon Storage: CURC recommends \$200M. CURC supports the authorized funding levels for Carbon Storage activities included in Public Law 116–260. CURC notes that direct air capture and other negative emissions technologies will also be dependent on a robust carbon storage industry and recommends a more robust program as follows:

- Storage Infrastructure:* CURC—\$180M.

- Regional Initiatives:* CURC—\$30M to diversify the Regional Initiatives' efforts, which were spun out of the Regional Carbon Sequestration Partnerships (RCSPs). The Regional Initiatives develop the geologic framework and infrastructure necessary to validate and deploy carbon storage, including the assessment of locations for CarbonSAFE or other commercial-scale carbon storage projects.

- CarbonSAFE:* CURC—\$150M to fully fund CarbonSAFE Phase III projects selected in fiscal year 2020 through to Phase IV and, with remaining funds, solicit proposals for additional CarbonSAFE projects. CarbonSAFE Phase III effort will seek permits, continue to integrate efforts with regional sources of CO₂, demonstrate technical viability of storage sites and support development of the qualification processes necessary for a site to begin to commercially accept CO₂.

- CCUS Storage R&D:* CURC—\$20M. CURC recommends continued focus on R&D at all TRL levels to address technical gaps to improve reliability of CCUS

storage, including continued characterization of potential storage opportunities, monitoring and modeling technologies, risk assessment and mitigation tools should be supported.

Carbon Utilization: CURC recommends \$55.25M. CURC recommends funding for Carbon Utilization RD&D activities consistent with Public Law 116–260.

Advanced Energy Systems: CURC recommends \$273M. Public Law 116–260 includes authorizing language for R&D and large-scale pilot projects for a variety of transformational carbon management technologies, including those covered by the Advanced Energy Systems program that inherently include carbon capture as part of their system process. CURC recommends funding for specific subprograms as follows:

- Advanced Gasification Systems:* \$20M. CURC recommends continued focus on research for low cost, modular gasification technologies that will increase efficiency and lower capital costs for coal and biomass to hydrogen or power applications, as well as research to support a broad range of R&D.

- Advanced Turbines:* \$50M. CURC recommends funding to undertake R&D to improve the efficiency of gas turbines, to utilize 100 percent hydrogen as well as hydrogen-natural gas blends as well as ammonia and ammonia-hydrogen blends, and to test and validate components and their performance as an integrated system.

- Fuel Cells:* \$40M. CURC recommends funding for the development of next generation fuel cell technologies to produce both power and hydrogen from fossil fuels.

- Advanced Combustion Systems:* \$68M. CURC recommends funding to advance novel energy conversion technologies, including chemical looping (\$11M), pressurized oxycombustion (\$29M), and supercritical CO₂ systems (\$38M) for bench-scale work as well as to advance promising technologies to pilot-scale testing.

Supercritical CO₂ Technology (STEP): CURC recommends \$20M. CURC recommends efforts, consistent with the original scope of work, to complete the necessary design and construction of the 10-MW pilot and to conduct the necessary testing for the facility. CURC also recommends funds for competitively awarded research and development activities, coordinated with the Offices of Nuclear Energy (NE) and Energy Efficiency and Renewable Energy (EERE), to advance the use of supercritical power cycles.

Transformational Coal Pilot Plant Program: CURC recommends \$10M, consistent with fiscal year 2021 appropriations, to continue funding Phase III projects selected in fiscal year 2021.

Cross Cutting R&D Program: CURC recommends \$75M. CURC's recommendations for Cross Cutting R&D include:

- Sensors and Controls:* \$8M to improve monitoring of systems and apply solutions to mitigate stress on fossil systems that increasingly operate under cycling load conditions.

- Extreme Environmental Materials:* \$16M. CURC recommends \$8M to support high temperature and pressure component testing under real operating conditions, a project underway between DOE and industry; and \$8M for the A-USC Materials Consortium.

- Water Management R&D:* \$15M for thermoelectric applications of water use and reuse, reduced water withdrawals, clean-up of water discharge, and zero liquid discharge (ZLD) technologies.

- Computational Science:* \$11M.

- Advanced Energy Storage Initiative:* \$5M. CURC supports funding for thermal, mechanical, and chemical storage systems that can be integrated with fossil power systems.

- University Training and Research:* \$4M to develop the next generation workforce for the fossil energy generation industry which is experiencing a very large generation gap.

Other Initiatives Within Fossil Energy Research and Development: Outside of the CCUS and Power Systems Program, CURC provides the following recommendations within the broader FE R&D portfolio:

- Natural Gas Utilization:* \$40M. CURC recommends the establishment of a new research and development initiative within the Natural Gas Technologies office to effectively utilize natural gas for decarbonization solutions. Within those funds, CURC recommends \$40,000,000 for sustainable fuels and chemicals research and development focused on conversion of natural gas, natural gas liquids and other gas streams to low-carbon products, including chemicals and fuels such as ammonia and low carbon hydrogen. Comprehensive planning approaches for transitioning segments of the economy to hydrogen and other low-carbon fuels should be a part of the program, including analysis of the infra-

structure required to store and transport these fuels. CURC also supports the establishment of a Center for Sustainable Fuels and Chemicals at the National Energy Technology Lab and a funding level of up to \$15,000,000 for this initiative from within available funds for sustainable fuels and chemicals research and development.

—*Hydrogen RD&D*: \$86M. CURC encourages the FE to expand hydrogen research, development and demonstration activities that support fossil fuel-derived hydrogen production equipped with CCUS technologies that results in significantly reduced carbon dioxide intensity. CURC encourages the Committee to recognize the importance of low- and zero-carbon hydrogen production for a variety of end uses and to support continued collaboration with the EERE, OE, and NE.

[This statement was submitted by Shannon Angielski, Executive Director, Carbon Utilization Research Council.]

PREPARED STATEMENT OF THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT

On behalf of the Central Arizona Water Conservation District (CAWCD), I encourage you to include an allocation of \$10.7 million for the U.S. Bureau of Reclamation's Salinity Control Basinwide Program for the Colorado River Basin in the Fiscal Year 2023 Energy and Water Development 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 up to 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 Tribal 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 percent of economic activity in the State of Arizona occurs within CAP's service area. The canal provides an economic benefit of \$100 billion 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.

THE COLORADO RIVER BASIN SALINITY CONTROL PROGRAM—ITS HISTORY AND SIGNIFICANCE

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 on 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 that 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 that 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. CAWCD and other key water providers in the United States and Mexico are working to maintain salinity standards.

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.

In 2020 the Bureau of Reclamation (Reclamation) estimated the quantifiable damages to Lower Basin water users due to elevated salinity levels at about \$354 million per year. Modeling by Reclamation indicates that quantifiable damages would increase to approximately \$671 million annually by 2040 if the program were not to continue. Damages, by water usage sector, include the following:

- A reduction in the ability to reclaim and reuse water for beneficial uses, including drinking water and irrigation water supplies, due to high salinities in the water delivered to water treatment and reclamation facilities;
- 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.

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 funding amount requested is required to get the Basinwide Program back on pace with the overall Program implementation needs.

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. As such, we respectfully request \$10.7 million for the U.S. Bureau of Reclamation's Basinwide Program for the Colorado River Basin in the Fiscal Year 2023 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.

[This statement was submitted by Theodore C. Cooke, General Manager, Central Arizona Water Conservation District.]

PREPARED STATEMENT OF THE CLEAN HYDROGEN FUTURE COALITION

Summary of CHFC Fiscal Year 2023 Recommendation: CHFC recommends \$865,000,000 for clean hydrogen research, development, and deployment (RD&D) activities at the Department of Energy for fiscal year 2023. These recommendations would direct \$745,000,000 to clean hydrogen programs within the Office of Energy Efficiency and Renewable Energy (EERE) and \$120,000,000 to clean hydrogen programs within the Office of Fossil Energy and Carbon Management. In order to effectively utilize these funds, the CHFC recommends that the Department continues its collaboration between the Offices of EERE, Fossil Energy and Carbon Management, Nuclear Energy, and Science.

Background on the Clean Hydrogen Future Coalition: The Clean Hydrogen Future Coalition (CHFC) is a diverse group of stakeholders supporting Federal clean hydrogen policies that will stimulate the adoption of clean hydrogen in the U.S. and enable our country to achieve national decarbonization objectives while also increasing U.S. global competitiveness. CHFC members represent a broad spectrum of forward-thinking entities in industries that will play a critical role in the transition to a clean energy economy with a robust role for clean hydrogen.

Importance of Investments in Clean Hydrogen RD&D: With its ability to be used as a fuel source for transportation, as an industrial or chemical feedstock, or to produce and store electricity, clean hydrogen will have a critical role in accelerating decarbonization across all sectors of our economy. For example, clean hydrogen will be necessary to decarbonize heavier modes of transport—including heavy-duty trucking, shipping, and aviation—that are substantially more difficult, if not impossible, to electrify than passenger vehicles. Clean hydrogen can also be used to power certain high-temperature industrial processes that cannot be electrified and for which other mitigation options are limited or unavailable. In the electric power sector, clean hydrogen can be used to produce CO₂ emissions-free electricity and can be used to enable the long-duration energy storage necessary to achieve the net-zero emission electric grid envisioned by the Biden administration.

The CHFC was pleased to see the Department of Energy announce its Hydrogen Earthshot last year, which seeks to reduce the cost of clean hydrogen by 80 percent to \$1 per 1 kilogram in 1 decade (“1 1 1”). This is a very ambitious goal and will require significant funding for public-private partnerships, as well as additional policy tools like a clean hydrogen production tax credit (PTC).

The Infrastructure Investment and Jobs Act (IIJA) provides significant investments that will promote the development of the U.S. hydrogen economy, including funding for regional hydrogen hubs that will drive capital investments in hydrogen production, transport, distribution, and end-use. The IIJA will also provide critical funding to drive down production costs for electrolytic hydrogen. These programs will be critical to advancing clean hydrogen in the U.S., but robust R&D funding from Congress is still needed to develop new, cost-effective technologies to scale hydrogen infrastructure necessary to reach decarbonization objectives and to fully leverage the investments made by the IIJA.

FY 2023 SPECIFIC BUDGET RECOMMENDATIONS—OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

The CHFC recommends \$745 million for clean hydrogen RD&D activities within EERE. While EERE has traditionally housed the majority of Federal RD&D programs related to hydrogen, CHFC encourages the Committee to provide direction to DOE requiring cross-Department collaboration on hydrogen RD&D activities.

Hydrogen and Fuel Cell Technologies: CHFC recommends \$370 million. The CHFC provides the following direction for that funding:

- Research, Development, and Demonstration:* The CHFC recommends that the Hydrogen and Fuel Cell Technology Program expands its clean hydrogen RD&D activities based on the detailed priorities included in the IIJA in coordination with the Offices of Fossil and Nuclear Energy. The Department should continue research on novel onboard hydrogen tank systems, trailer delivery systems to reduce cost of delivered hydrogen, novel chemical hydrogen carriers, and development of material-based storage and hydrogen storage materials. Funding for electrolyzer development, including high-temperature electrolyzer RD&D activities should be funded with the \$250 million appropriated by the IIJA for these activities. The Department should be directed to continue to advance fuel cell technology development for the transportation fleet, including for long haul and heavy-duty trucking, aviation, rail and maritime applications.
- Nuclear Demonstration:* CHFC recommends that \$18 million be provided to cost-share the Office of Nuclear Energy hydrogen demonstration project, including for high temperature electrolysis research and development at a national laboratory.
- H2@scale Front-End Engineering and Design:* The CHFC recommends \$120 million for a front-end engineering and design (FEED) program intended to support the hydrogen hub funding made available in the IIJA. Funding FEED studies will enable industry to more rapidly access private sector capital to invest in projects. The Department should conduct FEED studies on projects that will produce clean hydrogen with low-, net-zero, or net-negative carbon dioxide emissions. Eligible hydrogen technologies should include hydrogen production integrated with wind or solar power generation, autothermal reforming, compact

hydrogen generators, biomass combustion to hydrogen, and solid waste and plastics to hydrogen.

Energy Efficiency & Renewable Energy, Industrial Decarbonization: Given the potential of hydrogen technologies to significantly decarbonize applications in the industrial sector, the CHFC recommends \$50 million for an Industrial End Use RD&D program. The Department should utilize these funds for a research, development, and demonstration program focused on technologies that include fuel cells and direct use of hydrogen to replace fossil fuel use, including non-road vehicle applications. The Department should include in its efforts the iron and steel, chemical manufacturing, and other industrial applications requiring high temperatures.

SuperTruck III Program: CHFC recommends \$300 million for continued funding of the SuperTruck III program to improve the energy and freight efficiency of heavy- and medium-duty long- and regional-haul vehicles. These funds should be used to invest in private sector efforts to build and manufacture new hydrogen fueled truck designs and associated fueling and other infrastructure needed to support the expansion of a hydrogen trucking industry.

Building Technologies, Safety, Codes and Standards: CHFC recommends \$25 million to address significant R&D gaps that are stalling the transition to lower-carbon and zero-carbon fuels in buildings. The CHFC encourages the Department to continue to explore research and development that can advance systems and appliances, driven by delivered fuels including renewable fuels and hydrogen, to meet consumer demand for safe, high efficiency and environmentally friendly products in residential and commercial building applications, increased utilization of renewable fuels and hydrogen, appliance venting, hybrid fuel-fired and electrically-driven systems, and on-site (micro) combined heat and power to include cooling and integration with renewables. The Department should also conduct a study and testing programs to examine the potential for integration of renewable fuels and hydrogen in building applications.

FY 2023 SPECIFIC BUDGET RECOMMENDATIONS—OFFICE OF FOSSIL ENERGY AND CARBON MANAGEMENT

The CHFC recommends \$120 million for the Office of Fossil Energy and Carbon Management to undertake hydrogen-related RD&D activities within the Fossil Energy Research and Development (FE R&D) Program. The FE R&D Program should continue to leverage existing expertise to further develop clean hydrogen production from fossil fuels coupled with carbon capture, utilization, and storage (CCUS) with low- and net-zero CO₂ emissions, or net-negative emissions when fossil fuels are co-fired with sustainable biomass resources. The Office of Fossil Energy and Carbon Management is also uniquely positioned to assess issues related to hydrogen transport and distribution.

Natural Gas Technologies: The CHFC recommends \$50 million for the Natural Gas Technologies Program as follows:

- Natural Gas Hydrogen RD&D:* CHFC recommends \$50 million for research and development related to the conversion of natural gas into low-carbon, sustainable products, including chemicals and fuels, such as ammonia and hydrogen. As part of this program, the Department should consider how these chemicals and fuels, including hydrogen, can decarbonize industries. The Department should also continue its efforts at the Center for Sustainable Fuels and Chemicals at the National Energy Technology Lab.

CCUS and Power Systems: CHFC recommends \$70 million for hydrogen-related RD&D activities within the CCUS and Power Systems Program as follows:

- Advanced Turbines R&D:* CHFC recommends that within available funds for Advanced Energy Systems, \$50 million be made available for Advanced Turbines. The Department should use these funds for a research and development program focused on utilizing clean hydrogen, clean hydrogen-natural gas blends, and ammonia and ammonia-hydrogen blends, to test and validate components and their performance as an integrated system, working cooperatively with industry, universities, and other appropriate parties.

- Solid Oxide Fuel Cells:* CHFC recommends \$20 million for the development of next generation SOFC/SOEC technologies to produce power and hydrogen from fossil fuels, biogas, and hydrogen. Recognizing the significant progress made in system integration and lifetime extension for SOFC's from this program, this activity builds on research and development to enable efficient, cost-effective electricity generation and hydrogen production with minimal use of water. This program will result in development of SOFC/SOEC technologies to produce hydrogen and electricity while benefiting from the synergy in the EERE hydrogen and fuel cell programs relative to infrastructure developments and safety of end

use. This funding will preserve U.S. leadership in SOFC/SOEC technology, ensure utilization of extensive fossil fuel resources in the U.S., and will result in ultra-high efficiency production of power and hydrogen.

[This statement was submitted by Shannon Angielski, President, Clean Hydrogen Future Coalition.]

PREPARED STATEMENT OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM

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. In 2020 the Bureau of Reclamation (Reclamation) estimated the quantifiable damages to Lower Basin water users due to elevated salinity levels at about \$354 million per year. Congress authorized the Colorado River Basin Salinity Control Program (Program) through the Colorado River Basin Salinity Control Act (Act) (Public Law 93-320) 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 \$671 million annually by the year 2040 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. A funding level of \$10.7 million is required in 2023 to prevent further degradation of the quality of the Colorado River and a commensurate increase in downstream economic damages to water users.

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, much of which is administered by the Bureau of Land Management (BLM). In authorizing the Program, Congress recognized that most of the salts in the Colorado River originate from federally owned lands. Title I of the act deals with programs downstream of Imperial Dam that enable the U.S. to meet its commitment regarding the quality of waters being delivered to Mexico (Minute No. 242 of the International Boundary and Water Commission, United States and Mexico). Title II of the act addresses measures upstream from Imperial Dam, thus improving the quality of the water delivered to users in the United States. This testimony deals specifically with 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 for projects 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 of water into the groundwater system and the dissolution and transportation of salts to the Colorado River and its tributaries. It is more efficient and cost effective 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 the Natural Resources Conservation Service (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 \$354 million annually in quantified damages and significantly more in unquantified damages in the United States and results in poor water quality for United States users. Damages, by water usage sector, include the following:

- a reduction in the ability to reclaim and reuse water for beneficial uses, including drinking water and irrigation water supplies, due to high salinities in the water delivered to water treatment and reclamation facilities,
- a reduction in the yield of salt sensitive crops, increased water use to meet leaching requirements and additional actions necessary to comply with the Clean Water Act within 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 a corresponding increase in sewer fees in the industrial sector,
- a decrease in the lifespan 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 necessary to minimize 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 3 years to facilitate compliance with Section 303(c) of the Clean Water Act (Public Law 92-500). In so doing, it adopts a Plan of Implementation consistent with these standards. 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 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 Program. Adequate funding levels for salinity control 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 water quality for nearly 40 million Americans.

[This statement was submitted by Don A. Barnett, Executive Director, Colorado River Basin Salinity Control Forum.]

PREPARED STATEMENT OF THE COLORADO RIVER BOARD OF CALIFORNIA

This testimony is provided by the Colorado River Board of California (Board) and is in support of fiscal year 2023 funding for the Department of the Interior for Title II Colorado River Basin Salinity Control Act of 1974 (Public Law 93-320), as amended. 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 implements salinity control through its Basinwide Program, established by Congress through an amendment to the act in 1995. Funding levels for the Basinwide Program have fallen behind in recent years, and a funding level of \$10.7 million is requested to be provided in FY-2023 to prevent further degradation of the quality of Colorado River water supplies and increased economic damages. Under the Basinwide Program, Reclamation funds competitive proposals for projects 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 of water into the groundwater system and the dissolution and transportation of salts to the Colorado River and its tributaries.

The Colorado River System is used by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately 5.5 million acres in the United States, and supplies municipal and agricultural uses in Mexico. Within Southern California, the Colorado River serves close to 20 million residents and 860,000 acres of irrigated agriculture, including municipal, industrial, and agricultural water users in Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. Natural and human-induced salt loading to the Colorado River creates environmental and economic damages. In 2020 Reclamation estimated the quantifiable economic damages from salt in the Colorado River at about \$354 million per year. Modeling by Reclamation indicates that these economic damages could rise to nearly \$671 million annually by the year 2040 without continued implementation of the Basinwide Program.

The 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 capac-

ity, California participates along with the other six Colorado River Basin States in the Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin States' salinity control efforts. In close cooperation with the U.S. Environmental Protection Agency (EPA) and pursuant to requirements of the Clean Water Act, the Forum is charged with reviewing the Colorado River's water quality standards every 3 years. Every 3 years the Forum also 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 2020 Plan of Implementation for continued salinity control efforts within the Colorado River Basin. The Forum's 2020 Plan of Implementation can be found on this website: [https://coloradoriversalinity.org/docs/2020 percent20REVIEWpercent20percent20Finalpercent20wpercent20appendices.pdf](https://coloradoriversalinity.org/docs/2020%20percent20REVIEWpercent20percent20Finalpercent20wpercent20appendices.pdf).

If adequate funds are not appropriated to Reclamation's Basinwide Program, significant environmental and economic damages associated with increasing salinity concentrations in Colorado River water will become more widespread in the United States and Mexican portions of the Colorado River Basin. For example, damages occur from:

- A reduction in the ability and increased costs to reclaim and reuse water for consumptive beneficial use, including drinking water supply and irrigation, due to high salinities in the water delivered to water treatment and reclamation facilities;
- A reduction in the yield of salt-sensitive crops, increased water use to meet the leaching requirements to maintain crop productivity, and additional actions necessary to comply with the Clean Water Act in the agricultural sector;
- Increased use of imported water and 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 residential 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 a corresponding increase in sewer fees in the industrial sector;
- A decrease in the lifespan 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 necessary to minimize accumulation of salts in groundwater basins.

The 2020 Plan of Implementation, as adopted by the Basin States and approved by EPA, calls for 62,400 tons annually of additional salinity control measures to be implemented by Reclamation, Natural Resources Conservation Service, and Bureau of Land Management by 2024. Over the past years, the Basinwide 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 program is essential. Based on current program cost levels, Reclamation's funding for the Basinwide Program must be at least \$10.7 million to meet those annual salinity control targets.

The Colorado River is, and will continue to be, a major and vital water resource to the nearly 20 million residents of southern California, including municipal, industrial, and agricultural water users in Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. The protection and improvement of Colorado River water quality through an effective salinity control program avoids additional economic and environmental damages to California, the other Colorado River Basin States and Mexico that rely on Colorado River water resources.

Thank you for your consideration of this testimony.

PREPARED STATEMENT OF THE ELECTRIC DRIVE TRANSPORTATION ASSOCIATION

The Electric Drive Transportation Association (EDTA) is the cross-industry trade association promoting the advancement of electric drive technology and electrified transportation. We are writing to support robust fiscal year 2023 funding for the Department of Energy's (DOE) electric transportation programs, including the Vehicle Technologies Program, Hydrogen and Fuel Cell Technologies Office, ARPA-E, Department of Energy Loan Programs, Clean Cities, and programs established by the Bipartisan Infrastructure Law (BIL) to increase electric vehicle (EV) deployment across the country.

EDTA's 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. DOE's research, development and deployment programs speed the innovation needed to transition to e-mobility.

The importance of electrifying transportation has been widely documented. Emissions from the transportation sector threaten public health and the environment. A recent report published in *Lancet Planetary Health* documents that air pollution is responsible for nearly seven million premature deaths each year. Electric transportation is essential to reducing these harmful emissions. The Union of Concerned Scientists studied the total emissions reductions of electric drive in every region of the country. The study found that no matter where in the U.S. an EV is charged and operated, it has fewer total well-to-wheels emissions than the average gasoline-powered vehicle sold today.

Electrification is also a national security imperative. According to the U.S. Energy Information Administration, the transportation sector accounted for approximately 26 percent of the Nation's energy use in 2020; 90 percent of that energy came from petroleum fuels. This reliance is a chronic threat to U.S. energy and economic security. As we are being reminded today, oil reliance also keeps consumers and businesses vulnerable to volatile markets and spiking prices. The price of electricity is more stable and affordable than gasoline, with gas costing nearly three times as much per gallon compared to the eGallon price equivalent for electricity.

In her testimony to the subcommittee on April 28, 2022, Secretary Granholm detailed the role of DOE's portfolio of electrification programs in realizing the environmental, economic and competitiveness benefits of e-mobility. Specifically, DOE's Vehicle Technologies Program is a critical element of the National effort to decarbonize transportation, leveraging private sector investments to promote innovation in advanced vehicles, infrastructure and manufacturing chains. The program advances research in batteries and power electronics, electric drive motors, 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 charging systems 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 electric alternatives in commercial vehicles. The truck and transit segment is projected to grow rapidly in the next two decades. Research, demonstration, and deployment of electric drive technologies for combination tractors, heavy-duty pickup trucks and vans and vocational vehicle technologies' systems and components will speed technology breakthroughs and contribute to cost reductions while providing public health benefits and energy cost savings throughout the economy.

The SuperTruck Program is an important part of this effort. We support increased program investment in Class 7 and Class 8 vehicles, which are a significant part of the commercial fleet. An expanded program should continue to engage partners from across the manufacturing chain—chassis original equipment manufacturers, intermediate and final stage manufacturers, including hybrid system suppliers, and infrastructure providers—to improve performance in vocational vehicles.

Through the Hydrogen and Fuel Cell Technologies Office, DOE is working with industry to accelerate the availability of fuel cell electric vehicles. There are over 12,000 of these zero emission electric vehicles on American roads today. DOE's Hydrogen Shot seeks to reduce the cost of clean hydrogen by 80 percent to \$1 per 1 kilogram in one decade, improving the affordability of the production, storage, and distribution of clean hydrogen to help achieve the goals of H2@Scale.

Improvement of battery technology remains an industry priority to help achieve cost parity of EVs with ICE vehicles. Battery prices fell approximately 89 percent between 2010 and 2020, with a 13 percent drop in 2020 alone, according to BNEF. Prices are expected to continue to decrease—despite challenges associated with material sourcing—with the development of novel battery chemistries, more efficient manufacturing, and simplified pack designs.

To address these material sourcing challenges, we support the Department's efforts to strengthen the domestic supply chain for critical elements in EV batteries, including lithium, nickel, and cobalt. The Department's recently announced \$3 billion investment, directed under the BIL, will enhance domestic capacity to meet demand for these critical elements.

ARPA-E's role is essential in overcoming high-risk technological barriers that the private sector may not attempt in the early stages of research and development.

Past programs, such as Robust Affordable Next Generation Energy Storage Systems (RANGE) and Batteries for Electrical Energy Storage in Transportation (BEEST), helped improve performance and reduce costs of batteries. New programs would expedite innovation in critical materials and develop new processes to recycle, reuse, and reclaim battery materials.

We ask that the subcommittee continue its record of support for these programs, particularly in vehicle and infrastructure deployment activities and in early market development, education, validation and enabling activities. We support increased collaboration among universities, the 17 National Laboratories, and industry to address these challenges and develop clean energy solutions. Continued funding of the Department's loan programs, including Title 17 and Advanced Technology Vehicles Manufacturing (ATVM), will build domestic capacity and support good-paying manufacturing jobs.

EDTA also strongly supports the Clean Cities program. Clean Cities works with nearly 75 local and regional coalitions to expand deployment of electric drive and alternative fuel cars and trucks and recharging/fueling infrastructure, especially in underserved and BIPOC communities. These voluntary and locally-driven efforts have a demonstrated record of success, including the cumulative displacement of more than 12 billion gasoline gallon equivalents (GGEs) of petroleum with alternative fuels since the program began in 1993.

To advance the Administration's effort to install 500,000 charging stations across the country through the National EV Infrastructure (NEVI) Program, we support directing resources to help municipalities participate. These resources could be used to reduce the time and costs for permitting, inspecting, and interconnecting eligible infrastructure through standardized requirements, online application systems, recognition programs, and other technical assistance.

We appreciate the Committee's long-standing support for the important research, development and deployment programs at the Department of Energy. At this inflection point for the climate change action and for the electric drive industry, we respectfully request that appropriations for fiscal year 2023 reflect the magnitude of both our National energy challenge and our electric drive opportunity.

Thank you for your consideration.

[This statement was submitted by Genevieve Cullen, President, Electric Drive Transportation Association.]

PREPARED STATEMENT OF ENERGY EFFICIENCY STRATEGY GROUP ORGANIZATIONS

We, the undersigned, write today to urge you to support robust energy efficiency (EE) investments in critical programs managed by the U.S. Department of Energy (DOE). Increasing investment in these programs can deliver significant emissions reductions, grow jobs in the clean energy sector, and provide savings to American consumers.

Energy efficiency, a key domestic resource, is critical to ensuring safe, reliable, and affordable energy to Americans now and in the future. Efficiency measures have cut our energy use in half relative to the size of the U.S. economy since 1980. This energy waste reduction has effectively delivered more than \$2,000 in annual savings per American. According to the American Council for an Energy-Efficient Economy, scaling up key energy efficiency-related policies and programs can slash U.S. energy use and greenhouse gas emissions by about 50 percent by 2050. These energy savings would amount to more than \$700 billion in 2050.

The U.S. energy efficiency workforce is comprised of over 2.1 million Americans, which is the largest share of the entire U.S. energy sector and is more than all combined jobs in clean and fossil energy generation. Most of these jobs provide good compensation and cannot be shipped overseas, ensuring that future generations of Americans can pursue competitive careers in energy efficiency.

The importance of the U.S. DOE in research, technical assistance, and market integration efforts that have driven gains in energy efficiency cannot be overstated. U.S. DOE EE programs provide exceptional value to American consumers and businesses, yielding benefits that far outweigh the relatively nominal outlays appropriated by Congress. According to various impact evaluation studies, DOE's innovation investments have had a benefit-to-cost ratio of 33 to 1 and generated billions of net economic benefits for the country.

We respectfully request fiscal year 2023 regular appropriations funding for the following DOE programs, as summarized below:

Buildings Technologies (BTO): \$542 million to develop innovative, cost-effective technologies, tools, and solutions that help U.S. homeowners, consumers, and busi-

nesses achieve peak energy efficiency performance in their buildings across all sectors of our economy. Within this account, robust funding is needed for:

- Residential Buildings Integration (RBI)*: \$122 million for DOE to collaborate with the residential building industry to improve the energy efficiency of both new and existing homes. RBI develops critical technologies, tools, and solutions that help U.S. consumers and businesses achieve peak efficiency performance in residential buildings across the country. RBI's work supports workforce development and training and has partnerships with thousands of small businesses in this sector, the construction trades, equipment, smart grid technology and systems suppliers, integrators, and State and local governments. The integration research, demonstration, and market transformation activities of RBI are critical as we transform America's new and existing residential buildings and work towards the Administration's goal of weatherizing 2 million homes.
- Commercial Building Integration (CBI)*: \$80 million for the program's research, development, and evaluation help advance a range of innovative building technologies and solutions, paving the way for high performing buildings that could use between 50 percent and 70 percent less energy than typical buildings. CBI works with industry, small businesses, academia, the National labs, and other entities to advance energy efficiency solutions and technologies for commercial buildings. The program, which considers buildings as systems and as part of the electric grid, continues to be transformative in moving industry partners to embrace innovation.
- Efficiency Standards, Building Codes, and Test Procedures*: \$90 million for equipment and building standards, including \$60 million for appliance standards and \$30 million for the Building Energy Codes Program. DOE is responsible for setting minimum energy efficiency standards for appliances, equipment, and lighting to ensure new models continue to make progress on efficiency as technology matures. The Department is far behind in issuing new appliance standards, making an increased focus critical. DOE plays an important support and technical assistance role in the development and implementation of building energy codes, which are adopted by States and local governments for new construction and renovations of residential and commercial buildings, that reflect developments in building energy efficiency and "lock in" savings for the life of the building. Education, training, and technical assistance have been woefully underfunded over the past several years and can be very impactful in assisting in codes' adoption and effective implementation.
- Emerging Technologies (ET)*: \$160 million for the program to enable cost-effective, energy-efficient technologies to be developed and introduced into the marketplace. ET funds and directs applied research and development (R&D) for technologies and tools that support building energy efficiency, particularly electric technologies for a carbon-free grid.
- Grid-interactive Efficient Buildings (GEB)*: \$50 million for DOE to ensure that a high level of energy efficiency is a core element of this new crosscutting program and a baseline characteristic for GEBs which are also connected, smart, and flexible. The Office should engage with the public and private sectors, including the building and manufacturing industries and State and local governments, to share information on GEB technologies, costs, and benefits, and to provide information to position American companies to lead in this area. Funding for Connected Communities and other deployment activities is encouraged.
- Advanced Manufacturing Office (AMO)*: \$600 million to enable the research, development, demonstration, and deployment of industrial energy efficiency and advanced manufacturing technologies. This level of funding is intended to accommodate an ambitious agenda of decarbonizing U.S. manufacturing by the midcentury. This goal of dramatic reductions requires increases in activity levels across the Office and some important changes in the orientation of the Office's goals. AMO should expand its efforts from promoting energy efficiency to include efforts to reduce carbon emissions for manufacturing and reduce the embodied carbon in manufactured products. Additionally, as AMO rebuilds its staffing, the Office should focus on adding expertise in important decarbonization technology areas identified in its research road mapping.
- Technical Assistance and Workforce Development*:
 - Energy Management*: \$15 million for efforts to promote Strategic Energy Management practices and \$30 million for the establishment of a program to provide competitive grants to companies for the hiring or designation of plant energy managers. For Strategic Energy Management, AMO should focus efforts on small and medium-sized manufacturing plants.
 - Save Carbon Now*: \$55 million for the Better Plants program to expand that program to offer comprehensive assessment and engagements to the 1,500

largest greenhouse gas emitting manufacturing facilities. These engagements should include, but not be limited to, targeted assessments, staff training, technical analyses of opportunities, and education.

—*Existing Low-Carbon Technology*: \$60 million for the establishment of a grant program for manufacturing plants to install underutilized existing low-carbon technologies.

—*Smart Manufacturing*: \$30 million for support of the development and adoption of smart manufacturing practices directed towards small and medium-sized manufacturers. This includes, but is not limited to, expanded funding for the Clean Energy Smart Manufacturing Innovative Institute (CESMII) to increase educational and technical assistance activities directed toward smart manufacturing adoption.

—*Industrial Efficiency and Decarbonization*: \$55 million for industrial process heating decarbonization through the establishment of a research, development, and deployment effort by AMO to promote the adoption of technologies that can dramatically reduce the GHG emissions from process heating applications.

Office of Clean Energy Demonstrations (OCED): \$200 million for transformative technology adoption through the establishment of a grant program that provides cost-share payments to manufacturing sites that make at-scale implementation of transformative technologies to reduce GHG emissions in intensive manufacturing processes.

Manufacturing and Energy Supply Chains (MESCC):

—*Industrial Assessment Centers*: \$30 million for the Industrial Assessment Centers (IAC) program to expand the program in order to increase the number of university-based centers to 40; to establish satellite centers at community colleges, technical schools, and union training facilities; and to establish an apprenticeship program with matching funding for IAC students at facilities that have received assessments in the recent past to facilitate the implementation of recommendations.

—*Flex Tech*: \$40 million for the establishment of a Flex-Tech program that provides grants to States and Tribal governments partnered with educational institutions and trade associations to provide energy and greenhouse gas reduction assessments and loans to implement identified measures at small and medium-sized manufacturers.

Federal Energy Management Program (FEMP): At least \$100 million to provide project and policy expertise to all Federal agencies, including not less than \$60 million for the Department to continue its work through the Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) program and \$2 million for the Performance Based Contract National Resource Initiative. With minimal funding, FEMP supports all agencies of the Federal Government in their quest to save energy and money for the American taxpayer while improving agency infrastructure and addressing deferred maintenance. FEMP is at the forefront of efforts to improve Federal building energy performance, which is accomplished in part by accessing and leveraging private capital in performance contracts. FEMP's work has attracted private capital used to finance over 400 projects across two dozen agencies and resulted in \$7.8 billion in investments in Federal energy efficiency and renewable energy improvements. These improvements have generated approximately \$17.7 billion in cumulative energy cost savings for the Federal Government. Specified funding for AFFECT has been provided in prior fiscal years to provide small grants to Federal agencies to help achieve energy savings and resilience goals. These grants are then leveraged through performance contracts, allowing agencies to utilize private finance to complete innovative and comprehensive energy and water conservation projects that would not otherwise be possible.

Weatherization Assistance Program (WAP): At least \$422.5 million is recommended for the Weatherization Assistance Program, including \$375 million for the base Program, \$10 million for training and technical assistance, and \$37.5 million for the Weatherization Readiness Fund. R&D investments will continue to make emerging technologies cheaper and more accessible, but DOE's Weatherization Assistance Program is particularly important for bringing energy efficiency to communities and families that need it most. According to the Energy Information Administration, over 25 million American households report forgoing food or medicine to pay energy costs, while over 12 million households report being unable to use their heating or cooling equipment. Since 1976, WAP has helped make more than 8 million homes more efficient, saving the average recipient about \$4,200 over the lifetime of their home. Each WAP dollar produces \$4.50 in benefits, including energy savings as well as improved health and safety. Federal weatherization assistance also helps workers and small businesses.

State Energy Program (SEP): At least \$115 million is recommended for State Energy Program grants, including \$25 million to be used for technical assistance on energy and related air quality in schools. At least \$90 million of the SEP funds shall be utilized for direct formula grants to the States. SEP leverages over \$10 for every Federal dollar invested and saves over \$7 for every Federal dollar invested. In addition to energy efficiency and renewable energy programs, SEP is critical for dealing with cyber security and energy emergency preparedness and response. SEP is extremely flexible and is the basis for a variety of partnership programs.

U.S. Energy & Employment Report (USEER): \$2 million for the Office of Policy to complete the annual U.S. energy employment report that includes a comprehensive statistical survey to collect data, publish the data and provide a summary report. The information collected will include data related to employment figures and demographics in the U.S. energy sector. The report presents a unique snapshot of energy efficiency employment in key sectors of the economy, including construction and manufacturing.

Energy Information Administration: \$144 million to continue important data collection, analysis, and reporting activities on energy use and consumption, including the Commercial Buildings Energy Consumption Survey and the Residential Buildings Energy Consumption Survey.

We stand ready to work with Congress, the White House, and Federal agencies to identify ways the U.S. can improve the affordability and access of energy-efficient technologies, unlock utility savings for consumers, reduce energy-related carbon emissions, and improve public health. We appreciate your consideration of our requests.

Sincerely,

Advanced Energy Economy (AEE)

Alliance to Save Energy

American Council for an Energy-Efficient Economy (ACEEE)

Building Performance Association (BPA)

Business Council for Sustainable Energy (BCSE)

E4TheFuture

Environmental and Energy Study Institute (EESI)

Federal Performance Contracting Coalition (FPCC)

Institute for Market Transformation (IMT)

International Code Council (ICC)

National Association for State Community Services Programs (NASCSPP)

National Association of Energy Service Companies (NAESCO)

National Association of State Energy Officials (NASEO)

Natural Resources Defense Council (NRDC)

Southeast Energy Efficiency Alliance (SEEA)

U.S. Green Building Council (USGBC)

[This statement was submitted by Dane Farrell, Energy Efficiency Strategy Group Organizations.]

PREPARED STATEMENT OF THE FEDERAL PERFORMANCE CONTRACTING COALITION

Chair Feinstein, Ranking Member Kennedy, and members of the subcommittee, as you deliberate on the important programs to be funded in the FY23 appropriations bills, we respectfully request that \$100 million be allocated to the Federal Energy Management Program (FEMP) within the Office of the Under Secretary Infrastructure (formerly within the Office of Energy Efficiency and Renewable Energy) at the U.S. Department of Energy (DOE), with \$60 million designated to the Federal Energy Efficiency Fund, also known as Assisting Federal Facilities with Energy Conservation Technologies (AFPECT) grant program. We also request the following report language be included:

“The Committee recommends \$100,000,000 for the Federal Energy Management Program. The recommendation provides not less than \$60,000,000 for the Department to continue its work through the Assisting Federal Facilities with Energy Conservation Technologies (AFPECT) program. The Committee directs FEMP to continue requiring all AFPECT grant funding to be leveraged through private sector investment in Federal infrastructure to ensure maximum overall investment in resiliency, efficiency, emissions reductions, and security. Funding should be directed to projects that attract at least 10 dollars for each Federal dollar invested and that utilize public-private partnerships like energy savings performance contracts (ESPCs) and utility energy service contracts (UESCs).”

In fiscal year 2022, Congress graciously directed \$20 million for the AFFECT program. This small amount of funding allows agencies to continue to address resiliency as well as backlog maintenance, critical upgrade and maintenance needs, and other infrastructure on our Federal sites such as military bases, VA hospitals, and GSA buildings. The FPCC knows that we can address such critical infrastructure needs using fewer dedicated Federal dollars through performance contracting, and the AFFECT program facilitates just that.

The FPCC believes that using just a nominal amount of appropriated dollars for critical priorities such as cybersecurity, resiliency, and net-zero/deep energy efficiency retrofits will net:

- Additional private-sector dollars invested in the Federal Government,
- Improved Federal facility resiliency,
- Significant energy cost savings,
- Emissions reductions while addressing critical infrastructure failures, and
- Enhanced attention to ongoing operations and maintenance and regular equipment replacement costs

In fact, fewer dollars need to be appropriated overall if they are leveraged with private sector dollars. Leveraging allows precious Federal resources to focus on core mission objectives and transfers project execution risk to the private sector.

FEMP is the appropriate place for these dollars as they will be available to leverage performance contracting for all Federal agencies. FEMP has provided small amounts of appropriated dollars to leverage performance contracting through the AFFECT grant program for the past several years. The \$11 million appropriated in fiscal year 2021 resulted in DOE investing a total of \$13 million in AFFECT funding in 17 Federal agency projects that, when combined with the investment from the private sector, are expected to surpass \$737 million in infrastructure improvements. Congress further recognized the benefit of this program by providing it with \$250 million in one-time funding through the bipartisan infrastructure law—and make no mistake: when considering the substantial amount of derelict and outdated infrastructure in Federal facilities, these dollars are needed more than ever to meet requirements to improve energy and water utilization and site resiliency. Performance contracting projects, which focus on new technologies and resiliency, will help agencies across the Federal Government address backlog maintenance, which the Office of Management and Budget (OMB) estimates is \$174 billion government-wide. At a minimum, it would specifically address the \$7.2 billion in cost-effective energy-related backlog maintenance already identified in Congressionally mandated audits (EISA 2007, Section 432), which must now be addressed after the passage of the Energy Policy Act of 2020.

FEMP, with minimal funding, supports all agencies of the Federal Government in their quest to become more efficient, resilient, and secure and to reduce greenhouse gas emissions. The FEMP function of assisting all Federal agencies allows them to achieve these goals while saving money for the American taxpayer, improving aging infrastructure, and addressing deferred maintenance. FEMP also plays the critical role of trainer, facilitator, and honest broker for all Federal facilities wishing to address necessary facilities- and energy-related infrastructure.

As the single largest U.S. energy consumer with more than 360,000 buildings and structures comprising 3 billion square feet, the Federal Government has a significant opportunity and responsibility to lead by example through demonstrating and deploying energy and water conservation best practices and technology solutions. FEMP is at the forefront of responding to Administration priorities, statutory requirements, and Federal agency needs while helping to maintain resilient, efficient, and secure installations for mission assurance. FEMP assists Federal agencies with various needs, including technology development and integration, infrastructure improvements, energy project development and implementation assistance, and workforce development.

Energy Savings Performance Contracts (ESPCs) and Utility Energy Service Contracts (UESCs) are alternative financing methods created by Congress that utilize private sector resources and capabilities to complete Federal energy projects. Under an ESPC, a private company finances and implements an energy savings project for a Federal agency, measures and verifies that the installed measures are working as promised, and guarantees that energy savings will accrue. The private sector is then repaid over time through the savings on the customer's utility bill. As such, these contracts allow Federal agencies to address critical maintenance backlogs and infrastructure needs with no added expenditures by the Federal Government. According to FEMP, DOE IDIQ ESPC projects have achieved over \$17.7 billion in guaranteed energy savings across the Federal Government and generated investments of \$7.8 billion in Federal energy efficiency and renewable energy improvements. These projects have resulted in approximately 615 trillion Btu in life cycle

energy savings for the Federal Government, demonstrating their effectiveness as a tool to improve the Nation's energy independence and security posture.

FEMP's role is essential. It provides training, guidance, and technical assistance to help agencies achieve their energy, water, and carbon reduction goals. Additionally, FEMP provides oversight of every ESPC for the life of the contract. Because agencies are short on personnel, this is a critical function to ensure dollars are well spent and maximize environmental impact.

Utilizing performance contracting to address infrastructure improvements instead of using appropriated funds for direct services is a commonsense approach that reduces risk to the Federal Government and ensures that projects are well managed since the private sector partner must guarantee performance to get paid.

In past years, when appropriated dollars have been scarce, FEMP funding has leveraged between \$800 million and \$1.4 billion in private investment in Federal infrastructure with no added cost to the Federal Government, using money from existing funding streams. A 2013 report by the Oak Ridge National Laboratory (ORNL) titled *Beyond Guaranteed Savings: Additional Cost Savings Associated with ESPC Projects* found that for a typical ESPC, the actual cost savings to the Federal Government is 174 percent to 197 percent of the guaranteed savings by the contractor.

The members of the Federal Performance Contracting Coalition (ABM, AECOM, Ameresco, CEG Solutions, Constellation, Energy Systems Group, Honeywell, Johnson Controls Inc., NORESO, Schneider Electric, Siemens, Southland Energy, and Trane) know firsthand how impactful ESPCs are in saving energy costs, taxpayer money, and creating jobs in every State in the country. Our members represent approximately 90 percent of the Energy Savings Performance Contracts (ESPCs) in Federal facilities. They are committed to working with Congress and the Administration to facilitate more, faster, bigger, and better ESPC projects. Thank you for your consideration of our request.

[This statement was submitted by Dane Farrel, Director, Government Affairs.]

PREPARED STATEMENT OF THE GAS TURBINE ASSOCIATION

The Gas Turbine Association* (GTA) appreciates the opportunity to provide the Senate Committee on Appropriations with our industry's statement concerning recommended FY23 funding levels for the Department of Energy (DOE) Fossil Energy and Carbon Management R&D Program.

GTA is fully supportive of the decarbonization goals that require significant investment with a relevant technology roadmap. GTA understands the global urgency surrounding Energy Security, Energy Equity, and Environmental Sustainability. Our deeply held belief is centered on the long-term value and benefit that gas turbine technology has made and will continue to make in terms of contributing to a balanced and greener energy solution. Our technology, innovative history, and pathway forward are centered on optimizing output, improving thermal efficiency, and achieving environmental friendliness by reducing GHG emissions (with a goal of achieving a zero-carbon impact). We have worked successfully and have commercialized low emissions products since the 1970's. Our investment path has focused on meeting the need for low-cost energy production and ensuring the operating flexibility that is driven by today's changing market demand—gas turbines complement renewable energy systems to ensure grid stability and resiliency. Our fast start/stop capability is unmatched in the market. Gas turbines will contribute significantly to the decarbonization of the energy market.

The GTA strongly believes that DOE R&D funding should be prioritized to improve the performance and carbon footprint of our Nation's installed base of power generation infrastructure. Programs that incorporate diversity, equity, and inclusion elements to promote the representation and participation of different groups in the R&D space are an essential investment in underserved communities.

Representing the largest share of current electrical generation across the country, gas turbines provide critically important electrical generation capacity and dispatchability functions that are key to effective and efficient grid operations. These benefits include:

- Firming capacity enabling broader adoption and interconnection of renewable generation facilities,
- Integrating carbon capture and storage solutions, including both pre- and post-combustion carbon capture technologies,
- Securing energy through reliance on domestic sources of supply to meet our Nation's growing energy needs,
- Meeting social justice energy goals through affordable access.

With this country's focus on infrastructural improvements, accelerated electrification and US manufacturing, we are entering a period when the U.S. economy will depend more than ever on advanced gas turbine technologies. Gas turbines are used extensively throughout the U.S. for centralized and distributed electrical power generation, as well as industrial applications. Gas turbines can reduce local air pollution, increase energy resilience, lower utility costs and energy burdens, and create good-paying jobs. By advancing energy security and stability, gas turbines can provide increasing support for equality of opportunity and access to energy.

In addition, investing in improved turbine efficiencies as part of a "performance package" paired with carbon-capture technologies can help to operationalize lowest-cost carbon capture solutions. These solutions would in turn provide important elements enabling environmental justice: delivering resilient, clean, affordable power with advanced decarbonized gas turbine technology. This decarbonization may include the existing installed fleet, a significant portion of which is located within communities identified by the EPA as bearing a disproportionate burden of environmental harms and adverse health outcomes.¹ Additionally, reducing the cost of capture promotes adoption, preserving existing jobs and communities while creating new jobs to modernize these vital assets. The gas turbine community looks forward to developing world class technology to ensure US net-zero generation and lead the world in affordable clean power.

As the US National Academy of Sciences has highlighted in a recent report, *Advanced Technologies for Gas Turbines*: "the gas turbine industry will continue to play a critically important role in the generation of electric power, aircraft propulsion, and the oil and gas industry for decades to come, both domestically and globally." The GTA therefore strongly believes that advancing gas turbine technology should be a priority for the DOE and our Nation in order to keep our economy strong, preserve jobs, and maintain this country's preeminent position as a global gas turbine technology provider.

Based on input from the National Academies study and other industry stakeholders, the GTA believes that the core element of these programs should include the following:

1. Improved Efficiency. Increase combined cycle efficiency to more than 67 percent and simple cycle efficiency to more than 50 percent. This involves both improvements to existing installed power generation facilities as well as development and commercialization of technologies for new generation systems. Each percentage point increase in efficiency of the U.S. gas turbine power generation fleet results in emissions reductions equivalent to taking 2 million cars off the road, and provides an economic benefit of more than \$7 billion to the U.S. economy.²
2. Improvements in Fuel Flexibility, enabling gas turbines to operate with high proportions of hydrogen (including pure H₂) and other renewable gas fuels. This will make it possible to achieve low to no CO₂ emissions within our existing generation base and power production infrastructure. Gas turbines also have a significant role to play in compression and distribution of hydrogen, leveraging existing infrastructure and supporting upgrading of our Nation's gas distribution network.
3. Compatibility with Renewable Energy Sources delivering resilient, clean and smart grids. This will enhance efficiency and operational flexibility by reducing turbine start up times and improving the ability to accommodate flexible power demands inherent in integrating intermittent power sources into the grid while retaining grid stability and enhancing resilience.
4. Cutting-edge Technologies—research and development in areas including combustion; heat transfer; high temperature materials including superalloys, coatings, and ceramics paired with improved manufacturability;
5. Technology Demonstration and Validation Capabilities—support component testing, subscale testing, and full-scale testing in existing fleets

In recent years the Fossil Energy budget has provided \$27 million/year for gas turbine technology R&D. This was increased to \$35 million in FY 2022, however this level is still only a fraction of the funding authorized for this program by Congress in 2020. In the FY 2021 omnibus appropriations bill, the Energy Policy Act of 2020 established a dedicated line item for advanced gas turbine research and development. To build upon this development, the GTA urges the Senate to increase

¹United States Environmental Protection Agency, "Power Plants and Neighboring Communities", US EPA Clean Air Markets, Retrieved 05/20/2022, www.epa.gov/airmarkets/power-plants-and-neighboring-communities#graphing.

²10-yr projection with EIA fuel price projections and 1 percentage point efficiency improvement.

gas turbine R&D funding for the Fossil Energy Research and Development (FER&D): High Efficiency Turbines program to \$50 million to match the level authorized in the Energy Act of 2020.

With natural gas being key to our energy future, the DOE should invest in gas turbine research as part of a broad portfolio to accelerate decarbonization of our economy and robust U.S. manufacturing and job growth. GTA supports enhanced investment in research and development to minority institutions and HBCUs with programs advancing technology in clean energy, energy efficiency and climate programs geared to underserved communities.

Gas turbines produce less than half the CO₂ per megawatt hour than other fossil fuels, and have the ability to integrate hydrogen and other fuels to achieve low or zero-carbon emissions

- Gas turbines are key to stabilizing the electrical grid.
- Gas turbines, with their rapid response capability, are essential for integrating with intermittent renewable energy sources to provide reliable power at all times.
- Gas turbines are a vital part of the growing distributed generation infrastructure.
- Gas turbines are a major manufacturing export sector for the United States—the U.S. exports more than \$10 billion annually in gas turbine systems and components, and has a trade surplus of \$6 billion per year in turbine technologies.

Gas turbines provide a variety of functions essential to the effective, efficient and sustainable operation of America's energy system and our Nation's economy. In addition to the attributes outlined above, gas turbines are the primary source of dispatchable power for microgrids across the country (including hospitals, schools, military installations and the US Capitol complex), and underpin critical infrastructure including our Nation's natural gas distribution network. In addition, gas turbines ensure the stability and reliability of our Nation's electric grid while supporting hundreds of thousands of high-paying jobs in US manufacturing, engineering, operations, repair and related occupations.

The Department of Energy's R&D programs play a very important role in supporting the ongoing competitiveness of American manufacturers in the energy industry. Today's most advanced gas turbines have combined cycle efficiency levels exceeding 61 percent. In both the United States and other countries, there is a focus on technology advancements towards 65 percent, and long-term 67 percent+. In particular, China has identified advanced gas turbines as an industrial sector with critical strategic and economic implications and is devoting vast resources to building its gas turbine manufacturing industry as part of the "Made in China 2025" initiative. Maintaining the competitive edge for the U.S. gas turbine industry is critical to sustaining our manufacturing base and its jobs, producing electricity more efficiently, improving air quality, and increasing exports. An enhanced DOE focus on gas turbine technology R&D funding would lead to improved private/public strategic partnerships which are critical to R&D success and rapid market deployment. Examples of technology advancement areas include the development and integrated testing of: fuel-flexible combustors; turbine components; advanced cooling concepts; advanced aerodynamics; improved materials; and more capable coatings.

In short, advancing gas turbine technology is important to the United States. And increased DOE funding in this strategic area can maximize the potential of every R&D dollar.

The GTA respectfully requests \$50 million in FY23 appropriations for the Fossil Energy R&D: High Efficiency Turbines Program targeted to advanced gas turbine R&D to meet critical national goals including decarbonization and environmental justice, fuel efficiency to lower the cost of electricity, high-tech jobs, grid stability and reliability, and fuel flexibility, as well as ensuring the US maintains its pre-eminent position in the global market.

[This statement was submitted by Salvatore A. DellaVilla, Managing Director, Gas Turbine Association.]

PREPARED STATEMENT OF LINCOLN NETWORK

Chairwoman Dianne Feinstein, Ranking Member John Kennedy, and Members of the subcommittee:

My name is Lars Erik Schönander. I am a Policy Technologist at Lincoln Network, a think tank to help bridge the gap between Silicon Valley and DC along with leveraging technology and technical talent to solve governance and policy challenges.

The Department of Energy has requested \$144 million for FY 2023 for the Energy Information Administration (EIA).¹ As Congress considers that request, the committee should require the EIA to collect and report data on foreign investments in the U.S. energy sector to restore transparency in our energy industry as a requirement for fulfilling the request. I respectfully urge the committee to consider making EIA collect data on foreign energy investment in the United States again.

Much like in the 1970s, when the United States founded the Department of Energy, we are in a chaotic period for the energy sector. With gas prices at new heights,² it is critical that the public has a transparent picture of America's energy industry, and who controls and invests in the assets in said industry.

When Congress established the Department of Energy by passing the Department of Energy Organization Act of 1977, lawmakers included the following language to ensure transparency about foreign influence in the US energy sector and other matters:³

In accordance with the Department of Energy Organization Act, 42 U.S.C. 7257(8), the Energy Information Administration (EIA) prepares an annual report for the Secretary of Energy and for transmittal to Congress that summarizes foreign investment, energy operations, and financial performance in U.S. energy enterprises. The information is available for use by the Congress, government agencies, and the public.

These reports provided legibility to our energy industry. For example, the "Acquisitions and Divestitures in U.S. Energy by Foreign Direct Investors 2007" report shows what companies and what countries bought and sold American energy companies.⁴ Similarly, the "Profiles of Foreign Direct Investment in U.S. Energy" report shows what regions of the world were investing in our petroleum industry.⁵

Reviewing the history of this program, however, shows that the Department of Energy has stopped collecting this information.⁶ As a result of a \$15.2 million budget cut at EIA in 2011, a variety of data collection programs were canceled.⁷ One of these programs was the form EIA-28, the "Financial Reporting System." The EIA-28 form was the basis for the annual EIA reports providing analysis on foreign investment in our energy industry. Since its cancellation, no reports have been generated.

The Committee should direct the Department of Energy to report to Congress on how to restart this program and collect this information. While EIA tried to restart the collection of the data after 2011, as seen by notices in the Federal Register in 2013,⁸ these submissions did not lead to the form being used again. Congress should require the Department of Energy to investigate why this program was cut in 2011 and why attempts to bring it back later did not succeed, and then mandate the Department of Energy to bring back the program.

CONCLUSION

The funds that Congress provides to the Energy Information Administration offer the American people one of the best sources of information on our energy industry. In FY 2023, the Committee should mandate that funding to the EIA be tied to collecting data that provides transparency on how foreign investors interact with our energy industry. Doing so would allow the American people and Congress to understand the full extent of foreign countries' investment in our energy industry.

¹ Department of Energy, "Department of Energy FY 2023 Congressional Budget Request," March 2022, <https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-in-brief-v6.pdf>.

² Ella Koeze and Clifford Krauss, "Why Gas Prices Are So High," New York Times, June 14, 2022, <https://www.nytimes.com/interactive/2022/06/14/business/gas-prices.html>.

³ General Accounting Office, GAO/NSIAD-90-25BR, Foreign Investment: Federal Data Collection on Foreign Investment in the United States (1989), p. 12, <https://www.gao.gov/assets/nsiad-90-25br.pdf>.

⁴ Energy Information Administration, "Acquisitions and Divestitures in U.S. Energy by Foreign Direct Investors 2007," 2007, <https://www.eia.gov/finance/archive/fdiad2007.pdf>.

⁵ Energy Information Administration, "Profiles of Foreign Direct Investment in U.S. Energy," 1990, <https://play.google.com/books/reader?id=Hayc48sTggYC&pg=GBS.PA8&hl=en>.

⁶ Lars Erik Schönander, "The United States Should Collect Data on Foreign Energy Investment Again," RealClearEnergy, May 24, 2022, https://www.realclearenergy.org/articles/2022/05/24/the_united_states_should_collect_data_on_foreign_energy_investment_again_834001.html, May 24, 2022.

⁷ Energy Information Administration, "Immediate Reductions in EIA's Energy Data and Analysis Programs Necessitated by FY 2011 Funding Cut," April 28, 2011, <https://www.eia.gov/pressroom/releases/press362.php>.

⁸ 78 Fed. Reg. No. 48 (March 12, 2013), <https://www.govinfo.gov/content/pkg/FR-2013-03-12/pdf/2013-05632.pdf>.

[This statement was submitted by Lars Erik Schönander, Policy Technologist, Lincoln Network.]

PREPARED STATEMENT OF METHANE ACTION

Mr. Chairman and Members of the subcommittee,

In this testimony, on behalf of Methane Action, a not for profit organization, I summarize our detailed recommendations¹ for removing methane and other major greenhouse gases from the atmosphere and beginning the governance of these methods. These recommendations are from scientists, lawyers, economists and engineers with expertise in the rapidly evolving science and policy of methane removal.² The world must rapidly reduce emissions, of potent short-lived climate pollutants (SLCPs)³ such as methane, which is over 80 times more powerful than CO₂ in its impact period of 20 years. Methane is now at twice its preindustrial levels in the atmosphere and rising every year, and a burst of methane could erupt at any time from the melting permafrost and shallow waters off Siberia. Therefore, we must develop and deploy methods of converting or removing methane and other “SLCPs” responsibly and soon.

We recommend that you include in your FY23 bill the language below to create a Climate Restoration Program and that your Committee Report include descriptions of the removal methods below to guide the EPA, though the agency could adjust the details.

Suggested Bill Language: After adding \$22,200,000 to the ARPA-E section total, insert: “Of the funds included under this heading, no less than \$22,200,000 shall be allocated for the establishment of a Climate Restoration Program led by the Secretaries of Energy and Agriculture, the Bureau of Reclamation and the Administrator of the Environmental Protection Agency, for the research, development, assessment and deployment of methods for the long term removal, oxidation or destruction of methane and other greenhouse gases, near and far from their sources, whether related to energy or not, using, among other methods: filters, oxidation, photocatalysis, metal catalysts, biological action, enhanced rock weathering, and agricultural innovations including regenerative agriculture to improve soil health and carbon drawdown, as further described in the report accompanying this act.”

Suggested Committee Report Language: Several of the following Climate Restoration research programs could cover more than 1 year with contracts or grants committed or obligated in FY23. These examples are illustrative and not meant to be definitive or exhaustive. All are expected to be cost-effective. For comparing the cost of removing methane and other climate-forcing gases, the term “CO₂ equivalent” (CO₂-eq) refers to removing an amount of the gas that has global warming potential equivalent to an equal amount of CO₂. The Committee expects reports on the benefits, co-benefits and costs.⁴

Explanation of the Research Proposed

1. *Zeolite surfaces.* Zeolites are porous, high surface area alumina-silicate minerals used as molecular sieves and in water-treatment applications. Copper (Cu)—and iron (Fe)-zeolites are methane-oxidizing catalysts already used to convert methane to methanol (CH₃OH), a partial oxidation product (one added oxygen atom). More recently, zeolites have been shown to oxidize methane to carbon dioxide.⁵ The ability

¹We have provided, e.g., a memo to your staff under the title “Catalog of Research Needs”.

²(See, E.g., scientists’ letter of April 2021 at MethaneAction.org).

³Mitigating climate disruption in time: A self-consistent approach for avoiding both near-term and long-term global warming. Dreyfus, G. B., Xu, Y., Shindell, D. T., Zaelke, D., & Ramanathan, V. (2022). Proceedings of the National Academy of Sciences, 119(22), e2123536119. <https://doi.org/10.1073/pnas.2123536119>.

⁴We note that most scientists calculate that methane is at least 80 times more powerful in its warming than CO₂ over 20 years and this makes its removal far more important than the 100 year equivalent estimates used in older accounting. See, Abernethy S, O’Connor FM, Jones CD, Jackson RB. 2021 Methane removal and the proportional reductions in surface temperature and ozone. Phil. Trans. R. Soc. A 379: 20210104—“Our results demonstrate the effectiveness of methane removal in delaying warming thresholds and reducing peak temperatures, and also allow for direct comparisons between the impacts of methane and carbon dioxide removal that could guide future research and climate policy.”

⁵Methane removal and atmospheric restoration. Jackson, R. B., Solomon, E. I., Canadell, J. G., Cargnello, M., & Field, C. B. (2019). Nature Sustainability, 2(6), 436–438. <https://doi.org/10.1038/s41893-019-0299-x>; Atmospheric- and Low-Level Methane Abatement via an Earth-Abundant Catalyst. Rebecca J. Brenneis, Eric P. Johnson, Wenbo Shi, and Desiree L. Plata, 29 December 2021, ACS Environment Au. <https://doi.org/10.1021/acsenvironau.1c00034>.

of zeolites to adsorb CO₂ from the atmosphere is well known. Scientists have screened almost 100,000 zeolite structures as potential methane sorbents. Relatively low-temperature methane oxidation has already been shown in zeolites such as Cu-ZSM-5 and Fe-ZSM-5, with Fe zeolites able to oxidize methane at room temperature. Higher temperatures and pressures generally lead to greater conversion efficiencies. Teams leading: Stanford University, U.S.; Massachusetts Institute of Technology (M.I.T.), U.S. (partially funded to date by ARPA-E) Cost range: Target of \$100 per metric ton of CO₂ equivalent. For active systems with blowers, air handling will be required (hence the desire to partner with operating DAC facilities). Passive systems do not require such air handling. Funding need: \$500,000/yr, 2 years (\$1,000,000 total) for sorbent and catalyst development at ambient methane concentration. \$1,000,000

2. *Photocatalytic surfaces (small scale urban solar chimneys)—prototype testing.* Photocatalysts are metal oxide minerals activated by sunlight or by artificial UV-light able to oxidize organic pollutants and greenhouse gases, at room temperature.⁶ The smaller the size of the nanoparticles and the larger the surface area and porosity, the faster the oxidation rate. Several are proven to fully oxidize methane, such as modified zinc oxide or titanium dioxide. Trials will be conducted on the ventilation system of an agricultural facility with cows. Then a prototype will be tested on a landfill. Cost range: Based on estimations of infrastructure requested results in a cost ton⁻¹ CO₂-eq is \$166 by 2030 with a target of \$100 by 2040. Funding need: \$1,500,000 per year for 3 years + additional \$1,000,000 to build the pilot plant. \$5,500,000

3. *Photocatalytic large-scale solar chimneys and solar chimney power plants.* Giant solar chimneys can be constructed that cause heated air to updraft, which provides flowing air that can generate electricity through a turbine, comparable to a wind-mill.⁷ The structure and coatings on the solar chimney allow flowing air to be cleansed of methane via photocatalytic coatings or other methods. Cost range: Based on estimations of infrastructure requested results in a cost per ton CO₂-eq is \$166 by 2030 with a target of \$100 by 2040. Funding need: \$1,000,000 per year for 3 years: \$3,000,000

4. *Iron salt aerosols demonstration phase.* Many ships burn low-cost bunker fuels that contain metals including iron that may have the favorable side effect of enhancing the naturally occurring chlorine atom sink for methane.⁸ Existing evidence supports the theory that the mix of particle-phase iron, sunshine, and sea spray (containing natural chloride) generates chlorine atoms that will oxidize methane in the ship's plume. University researchers are prepared to demonstrate this mechanism using a combination of laboratory experiment, reaction system modeling and field tests. After appropriate assessment, consultation, permitting and governance, practitioners could then harness its power to control methane at scale. It is important to note that this approach would take advantage of present-day shipping traffic and the large volumes of air that are in contact with dilute ship plumes. Cost-range: \$9 per metric ton of CO₂-eq or less. A full environmental impact assessment should be completed before deployment. \$1,500,000

5. *Chlorine based photochemical removal at point sources. (Type 1)* This method generates chlorine atoms using low-cost light sources and uses a catalytic mechanism to recycle chlorine within a closed reactor. The innovators are at technology readiness level 3 (experimental proof of concept) and seek to bring this to technology readiness 5 (validation in relevant environment). Cost-range: Modeling based on power requirement results in a price of \$9 per ton of CO₂-eq. Funding needed: \$2 million to build a prototype to field to test at livestock barns and a coal mine vent. \$2,000,000

⁶The comprehensive performance analysis on a novel high-performance air-purification-sterilization type PV-Trombe wall. Yu, B., Li, N., Yan, C., et al. (2022). *Renewable Energy*, 182, 1201–1218. <https://doi.org/10.1016/j.renene.2021.11.029>; A new double-skin façade system integrated with TiO₂ plates for decomposing BTEX. Building and Environment, 180, 107037. Li, H., Zhong, K., & Zhai, Z. J. (2020). <https://doi.org/10.1016/j.buildenv.2020.107037>.

⁷Removal of non-CO₂ greenhouse gases by large-scale atmospheric solar photocatalysis. De Richter, R., Ming, T., Davies, P., Liu, W., & Caillol, S. (2017). *Progress in Energy and Combustion Science*, 60, 68–96. <https://doi.org/10.1016/j.pecs.2017.01.001>; Ming, Tingzhen, et al. "Solar chimney power plant integrated with a photocatalytic reactor to remove atmospheric methane: A numerical analysis." *Solar Energy* 226 (2021): 101–111. <https://doi.org/10.1016/j.solener.2021.08.024>.

⁸A nature-based negative emissions technology able to remove atmospheric methane and other greenhouse gases. Ming, T., de Richter, R., Oeste, F. D., Tulip, R., & Caillol, S. (2021). *Atmospheric Pollution Research*, 12(5), 101035. <https://doi.org/10.1016/j.apr.2021.02.017>; Wittmer, J., & Zetzsch, C. (2017). Photochemical activation of chlorine by iron-oxide aerosol. *Journal of Atmospheric Chemistry*, 74(2), 187–204. <https://doi.org/10.1007/s10874-016-9336-6>.

6. *Chlorine-based photochemical removal in the global atmosphere. (Type 2)* This method generates chlorine atoms using sunlight by generating an aerosol of FeCl_3 in marine environment where there are sea brines. The reaction is catalytic in iron, the chlorine atoms being provided by the sea salt. The innovators are at technology readiness level 4 (prototype for the aerosol generation tested in-doors) and seek to bring this to technology readiness level 5 (validation in relevant environment). Cost-range: Modeling based on FeCl_3 consumption results in a price of \$2–3 per ton of CO_2 -eq. \$2,000,000

7. *Chlorine-based photochemical removal. (Type 3—Alternative Methods)* The generation of Cl atoms can be made by photolysis of Cl_2 gas, produced by the well-established chlor-alkali industrial process. Other methods to generate chlorine atoms to remove methane will be explored. In particular, in order to be able to rapidly react if a methane burst occurs (for instance from methane hydrates, due to a submarine landslide after an earthquake). Cost-range: \$20 per ton of CO_2 -eq, based on estimations of chlorine gas prices and the cost of UV light at 254 nm for photolysis. Funding needed: \$300,000

8. *Climate chemistry global model to study accelerated recovery of the stratospheric ozone layer.* Enhancing the tropospheric production of hydroxyl radicals and chlorine atoms will increase oxidative capacity of the troposphere and might reduce the amount of halogenated compounds reaching the stratosphere. Before conducting open-air field tests, global computer modeling is needed to anticipate benefits and any possible side effects of halogenated gases from natural sources, such as chloromethane produced by plankton, and anthropogenic sources. This can be done using the climate-chemistry global model LMDz-INCA. Funding needed: \$100,000 per year for 3 years: \$300,000

9. *Accelerate the recovery of the stratospheric ozone layer.* Study the use of high altitude solar photovoltaic platforms, which receive 5 times more solar energy than land-based PV panels, to generate UVB and UVC light to enhance the photolysis of N_2O and CFCs, the oxidation of methane and the production of oxygen atoms and ozone below the lower stratosphere.⁹ Laboratory research and R&D are needed to optimize the aerostatic platform and the UV lamps materials (quartz or other materials transparent for low wavelength UV). Funding needed: \$300,000 per year for 3 years: \$900,000

10. *Generation of hydroxyl radicals to increase methane removal by oxidation.* Hydroxyl radicals are the predominant naturally occurring agents that naturally oxidize methane in the atmosphere. Commercially available hydroxyl generators based on UVB or UVC light exist, but for large scale use the energy consumption is high. Other methods for large-scale generation of hydroxyl radicals will be explored. Cost-range: Based on estimations of infrastructure requested results in initial cost-range estimation of \$200–1000 per ton of CO_2 -eq. Funding need: \$400,000 per year for 3 years: \$1,200,000

11. *Surface-based Photocatalytic Enhanced Methane Oxidation (SPEMO).* The Department of Energy, in cooperation with EPA, and the Secretaries of Interior, Agriculture and State could contract for 3 years of research and development of SPEMO to assess alternative methods to:

(I) lower methane emissions from coal mines, oil wells and animal farms, and

(II) apply photocatalytic paint to buildings, rooftops, photovoltaic panels, or in a ventilated conduit to reduce methane in the general atmosphere as a complement to commercial photocatalytic paints and coatings already being used because of their self-cleaning property and ability to reduce urban pollution such as nitrogen oxides and volatile organic compounds. \$3,000,000

12. *Methane mitigation via wetlands management.* Wetlands emit 31 percent of total methane emitted. The Bureau of Reclamation, in consultation with the Army Corps of Engineers, should conduct an investigation of relative wetland emissions of methane, through field surveys and laboratory experiments, to determine how alternative management practices could reduce greenhouse gas emissions and restore natural ecosystems. \$1,500,000

[This statement was submitted by John Fitzgerald, Methane Action—MethaneAction.org.]

⁹Solar power generation using high altitude platforms feasibility and viability. Aglietti, G. S., Markvart, T., Tatnall, A. R., & Walker, S. J. (2008). Progress in Photovoltaics: Research and Applications, 16(4), 349–359. <https://doi.org/10.1002/pip.815>.

PREPARED STATEMENT OF THE MNI WICONI PROJECT

1. Fiscal Year 2023 OMR Request

The Mni Wiconi Project respectfully requests \$ 33.7 million in appropriations for operation, maintenance and replacement (OMR) activities in fiscal year 2023, including \$2.082 million for the Bureau of Reclamation (BOR). The OMR request includes roughly \$ 6.184 million for necessary crossing, pump station, and SCADA improvements. Additionally, the OSRWSS Core needs \$38 million for South Core Line (Phase V) Replacement (see Section 2). Report language is also requested.

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).

Table 1-Updated

	OSRWSS		RSRWS	LBSRWS	Reclamation	TOTAL
	Coreline	Distribution				
Number of Employees	17	33	14	13	8	85
Labor and Fringe Benefits	\$1,488,956	\$2,115,004	\$847,269	\$990,600	\$1,025,100	\$6,466,929
Labor Overhead Costs	680,304	856,577	587,371	201,400	425,000	2,750,652
Non-Labor Costs						
Electricity/Natural Gas/Propane	650,000	775,836	230,000	139,800	350,000	2,145,636
Telephone/Communications	40,000	52,014	23,500	34,900	.....	150,414
Water Treatment Chemicals/Supplies	500,000	243,132	30,000	105,500	.....	878,632
Wells, Pumps, Motors & Replacement	400,000	88,511	62,000	104,500	.....	655,011
Water Testing	140,000	32,782	10,000	.....	.....	182,782
Vehicle OMR	83,000	299,407	85,200	97,400	17,000	582,007
Water Service Providers .....	.....	.....	310,500	.....	.....	310,500
Travel-Training	60,000	92,882	6,840	33,800	15,000	208,522
Other	337,000	95,066	200,391	215,600	250,000	1,098,057
Emergency Leak Repairs	500,000	.....	.....	.....	.....	500,000
Extraordinary Replacements						
Meter vault, fuel tank & security upgrades .....	.....	.....	.....	200,000	.....	200,000
GPS/GIS .....	.....	100,000	.....	27,500	.....	127,500
PLC Upgrades (44) .....	.....	1,000,000	.....	.....	.....	1,000,000
West Brule Elevated Tank Replacement .....	.....	.....	.....	1,900,000	.....	1,900,000
Replace Standby Generator (3) .....	.....	.....	.....	700,000	.....	700,000
Increase Pipe Size: 8" to 12" (Sharps to Rockyford—15 mi) .....	.....	2,500,000	.....	.....	.....	2,500,000
Replace Sharps East Reservoir: 1 MG .....	.....	2,000,000	.....	.....	.....	2,000,000
White River PS Replacement .....	.....	.....	2,500,000	.....	.....	2,500,000
Existing Community Transfer Wounded Knee OM&R .....	.....	25,000	.....	.....	.....	25,000
Priority Community System Upgrades						
Production Well Replacements .....	.....	600,000	.....	.....	.....	600,000
Projects						
White River Bore Crossing	5,310,000	.....	.....	.....	.....	5,310,000
SCADA Redundancy Telemetry Improvements	65,000	.....	.....	.....	.....	65,000
High Service Pump Station VFD	808,800	.....	.....	.....	.....	808,800

Table 1-Updated—Continued

	OSRWSS		RSRWS	LBSRWS	Reclamation	TOTAL
	Coreline	Distribution				
TOTAL	\$11,063,060	\$10,876,211	\$4,893,071	\$4,751,000	\$2,082,100	\$33,665,442

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 7 off-reservation counties covering southwestern South Dakota with a design capacity of 52,000 people. The Project now serves 41,250. 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. 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 (1) keep pace with the system and its growing population and (2) protect and preserve the \$470 million investment held by the United States in trust for the Tribes and by WRLJ. Funds are needed to properly operate and maintain the infrastructure.

We appreciate the President's focus on improving critical water infrastructure in his requested \$20.021 million for the Mni Wiconi Project. However, more is needed. We remind you of the Project's overall needs, including OMR for community systems when they are transferred into the Project, along with the actual costs of the upgrade work. We also remind you that the oversight budget decreases funds for routine maintenance and extraordinary replacements as referenced in Section 7.

2. Crossing and Phase V Project/Existing Community Transfers/Extraordinary Replacements

Included in Table 1 is roughly \$6.184 million for a crossing, pump station replacement, and SCADA improvements. The Coreline needs \$ \$5.31 million to replace the White River Coreline crossing because there is a leak in the steel pipe under the river that is growing in size. This crossing is essential for the Pine Ridge Reservation and surrounding area south of the White River crossing. It also needs \$808,800 million for the High Service Pump Station VFD Project and \$65,000 for SCADA improvements.

Not included in Table 1 for the OMR request, but a critical need for the OSRWSS Core is the South Core Replacement (Phase V) Project, which will move the lines around the City of Ft. Pierre to address recurrent leaks in the area. Project costs are estimated at \$38 million.

Annual budgeting by the Administration must reflect: (1) increases in water deliveries as project population was added between 2013 and 2015 with no corresponding increase in funding; (2) aging facilities in need of maintenance and replacement (since start of construction in 1994 and through end of construction in fiscal year 2015); and (3) 40 existing communities that must be transferred to the respective Indian rural water systems. It is critical that Project features not fall into disrepair and that sufficient funds are available for the OMR of existing community systems that are scheduled for inclusion in the Project in fiscal year 2023 (or were transferred earlier). Funding is also needed for the actual upgrade work, costs for which total in the tens of millions for the Indian Project Sponsors. We also ask the Subcommittee to be mindful of what BOR calls “extra-ordinary replacements,” which are actually necessary and routine when pumps, water treatment equipment, pipelines, and other facilities fail and require replacement to continue operations.

The Mni Wiconi Project should be a shiny, new project that stands out as a beacon of modern technology. It provides under-privileged communities with safe and adequate drinking water of the highest quality and to improve the health and well-being of a low-income population, purposes that have been frustrated by inadequate attention to infrastructure maintenance.

It is important to remember that for OMR activities, the Indian projects are left with the appropriated figure minus the approximate \$2 million that BOR takes for

oversight. The reduced amount does not account for the needed storage towers, crossing replacement, the community upgrade work, any additional community system transfers, or unexpected extraordinary replacements.

The Promise Zone designation for the Pine Ridge Indian Reservation was announced in April 2015. It focused 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 Promise Zone designation (and last Administration's Opportunity Zone designation), and underscores the need for OMR funding for routine maintenance, "extraordinary" replacements and existing community systems following transfer.

The need is the same on the Rosebud and Lower Brule Indian Reservations. Adequate funding for all activities, including community water systems that are transferred, is a necessity for the three Indian rural water systems in the Mni Wiconi Project. The following report language is requested (see previous Congresses for similarity):

Mni Wiconi Project, South Dakota.—Reclamation is directed to continue working with the Tribes and relevant Federal agencies, such as the Department of Agriculture, the Environmental Protection Agency, the Bureau of Indian Affairs, the Indian Health Service, and the Department of Housing and Urban Development to coordinate use of all existing authorities and funding sources to finish needed community system upgrades and connections, as well as any transfers of those systems, as quickly as possible. The Administration is encouraged to include appropriate funding for transferred community systems in future budget requests. (House Report 114-532, Fiscal Year 2017)

BOR's annual budget requests properly included the transfer of existing community systems and responsibility for operation and maintenance. The budget needs to reflect those transfers:

. . . 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. (Fiscal Year 2012-18 Budget Justifications, p. GPR-49)

BOR and other Federal agencies are now assisting the Tribes with a pathway for funding transfers and future OMR activities for the 40 existing community systems as they become part of the Project and eligible for funding. It is crucial that these efforts continue. OMR funding is needed for communities that were upgraded and will be transferred (or have been transferred) to the Project.

3. OSRWSS Regional Core Facilities

The staff of the OSRWSS core system includes 17 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. Again, the Core Facilities need a crossing replacement, pump station project and SCADA improvements at a cost of roughly \$6.184 million and total funding at \$11,063,060.00. The OSRWSS Core also needs \$38 million for the South Core Line Replacement (Phase V) Project.

4. 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 2,206 metered residences. The water system has been designed and constructed over a 24-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 \$150 million, although 20 additional community system upgrades and transfers are still pending. To operate and maintain our water system has become a challenge. The core system east of Kyle has 4 reservoirs which have a total of 520,000 gallons of storage, this equates to only enough for less than 6 hours of storage in emergency situations. Table 1 shows a proposed 1-million-gallon reservoir to be constructed adjacent to the Sharps East Reservoir that would increase the emergency storage to 18 hours. Table 1 also proposes increasing the existing 8" waterline to a 12" line over the 15 mile stretch from Sharps to the Rockyford Hwy 27/Hwy 2 Intersection. Our older system will also require an estimated \$1 million to replace

all the obsolete programmable logic controllers (PLC) in our (44) pump and control stations located throughout the Reservation.

5. *Rosebud Sioux Rural Water System (RSRWS)*

The staff of RSRWS or Sicangu Mni Wiconi has 14 full-time employees. The staff operates and maintains 425 miles of mainline, 15 major pumping stations, 20 water storage reservoirs, 9 supply wells with two associated chlorination facilities, and SCADA system. A new production well was funded by Indian Health Service for 2023 for RSRWS to increase ground water production and water supply. The proposal was previously denied by BOR. A current RAX project is proposed to replace a critical asset known as White River PS. Asset management indicated replacement is needed at this site. The RSRWS budget also includes water service contracts with the City of Mission, Tripp County Water Users District (TCWUD) and others in the secondary service area now including the City of White River at a total cost of \$310,500. The newly approved cooperative agreement negotiated in 2022 allows payments to the City of White River tribal residents in the amount of \$60,000. No new monies were appropriated for this expense so the budget was reprogrammed to cover the additional costs. Likewise, 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, the City of Mission, and BOR 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. The recent completed community upgrades in Antelope, Butte Creek, Okreek, and Parmelee communities are in the process of being transferred into the RSRWS to be held in trust. Upcoming Upper Swift Bear and Spring Creek community water system upgrades will be completed by the end of fiscal year 2022. RSRWS is proposing a budget request of \$4,893,071.00 for fiscal year 2023 including the RAX request for the White River PS replacement.

6. *Lower Brule Rural Water System (LBRWS)*

The 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 and two part-time employees to provide the operation and maintenance of these facilities. As shown in Table 1, wages and fringe benefits total \$990,600.

The budget continues to include \$200,000 to upgrade main line meter vaults and \$27,500 to obtain the GPS location of water lines installed by ranchers and to add the lines to the current GIS database. The meter pit upgrades will improve access to the meter vaults and prolong the life of the equipment within the meter pits, while the GPS/GIS information will provide needed information for the operation and maintenance as well as the management of the system.

The Kennebec Booster Station (KBS) was originally designed based on the OST pipeline to Vivian being a 14-inch pipe. However, a significant portion of this line is only a 12-inch pipe. The consequence of this smaller pipe is significantly reduced inlet pressure at the pumps in the KBS. This has led to cavitation occurring in the pumps which has led to numerous pump replacements and complete booster station shutdowns, at times. To solve this issue, LBRWS has begun pumping less water with the KBS and supplying additional water with the LBRWS Water Treatment Plant (WTP). This method of solving the problem is working well, but to fully meet water needs and design standards the size of the West Brule elevated tank needs to be increased. In addition, standby generators for the WTP and booster stations #1 and #2 should be upgraded/replaced. As a result, the budget includes \$1,900,000 to replace the existing West Brule tank with a larger tank and \$700,000 to upgrade/replace generators for the WTP and booster stations. LBRWS will continue to work with the BOR and the other sponsors to prioritize their needs and ensure that their system is operating to the standards that have been established over the past several years.

7. *Bureau of Reclamation (BOR)*

The BOR's budget is for oversight of operation and maintenance activities for all tribal systems, including the employment of an equivalent 8.0 persons. BOR pays the Western Area Power Administration for Project preference power used by the OSRWSS core system and Rosebud core system. BOR also pays for cathodic protection services for OSRWSS core system, Rosebud, and OSRWSS on-reservation DWM&C systems. BOR costs are expended before funds reach the Project.

[This statement was submitted by Ron Blacksmith, Core System Manager, Oglala Sioux Rural Water Supply System; Chuck Jacobs, Distribution System Director,

Oglala Sioux RWSS; Young Colombe, Manager, Rosebud Sioux Rural Water System; and Jim McCauley, Manager, Lower Brule Sioux Rural Water System.]

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

Chair Feinstein, Ranking Member Kennedy, and members of the subcommittee, I am David Terry, Executive Director of the National Association of State Energy Officials (NASEO) testifying on behalf of our 56 governor-designated state and territory members. NASEO respectfully requests funding for the following U.S. Department of Energy (DOE) programs: \$90 million for the U.S. State Energy Program (SEP) as formula funding to States with no more than 5 percent of the appropriated amount for use by DOE in providing technical assistance and support; \$375 million for the Weatherization Assistance Program (with robust funding for the innovation and resilience funds); \$392 million for the Building Technologies Office, with \$20 million for building energy codes, and \$50 million for grid-interactive efficient buildings; \$602 million for the Vehicle Technologies Office; \$535 million for SETO; \$202 million for CESER, with robust support for ISER and program direction; A robust increase for the Office of Electricity including \$81 million for energy storage and \$50 million for regional electricity market development; \$478 for carbon management within FECM; \$100 million for FEMP; and \$90 million for the Grid Deployment Office. The DOE \$4 billion request for EERE is justified given the extraordinary energy affordability, climate, and reliability crises the Nation is facing.

A bipartisan “Dear Colleague” letter led by Mr. Reed and Ms. Collins supporting funding for SEP and Weatherization was received and signed by 47 Members. The SEP statute provides States with flexibility to advance energy affordability and security, resilience, renewables, efficiency, EVs, grid planning and more in ways that link with state policy to achieve greater national impact. States work collaboratively using SEP formula funds to accelerate results: REVWest EV charging initiative (e.g., AZ, ID, NV, UT, WY); Microgrid Working Group (e.g., KY, IL, PA, TN, WA); Southeast EV initiative (e.g., KY, TN, AL); the Western Petroleum Response Collaborative which responds to supply disruptions caused by natural disasters (e.g., AK, WA, CA, OR); coordination on carbon utilization and hydrogen (e.g., LA, ND, WY, MT, AZ, CO); and building-grid electric management (e.g., CA, GA, WA, MS, IL, OR, TN, SC). Past Administrations have taken a portion of the SEP formula funds provided by Congress for competitive awards on DOE-directed priority topics. NASEO strongly opposes this approach which limits States’ ability to address their unique priorities. We urge Congress to explicitly provide the requested \$90 million as formula funding to States with no more than 5 percent of the appropriated amount for use by DOE in providing technical assistance and support.

SEP formula funds enable States to leverage DOE’s research activities and work with the private sector to improve electricity resilience, accelerate clean energy development, catalyze investments in carbon capture, advance low-carbon hydrogen markets, support manufacturing energy efficiency, lower home energy costs through energy efficiency, and accelerate energy technology innovation through State-private sector partnerships. Two Oak Ridge National Laboratory (ORNL) studies found that \$1 of SEP formula funds leverages \$10.71 of State and private funds and realizes \$7.22 in energy cost savings for citizens and businesses. With SEP funds, the State Energy Offices lead or co-lead energy emergency planning and response across electricity, natural gas, and petroleum products in coordination with DOE’s CESER—which provides expertise to the States and energy industry. SEP formula funds are the key connection between billions of dollars spent by DOE on R&D and the priorities of States. State energy policy guides energy markets and a constructive DOE-state relationship can achieve greater impact. A greater reliance by DOE on the States and their local businesses and communities to ensure Federal R&D meets real world conditions would maximize the impact of R&D.

Below are examples of States’ utilization of SEP formula funds:

California-Development of Appliance Standards. California uses SEP funds for appliance efficiency standards. In 2020 California’s general services lamps standard became national, and in 2021 the state established standards for desktop/notebook computers, gaming systems, and pool pumps. Examples of previous standard successes: portable air conditioners saving 369 gigawatt-hours annually, and sprinklers saving 150 billion gallons of water annually.

Louisiana-Government and Industry Partners Set the Stage for CCUS and Hydrogen. Louisiana uses SEP funds to lead two major components of the State’s strategy to combat climate change and develop its economy: achieve primacy in CO2 sequestration and coordinate the LA-AR-OK initiative to establish a hub for the production and use of clean hydrogen. The State Energy Office facilitated the announce-

ment of two operating agreements for “blue” hydrogen/CCUS projects in 2021, positioning the state as a global leader in carbon management.

Alabama-Energy Efficiency for Local Governments. Alabama used a portion of their SEP funds to support energy efficiency upgrades at wastewater treatment plants and local facilities. In all, 29 grants to local governments, universities, and non-profits increased energy efficiency and reduce costs by deploying variable frequency drives, lighting, and efficient HVAC systems. In addition, Alabama’s Energy Security Plan is supported with SEP funds allowing for needed updates to adapt to changes in Alabama’s energy portfolio and infrastructure.

Alaska-Grants for Electric Vehicle (EV) Charging Stations. Alaska leveraged SEP funds to award \$1 million in grants to support Level-2 and DC fast-charging EV charging station deployment. The nine communities awarded grants are in critical locations along the State’s highway system and will provide matching funds to complete the process. The program will develop new industries, help promote the economy, and save Alaskans money.

Delaware-Energy Efficiency Fund. The Delaware Energy Office operates a highly successful Energy Efficiency Investment Fund supported in part by SEP funds. Last year, the fund provided \$9.2 million across 218 projects, avoiding 69.7 million kWh and 151,540 MMBtu annually; saving \$4.9 million in annual energy costs; and reducing 57,429 metric tons of CO₂ emissions, equivalent to 12,490 passenger vehicles driven for 1 year. Each dollar of program funds leveraged \$5.82 in external investment.

Illinois-Leverage \$16 Million with 79 Percent of Funds Going to EJ Communities. The Illinois Energy Office used SEP funds to support upgrades at four publicly-owned wastewater treatment plants, leveraging \$16,018,574 in funds from municipalities and saving 2,431,955 kWh annually. Of the funds awarded, 79 percent was granted to facilities serving EJ communities.

Kentucky-Tool to Site Solar Projects at Reclaimed Mines. The Kentucky Energy and Environmental Cabinet used SEP to create a web-based tool that enables users to identify potential solar energy siting opportunities in Kentucky, including on previous mine locations. The tool was created in response to an increasing number of solar developers supporting corporate sustainability goals, and to support wholesale market clean energy procurement demand. The tool helps developers and land-owners assess solar site suitability and makes it easy for developers to use GIS Site Suitability Analysis to site solar installations on reclaimed minefields. The website includes information about land reclamation.

Maine-Supports Clean Energy, Energy Efficiency, Climate, and COVID Coordination. The Maine Governor’s Energy Office used SEP funds to develop and implement such nation-leading energy initiatives as a Statewide energy assessment, the State’s first energy storage market assessment, clean transportation roadmap, and energy workforce study. The office’s work is aimed at reducing energy volatility for Maine consumers, for instance by advancing the country’s first floating offshore wind demonstration project and new programs aimed at installing 100,000 new high-efficiency air source heat pumps by 2025. In 2021, the Governor’s Energy Office assisted in the implementation of the State’s 4-year climate action plan, Maine Won’t Wait, outlining how Maine will achieve the statutory requirement to reduce greenhouse gas emissions of 45 percent by 2030 from 1990 levels and 80 percent by 2050, achieve carbon neutrality by 2045, and achieve 80 percent renewable energy by 2030, while strengthening the economy and doubling the number of clean energy jobs in Maine.

Mississippi-Industrial Energy Efficiency Program. The Mississippi State Energy Office used SEP funds to design the Mississippi Industrial Energy Efficiency Program to assist the State’s manufacturers with making energy-efficient upgrades. Projects have resulted in improved working conditions for approximately 2,500 employees across a wide variety of manufacturers, ranging from catfish processing to HVAC component production. Those projects include lighting upgrades, compressed air system replacements and building envelope improvements that cover over 2.95 million square feet of manufacturing space.

Montana-Implementing Energy Projects in State-Owned Veteran Retirement Homes. The Montana Energy Office leveraged SEP funds to upgrade lighting and ventilation systems at Veteran retirement homes in Glendive and Columbia Falls. The project surpassed the statutorily-required cost effectiveness target and increased resident comfort through dimmable, high-resolution lighting, which is less disruptive to sleep patterns; provides high contrast to lessen risk of slips and falls; and increases contrast for people with limited vision.

New Hampshire-School Energy Cost Savings. Since 2018, New Hampshire has used a portion of their SEP funds for the School Energy Efficiency Development Program, an annual competitive matching grant that allows schools in small communities to complete energy efficiency projects. This program’s dual purpose to create

a safer, healthier learning environment for students and staff, and reduce a local school's energy costs has been successful. For example, in 2020, \$80,000 was awarded to the New Boston Central School for LED lighting and controls, resulting in 110,812 kWhs of annual electricity savings and \$21,000 in annual cost savings.

New Mexico-Advancing Cutting-Edge Sustainable Buildings and EVs. The State Energy Office uses SEP funds to support implementation of the 2021 Sustainable Buildings Tax Credit Program. The program incentivizes New Mexico's commitment to cutting-edge sustainable building practices including the provision for the installation of energy-conserving products in existing commercial and residential buildings-helping to improve existing buildings and low income and affordable housing. This program advances adoption of EVs through a tax incentive for EV-ready buildings-existing, new, commercial, residential-to make EV charging available or provide the appropriate electrical upgrades for charger installation. The tax incentive also provides bonuses for a fully electric house, and/or for meeting net-zero carbon certification, zero energy certification, zero waste certification or zero water certification.

North Dakota-Deploy Solar Panels, Bolster Resiliency, Educate Students. SEP Funds supported installation of 115 solar panels and an inverter at the Bismarck Public Schools Career Academy. In addition to powering the building, instructors at the school plan to start incorporating the panels into their lessons.

Oregon. The Oregon Department of Energy utilized a portion of their SEP funds to create the Oregon Guidebook for Local Energy Resilience: for Small and Medium Electric Utilities, a technical resource for the 38 consumer-owned electric utilities serving Oregon. The Guidebook will help consumer-owned utilities improve local energy resilience through business continuity planning; identifying strategic efficiency and distributed renewables resilience opportunities; and understanding ways to leverage Federal and State emergency management planning efforts. The office's resilience policy analyst engaged with consumer-owned utilities to share the recommendations and offer guidance to implement resilience-focused actions.

South Carolina-High School Energy, Chemistry, and Supply Chain Education. South Carolina uses a portion of its SEP funds to offer mini-grants for highly-visible demonstration projects that promote emerging energy technologies and innovation. The program targets South Carolina's State and local government agencies, public colleges, universities and school districts. Last year, seven projects were selected, including, for example, the Blythewood High School's Bengal Biodiesel grant to help expand the school's Chemistry 2 class where students are being taught lab procedures in making B100 biodiesel fuel out of waste streams and learning about supply chain logistics. The class will be expanded to 75 students and includes workforce issues and engaging with equipment manufacturers. The class's B100 will be used in school buses and other on-road equipment around the community after successful tests in the school's tractor. The project was profiled by MotorWeek, the Nation's longest running auto publication.

Tennessee-Leading the Charge on Transportation Electrification. The Tennessee Office of Energy Programs (OEP) used a portion of their SEP funds-in partnership with the Tennessee Valley Authority-to support EV fast-charging and add 40 priority charging locations in order to double the State's fast-charging network. OEP also leveraged SEP funds to partner with TN-DOT on the plan for IJJA-funded EV fast-charging. The Drive Electric Tennessee Roadmap aims to increase EV adoption to 200,000 EVs by 2028, up from 18,494 in 2022. This work has been foundational to the State's leadership in EV infrastructure and EV-related manufacturing.

Washington-Energy Emergency Response. The Washington State Energy Office utilized SEP funds to address critical energy emergency preparedness and response. In 2021, heavy rain led to flooding and landslides, damaging infrastructure in Washington and British Columbia resulting in a regional fuel emergency. The State Energy Office led efforts to ensure critical fuel deliveries and coordinated with British Columbia and the multi-State Western Petroleum Shortage Collaborative in response to crude oil refinery closures. The positive outcome was the result of planning and coordination at the State, Federal, and international levels.

Wisconsin-Enhancing Energy Security for Local and Tribal Governments. The Wisconsin Office of Energy Innovation utilized a portion of their SEP funds to enhance energy security for local and Tribal governments with its Statewide Assistance for Energy Reliability and Resiliency (SAFER2) initiative. The program improves the efficacy of Wisconsin's response to long-term energy outages by partnering with local governments and Tribal emergency managers to gain a better understanding of the resiliency of critical energy infrastructure; provide templates for fuel shortage contingency plans; improve cyber-security awareness; and enhance the understanding of roles and responsibilities of both State and local partners during an energy emergency?.

[This statement was submitted by David Terry, Executive Director, National Association of State Energy Officials.]

PREPARED STATEMENT OF THE NATIONAL COMMUNITY ACTION FOUNDATION

Chairwoman Feinstein, Ranking Member Kennedy and Members of the subcommittee: Thank you for this opportunity to present the views of the National Community Action Foundation (NCAF) on fiscal year 2023 appropriations for the Weatherization Assistance Program (WAP), which is administered by the Department of Energy.

Recommendation: We urge the subcommittee to provide the following for the fiscal year 2023 Weatherization Assistance Program: the funding requested in the President's budget for the core program at no less than \$362.2 million and \$90 million for the Weatherization Readiness Fund for a total of \$452.2 million. To the extent that budget constraints make this recommendation difficult, we urge you to prioritize funding the Weatherization Readiness Fund. We also urge the subcommittee to reject the proposed "LIHEAP Advantage" \$100 million project for reasons we outline below. We hope your report will provide guidance to the Department of Energy regarding better integration of the program funded in this appropriation with the soon-to-be-initiated program funded by the Infrastructure Investment and Jobs Act.

The National Community Action Foundation (NCAF) represents the Nation's local Community Action Agencies, known as CAAs. These agencies make up 81 percent of the local agencies that are funded by the WAP to recruit and evaluate eligible homes and to install the appropriate set of efficiency measures and health or safety improvements. CAAs deeply appreciate the subcommittee's long record of support for the Weatherization Assistance Program. Your record of oversight and support has kept the program strong and effective. We appreciate the trust that has been placed in our network to deliver more than \$3.5 billion worth of energy upgrades to America's most vulnerable energy consumers under the Infrastructure Investment and Jobs Act (IIJA).

Status of the Two Weatherization Initiatives as Seen from the 'Ground': The expanded program funded by IIJA will begin in the late fall or early winter of 2022 after DOE approves the plans that States must submit by October 1. Since passage of the bipartisan Infrastructure bill, we have been informing the Department and Senators that the WAP needs changes in DOE policies. These changes were described in a bi-partisan House and Senate letter to Secretary Granholm, initiated by Senators Reed, Collins, Shaheen and Coons. The same four champions of Weatherization also sponsored the statutory changes contained in S. 3769—"The Weatherization Assistance Program Improvements Act of 2022." With planning now underway and a deadline three- and one-half months after this testimony, the Department's lack of action is increasingly concerning. We hope the subcommittee's ongoing oversight can add weight to the recommendations and that your entire membership will support the provisions of S. 3769.

Fortunately, the initial months after full funding becomes available will be devoted primarily to recruiting contractors and employees who will be trained in the specialized skills the program requires of its workforce. The tight labor market in the construction field means this period will be especially challenging. CAAs and their non-profit partners look forward to recruiting residents of assisted communities into these "green jobs." We trust Congress and DOE understand this part of the workforce will take longer to train and, therefore, will cost more to become fully skilled.

The fiscal year 2022 appropriated programs in 17 States, which started April 1, are proceeding. Plans for the other States' programs, which begin July 1, are on track for approval. In these administrative functions, DOE has set a shining example of timely issuance of the information grantees need to complete applications and of release of appropriated funds.

Also, the recently announced addition of categorical eligibility for HUD-assisted properties, which this subcommittee urged DOE to achieve, is a major improvement that will progress CAAs' outreach work and result in many multi-family buildings being weatherized. Thank you for your persistent leadership that achieved this result.

Our Fiscal Year 2023 Recommendations in Depth:

First, I want to address the question that is sure to emerge in times of budget constraints: Why would we need a regular program in fiscal year 2023 through fiscal year 2027 when the IIJA program is funded and running?

In short, the two programs are so different that both are required to be able to appropriately serve the housing stock in America's most disadvantaged communities. The "regular" or base program can do work that cannot be done with IIJA funds. It is an essential complement. One example of the reason both are needed is the as-yet-undefined statutory requirement to "Buy American." CAAs vastly prefer to Buy American at all times, and we strongly support the policy. However, WAP buys many mid-range household appliances, especially efficient refrigerators. While GE and Whirlpool (under multiple brand names) manufacture some appropriate models in the U.S., agencies often cannot obtain American-made appliances in many markets in a timely manner. Imports cannot be purchased with IIJA funds, so homes in markets with only imports available will be weatherized with annual appropriations funds. Also, in some rural markets with few willing contractors, it may be necessary to use annual appropriations funds to weatherize eligible multi-family buildings.

The Weatherization Readiness Fund at \$90 Million: Appropriating the Weatherization Readiness Fund at \$90 million would allow our agencies to repair not only the homes that will be deferred during inspections in the fiscal year 2023 program year, but to also repair the tens of thousands of dwellings on their "deferral" lists awaiting repairs because of previous years' inspections.

The President's Request is woefully inadequate to the backlog of deferred eligible homes. In the Budget document, DOE provided research showing that the cost to repair the number of anticipated deferred homes in the PY2023 program alone was \$43.8 million. The Request is less than 75 percent of the funds needed, and neither figure allows subgrantees to address previously deferred homes. Our members strongly believe that, if the Committee must make tradeoffs when considering the requested WAP increases, the Readiness Fund should be the highest priority.

Readiness Barriers: Further, DOE prohibits using annual program funds in combination with the IIJA funds. This DOE policy must be changed. Under current DOE policy, any home that is repaired using Weatherization Readiness Funds cannot be weatherized with IIJA funds. This prohibition will create impossible real-world stumbling blocks to getting the greatly expanded pool of eligible homes retrofitted. Further, it means hundreds of thousands of homes of the most disadvantaged Americans who live in substandard housing cannot be served. This reality is contrary to the government's commitment to focusing on families with the greatest disadvantages. The Committee can correct this problem by directing DOE to allow a combination of annual and IIJA funds.

The LIHEAP Advantage Request: We cannot recommend the subcommittee move forward with the President's funding request for the "LIHEAP Advantage" initiative. It is a costly project that would ostensibly "test" what is long-standing practice. LIHEAP and Weatherization are already inseparably intertwined.

- Most WAP participants today are LIHEAP recipients referred to the program;
- More than \$400 million a year is transferred by States to the local WAP programs, and;
- LIHEAP funds measures that DOE cannot fund in most States.

Our member agencies "braid" multiple funding sources, including DOE's WAP, LIHEAP, some USDA funding and many utility efficiency program funds, to address a single home. With the newly established eligibility for HUD assisted buildings, we expect to see HUD programs added into these "braids."

Studies on the varieties of long-standing, State and local "leveraged" programs and their outcomes were completed in 2014 by Oak Ridge National Laboratory. New, nationwide research could be useful as part of the planned evaluation of the IIJA program. However, studies of a "pilot" of these already-widespread practices would not add to the whole-program review. Notably, true innovations and pilot efforts are already part of the program, and DOE is expected to select winners of the first two rounds of Innovation and Enhancement competitive grants shortly. These are mandated to occur annually. Duplication is unnecessary.

A Final Point: The LIHEAP Advantage initiative proposes to use State Energy Program authority so that the proposed projects can provide "deep retrofits" not allowable with WAP funds (except with Innovation Grant funds). This acknowledges that there is insufficient authority under WAP to deliver needed services. This demonstration would be a tangential, ineffective way to address the need for a higher-impact program. The legislative changes which have been incorporated in The Weatherization Assistance Program Improvements Act, S. 3769, and its House companion, H.R. 7947, will have the same effect along with the proposed regulatory changes DOE must make to cut red tape.

This subcommittee's oversight of the program and your policy guidance have been highly supportive of positive changes. Thank you in advance for your continuing

leadership and support as Community Action and its energy partners prepare to accelerate the Weatherization of the most inefficient and vulnerable American homes.

[This statement was submitted by David Bradley, Chief Executive Officer, National Community Action Foundation.]

PREPARED STATEMENT OF THE NATIONAL CONGRESS OF AMERICAN INDIANS

On behalf of the National Congress of American Indians (NCAI), thank you for this opportunity to provide testimony on fiscal year 2023 funding for the Department of Energy (DOE), Department of Defense (DOD)—U.S. Army Corps of Engineers (USACE), and Department of the Interior (DOI)—Bureau of Reclamation (BOR), involving our recommendation of \$408.84 million in funding.

A 2007 report by Dr. Theodore Jojola, Ph.D., developed for the NCAI Policy Research Center, found that underinvestment in physical infrastructure not only harms the social, physical, and mental wellbeing of Tribal communities, but also impairs the ability of Tribal communities to thrive.¹ Physical infrastructure reinforces and shapes the socio-cultural and political milieu of the community and plays a role in competitively positioning the economy of its enterprises for capital gain.² The provision and placement of basic utilities for the adequate provision of drinking water, sanitation, and electricity are considered fundamental for the physical and mental health of communities as well as being a measure of the overall quality of life.³ Further, there is a strong link between physical infrastructure and economic development.⁴

Unfortunately, the conditions noted by Dr. Jojola in 2007 have persisted, with the U.S. Commission on Civil Rights (USCCR) finding in 2018 that the efforts undertaken by the Federal Government from its initial 2003 report to 2018 have resulted in only minor improvements, at best; and in some respects, the U.S. Government has backslid in its treatment of Native Americans.⁵ Specifically, the USCCR report notes that many Native Americans face unique challenges and harsh living conditions resulting from the United States having removed their Tribal Nations to locations without access to adequate resources and basic infrastructure upon which their Tribal governments can foster thriving communities.⁶ In its 2003 report, USCCR summarized the funding shortfall to which Native Americans were subjected stating that, “laws and policies are meaningless without resources to enforce them. Resources are an important demonstration of the U.S. government’s commitment to its responsibilities, including the obligation to preserve civil and other rights . . . [u]nder-funding violates the basic tenets of the trust relationship between the [Federal] Government and Native peoples and perpetuates a civil rights crisis in Indian Country.”⁷

Cross-referencing Office of Management and Budget (OMB) Native American Crosscut data with Appropriations Committee reports reveals that fiscal year 2022 spending for Native American programs represents approximately 0.49 percent of total regular appropriations budget authority within this subcommittee’s jurisdiction. With Federal investment metrics such as these, it is no surprise that Indian Country is in a State of catastrophe by national standards.

Despite this chronic underinvestment, Indian Country is an important economic driver in the U.S. Economy.⁸ Collectively, Tribal Nations comprise the 13 largest employers in the United States, with Tribal businesses employing more than 700,000 employees, providing economic opportunity for both Native and non-Native

¹NCAI Policy Research Center, Physical Infrastructure and Economic Development, May 2007, 3–4, available at: https://www.ncai.org/attachments/PolicyPaper_OAYcOPFdNTxazqxAOZGImEXOHFGoAnZlOepYZcUnSqRGgoWUTLp_Jojola_percent20and_percent20Goverpercent20FINAL_percent20FORMATTED_percent205.8.07.pdf, accessed on: May 25, 2022.

²Id. at 2.

³Office of the United Nations High Commissioner for Human Rights, The Human Right to Adequate Housing, Fact Sheet No. 21/Rev.1, available at: https://www.ohchr.org/sites/default/files/Documents/Publications/FS21_rev_1_Housing_en.pdf, accessed on: May 25, 2022.

⁴Physical Infrastructure and Economic Development at 2.

⁵U.S. Commission on Civil Rights, Broken Promises: Continuing Federal Funding Shortfall for Native Americans, 3–4, available at: <https://www.usccr.gov/files/pubs/2018/12-20-Broken-Promises.pdf>, accessed on: May 25, 2022.

⁶Id. at 1.

⁷Id. at 2.

⁸Patrice H. Kunesh, Getting real about Indian Country—surprising progress in the heartland, <https://indiancountrytoday.com/opinion/getting-real-about-indian-country-surprising-progress-in-the-heartland>, Accessed: April 6, 2022.

workers.⁹ Evidence indicates that where Tribal Nations are successful with economic development that poverty rates and other health issues are lower, while educational outcomes and real per capita income are higher.¹⁰ Further, revenue generated on Tribal lands results in a spillover effect that supports local workforces and generates tax revenue.¹¹ As such, an investment to promote the building blocks of physical infrastructure in Indian Country is an investment in America for all Americans.

DEPARTMENT OF ENERGY

Cross-referencing OMB Native American Crosscut data with Appropriations Committee reports reveals that spending for Native American programs represents approximately 0.19 percent of total fiscal year 2022 regular appropriations budget authority for DOE within this subcommittee's jurisdiction. By comparison, for every \$100 appropriated to DOE, less than two dimes go to Indian Country. While this statistic is shocking, the fiscal year 2022 omnibus represents more than twice the investment in DOE Native American programs as the previous 2 years and more than four times the investment of FYs 2018 and 2019. This does not mean that Tribal programs are now adequately funded—it is a signal that funding for Tribal programs at DOE has been so woefully inadequate for so long that even increasing funding by four times still only equals a fraction of a penny of every dollar appropriated to the Agency by this subcommittee.

In order to address these funding deficiencies, this subcommittee should provide at least \$150 million for the Office of Indian Energy Policy and Programs, including resources for the feasibility studies, assessments, planning, and financial and technical assistance necessary to create a pipeline of projects for underutilized programs with prohibitive cost barriers such as the Tribal Energy Loan Guarantee Program (TELGP); at least \$2.5 million for TELGP credit subsidies and \$2 million for TELGP Administrative Costs; \$15.9 million for the Office of Legacy Management Legacy Sites in and around Indian Country; and \$5.3 million for the National Nuclear Security Administration's Tribal College and University Advanced Manufacturing Initiative.

BUREAU OF RECLAMATION

Indian water rights are vested rights and resources for which the United States has a trust responsibility. The U.S. Supreme Court first recognized Indian water rights in *Winters v. United States* in 1908.¹² Under the *Winters* doctrine, when Congress reserves land, Congress implicitly reserves water sufficient to fulfill the purpose of the reservation and the water rights of Tribes often are senior to non-Indian water rights holders.¹³ In *Arizona v. California*, the Supreme Court ruled that Tribal Nations have rights to enough water to cultivate every irrigable acre on a reservation.¹⁴ However, despite the priority of Indian reserved water rights, non-Indian populations frequently have greater access to and allocations of water through infrastructure, leading to disputes that typically have been litigated and/or resolved by negotiated settlements.¹⁵ The adjudication of these rights is complex and costly for Tribal Nations, spanning an average of 22 years.¹⁶ The Infrastructure Investments and Jobs Act of 2021 (IIJA) established the Indian Water Rights Settlement Completion Fund to satisfy Tribal water settlement obligations as authorized by Congress, along with the mandatory funding for Indian water rights settlements from the Reclamation Water Settlement Fund authorized through fiscal year 2029;¹⁷ however, the amount does not include the cost of ongoing operation requirements for existing settlements and excludes future water settlements or court orders.¹⁸

⁹Id.

¹⁰Id.

¹¹Id.

¹²*Winters v. United States*, 207 U.S. 564, 575–77 (1908).

¹³See *Winters v. United States*.

¹⁴*Arizona v. California*, 373 U.S. 546 (1963).

¹⁵Congressional Research Service, Bureau of Reclamation: History, Authorities, and Issues for Congress, R46303, available at: <https://crsreports.congress.gov/product/pdf/R/R46303>, accessed on: May 26, 2022.

¹⁶L. Sanchez, E. Edwards, and B. Leonard, Beyond “paper” water: The complexities of full leveraging Tribal water rights, available at: <https://www.minneapolisfed.org/article/2022/beyond-paper-water-the-complexities-of-fully-leveraging-tribal-water-rights>, accessed on: May 25, 2022.

¹⁷Bureau of Reclamation, Fiscal Year 2023 Congressional Justification, Permanent Appropriations—5, available at: <https://www.usbr.gov/budget/2023/FY-2023-Bureau-of-Reclamation-Budget-Justifications.pdf>, accessed on: May 26, 2022.

¹⁸Id. at General Statement—2.

BOR has trust and treaty obligations to Tribal Nations to promote and protect their water rights.¹⁹ This subcommittee must provide at least \$34 million for ongoing operational needs of Indian water settlements in fiscal year 2023; at least \$100 million for developing, managing, and protecting Tribal water and related resources; and work with authorizing committees to provide a permanent mandatory funding solution for future Indian water rights settlements and for the operation and maintenance of previously enacted Indian water rights settlements.

U.S. ARMY CORPS OF ENGINEERS

USACE implements the Tribal Partnership Program (TPP), which provides an opportunity to assist with water resources projects that address economic, environmental, and cultural resource needs including flood damage reduction, environmental restoration, and protection and preservation of natural and cultural resources. Tribal relations with USACE have been historically contentious as well as under-resourced, leading to the underutilization of TPP. Congress should provide \$17 million for the TPP with at least \$5 million for investigations and \$12 million for construction and provide \$3 million for the Tribal Nations Program—which implements the Army Corps' Tribal Policy Principles—to conduct outreach, consultation, and improve partnerships and relations with Tribal Nations.

CONCLUSION

Tribal Nations have paid for every penny obligated to Indian Country hundreds of times over by providing this Nation with our land. In order to uphold this Nation's promises to its people, it must first uphold its promises to this land's First Peoples. We must continue down the path of Nation-to-Nation growth, so that all of our people may flourish.

[This statement was submitted by Larry Wright, Jr., Director of Leadership Engagement, National Congress of American Indians.]

PREPARED STATEMENT OF THE NATIONAL HYDROPOWER ASSOCIATION

The National Hydropower Association (NHA) respectfully requests \$222,000,000 for the Department of Energy's (DOE) Water Power Technologies Office (WPTO) in the Fiscal Year 2023 Energy and Water Development Appropriations measure. NHA recommends \$85,000,000 for hydropower and \$137,000,000 for marine energy. NHA also supports robust funding for the operations and maintenance (O&M) programs of the U.S. Army Corps of Engineers (USACE) and Bureau of Reclamation (BuRec) to increase capacity and generation at their facilities, addressing the billions of dollars of backlogged O&M needs.

Funding Justification.—The U.S. water power sector has tremendous beneficial impacts on our Nation's electric grid, the economy, and environment. In 2020, hydropower delivered almost 40 percent of total U.S. renewable electricity generation and pumped storage projects provided 93 percent of total energy storage in the country. Hydropower also avoids approximately 200 million metric tons of CO₂ emissions each year. In addition to providing affordable, renewable power to the grid, hydropower and pumped storage help integrate greater amounts of variable renewable generation, such as wind and solar, while maintaining grid reliability and resilience. Finally, the water power industry employs more than 60,000 Americans, creating good-paying jobs in communities across the country.

The water power sector is poised to do even more to support a 100 percent clean energy future. The U.S. has significant underutilized water power resources, including non-powered dams, conduits, new pumped storage potential, and untapped marine energy. Advancement of new and innovative technologies, operations, and approaches to harness these resources in a globally competitive marketplace is enhanced by Federal funding that augments research, development, and deployment (RD&D) efforts being led by industry with support from universities and the National Labs. A growing U.S. water power sector will support efforts to address climate change and reduce carbon emissions, assist in grid reliability and resiliency, while also advancing our National economic goals. Significant increases in funding for the WPTO is critical and will help create high-value employment and support businesses across the country that comprise the water power supply chain.

NHA commends Congress for its increased support of the DOE WPTO in recent years, culminating in the \$162,000,000 appropriation in fiscal year 2022. While a

¹⁹ See *Generally Seminole Nation v. United States*, 316 U.S. 286 (1942); *Winters v. United States*; *Arizona v. California*.

step in the right direction, this funding is well below other DOE renewable programs. Policymakers, including many on this committee, had the foresight to make significant and sustained Federal technology RD&D investments in the wind and solar industries. Thanks to these prudent investments, wind and solar technologies improved and the costs for deploying them went down. Today, the wind and solar industries are developing utility scale projects. A “solar-scale” level of Federal investment for advanced water power technologies is required to accelerate the pace of demonstrations and deployments, reduce costs, and increase adoption along a similar trajectory of more mature renewables.

Overview of DOE Water Power Technologies Office Investments.—Congress reauthorized DOE’s water power activities through passage of the Water Power R&D Act of 2020 and the Reliable Investment in Vital Energy Reauthorization Act (RIVER Act). These WPTO investments support innovation of advanced technologies to increase power production and reduce costs, improve grid reliability and resilience, create new market opportunities that improve economic growth, and fund cross-institutional foundational research to support workforce development. Increased WPTO funding will help the United States achieve its clean energy goals through the development of new water power energy generation resources.

Hydropower.—NHA requests \$85,000,000 for the hydropower program. Hydropower is a proven renewable electricity resource, accounting for nearly 7 percent of all U.S. electricity production. Increased WPTO investments could significantly expand electricity generation from this resource.

Growth opportunities for hydropower in the U.S. include adding generation to non-powered dams. Currently, only 3 percent of the approximately 90,000 existing dams in the U.S. generate electricity. Other opportunities include increasing efficiencies and expanding capacity at existing hydropower projects, new pumped storage facilities, and new small hydro development. Pumped storage represents a significant opportunity because it provides ancillary services that ensure grid reliability, is the only proven long-duration energy storage system in the United States, and can integrate intermittent renewable generation resources on the grid.

The WPTO invests in hydropower technology RD&D for innovative, standardized, and modular approaches to hydropower development that can lower project costs compared to traditional development which requires site specific engineering. For small hydropower, the WPTO supports standardization of new turbine designs, as well as new advanced materials and manufacturing across the sector, including applications at non-powered dams, irrigation channels, and other waterways, including greenfield sites. This work increases generation opportunities with innovations that also improve environmental performance. It also helps reduce costs for companies that have capitalization challenges to fund this work. The WPTO supports DOE’s Advanced Energy Storage Initiative and focuses on the role of hydropower and pumped storage in grid reliability and resiliency by supporting innovative technologies and conducting new research to evaluate and improve the flexibility and grid services provided by these projects. The WPTO also supports development of innovative environmental mitigation technologies, such as novel fish passage systems and other advancements.

Marine Energy.—NHA requests \$137,000,000 for the marine energy program. Marine energy is a carbon-free, renewable resource that can make a material contribution to decarbonize our domestic energy portfolio. The DOE recently found that marine energy has the technical potential to provide 2,300 TWhs a year of electricity generation in the United States—the equivalent to 57 percent of 2019 energy consumption.

Marine energy is widespread, consistent, reliable, energy dense, and can be generated close to large urban centers with significant load. Marine energy technologies are rapidly innovating, with a number of systems globally nearing commercialization, but Congress must invest additional resources in this sector to ensure its future domestic viability and to keep cutting-edge development in the United States.

Last year, NHA’s Marine Energy Council (MEC) released a Commercialization Strategy for Marine Energy. The strategy sets technology deployment targets, starting with 50 megawatts by 2025, which are the critical first steps for the domestic marine energy sector to materially contribute to the effort against climate change. Follow on targets include 500 megawatts by 2030 and 1 gigawatt by 2035. To achieve these targets, Federal policymakers must:

- Dramatically increase technology advancement and testing support;
- Establish a clear, timely, and predictable regulatory framework for marine energy projects; and,
- Implement a fair incentive regime structure that facilitates volume manufacturing and rapid market deployment.

The WPTO supports industry-led RD&D for marine energy systems and sub-systems ultimately leading to reduced costs and increased deployments. The WPTO validates the reliability of marine energy technologies and the value of integrating energy from prototype devices into the electric grid and Blue Economy applications. These funds provide risk mitigation, technical advancement and review, and early market growth opportunities.

There are wide ranges of design approaches to marine energy systems. It is likely that different designs will be most effective in diverse resource areas or for various market applications. Increased funding is required to support the design, construction, and validation of marine energy systems in open water deployments and alongside offshore co-location opportunities, with a balanced approach across resource areas that reflects the higher funding requirements of more mature designs.

Marine energy technologies also present unique engineering challenges that require collaborative foundational innovations by cross-institution teams of researchers. NHA urges dedicated funding for National Marine Energy Center operations and continuation of support for foundational research activities led by universities and other research institutions affiliated with the Centers to accelerate development of the marine energy sector and help train a skilled workforce for the Labs and industry.

In addition, a key barrier to marine energy technology development is the difficulty of testing new designs. Funding is needed to establish and expand testing infrastructure including open-water test centers, such as PacWave, along with other capabilities. Funds are also needed to conduct the tests, through regular and consistent Funding Opportunity Announcements and the TEAMER program, along with environmental monitoring technologies and research to expedite permitting and in-water demonstration. NHA also recommends continued close coordination with other agency partners, including the U.S. Navy on national security applications for marine energy devices at the Wave Energy Test Site in Hawaii.

Finally, marine energy systems can also be a cost-effective and reliable power source in several distributed Blue Economy markets, such as aquaculture, desalination, oil and gas production, underwater data centers, and other emerging needs. However, prototypes must be tailored to specific applications and their performance demonstrated to facilitate adoption in these markets. NHA urges continued funding of the WPTO Powering the Blue Economy activities.

Other Recommendations.—NHA recommends that DOE lead an effort with FERC, USACE, BuRec, National Oceanic and Atmospheric Administration, and other Federal resource agencies to review and provide recommendations on how to address the amount of time, effort, and funding that is required to permit, license, and relicense marine energy projects.

Finally, NHA urges Congress to increase funding to USACE and BuRec to operate, maintain, and upgrade their existing projects, as well as to add non-federal hydropower development to their non-powered infrastructure. NHA also believes there are ways to make this investment that do not increase costs to the power customers. The Federal hydropower system makes up approximately half of U.S. hydropower generation. Many of these projects are candidates for upgrades and/or have backlogged O&M needs. USACE and BuRec projects make the Federal Government itself one of the largest renewable energy providers in the country. Reinvesting in these projects will help to address climate change, provide economic and job opportunities, and maximize the benefits of this public infrastructure.

Sincerely,

[This statement was submitted by Malcolm Woolf, President and CEO, National Hydropower Association.]

PREPARED STATEMENT OF THE NATURE CONSERVANCY

Chairwoman Feinstein, Ranking Member Kennedy and members of the subcommittee, thank you for the opportunity to present The Nature Conservancy's (TNC's) testimony on fiscal year (FY) 2023 appropriations for the U.S. Army Corps of Engineers (Corps), Bureau of Reclamation (Reclamation) and Department of Energy (DOE).

TNC thanks the subcommittee for its attention to the water resources needs of the country, especially including past support for natural infrastructure, which the Corps and Reclamation can use to enhance water infrastructure and improve environmental outcomes. Using natural infrastructure provides effective and cost-effective multi-benefit solutions to many water resource management problems. TNC also applauds the subcommittee's past commitments to vital clean energy technology research, development and deployment programs. These programs are a critical pil-

lar of efforts to reduce greenhouse gas emissions and avoid the worst effects of climate change. TNC strongly encourages the subcommittee to continue to support natural infrastructure and clean energy programs again in FY23.

U.S. ARMY CORPS OF ENGINEERS

Sustainable Rivers Program (SRP): SRP is an initiative to modernize the operations of the Nation's reservoirs to enhance water supply, flood protection, hydro-power generation and recreation, while restoring critical ecosystems and the economically valuable services they provide. The challenges related to providing water supply and flood protection are growing and will only increase due to climate change. SRP works collaboratively with local communities, water stakeholders, States and other Federal agencies to update decades-old water management practices to better meet society's needs. With increased funding in FY20–FY22, the Corps has been able to significantly expand the program from 16 rivers—encompassing 66 reservoirs and 5,083 downstream river miles—to 43 rivers—encompassing more than 90 reservoirs and nearly 12,500 downstream river miles, while still not being able to meet the demand for the program within the Corps. In FY22, the Corps was able to fund only 40 percent of requests from Corps districts for SRP involvement. TNC requests you increase funding to \$7.5 million for SRP in FY23.

Navigation and Ecosystem Sustainability Program (NESP): NESP is an important, dual-purpose program that allows the Corps to address both navigation and ecosystem restoration in an integrated approach along the upper Mississippi and Illinois rivers. Past committee support led to \$5 million in pre-construction engineering and design (PED) funding in the Corps' fiscal year 2021 work plan. Then the Infrastructure Investment and Jobs Act (IIJA) FY22 work plan moved NESP into construction and provided \$732 million for Lock and Dam 25 replacement and \$97.1 million for fish passage at Lock and Dam 22. TNC requests the subcommittee continue its strong support for NESP by providing it \$84 million in FY23, including \$35 million for ecosystem restoration and \$49 million for PED at LaGrange Lock and Dam.

Chesapeake Bay Oyster Recovery: Ongoing oyster restoration work has functionally restored several tributaries in Virginia and Maryland and demonstrates that strong partnerships between private, State and Federal agencies can accomplish tangible outcomes in the Chesapeake Bay. TNC requests \$5 million in FY23 to continue the essential work of restoring the eastern oyster.

Engineering With Nature: The Corps' Engineering With Nature (EWN) initiative is using a collaborative, science-based approach to better deliver a full range of economic, social, and environmental benefits from water resources infrastructure. It is leading work to share, train and support Corps districts and other partners how to effectively develop nature-based projects. Its innovative approaches are building more resilient communities and a healthier environment. We urge you to maintain funding for EWN at \$16.25 million in FY23 in its own budget line.

South Florida Ecosystem Restoration (SFER) Program: Congress made a historic investment last year to advance Everglades restoration projects, increasing funding for SFER to \$350 million in FY22, a \$100 million increase over FY21, and investing almost \$1.1 billion in SFER as part of the IIJA. With some of the largest and most important restoration projects now underway, TNC encourages increased funding for authorized Comprehensive Everglades Restoration Plan and SFER projects. In order to complete authorized projects and keep pace with state investments, TNC requests \$725 million for SFER in FY23.

Continuing Authorities Programs: TNC supports the Continuing Authorities Programs that promote ecosystem restoration and the use of nature-based solutions, including beneficial uses of dredged material (Section 204), aquatic ecosystem restoration (Section 206) and project modifications for improvement of the environment (Section 1135). In addition, WRDA 2020 clarified that small flood control projects (Section 205) can use natural and nature-based features. For FY23, TNC urges you, at a minimum, to maintain funding for these programs at their FY22 enacted levels.

In addition, TNC supports the following projects and programs and requests your support for them at the FY23 requested level.

Project/Program	Account	Budget Request
Brandon Road Lock and Dam, Aquatic Nuisance Species Barrier, IL	Construction	\$47,880,500
Claiborne and Millers Ferry Locks and Dams (Fish Passage), Lower Alabama River	Investigations	\$400,000
Hatchie/Loosahatchie Habitat Restoration (Tennessee and Arkansas)	Investigations	\$400,000
Upper Mississippi River Restoration Program	Construction	\$55,000,000

BUREAU OF RECLAMATION

Upper Colorado River Endangered Fish Recovery and San Juan River Basin Recovery Programs: These programs take a balanced approach to recovering four threatened and 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. These efforts provide Endangered Species Act compliance for more than 2,500 water projects. TNC supports the budget request for these programs, which includes \$7.655 million for the Endangered Species Recovery Implementation Program (Upper Colorado and San Juan River Basin) and \$21.4 million for the Colorado River Compliance Activities account.

WaterSMART and Drought Response Programs: In 2020, Congress modified the WaterSMART Program to allow grants to non-profit organizations working with traditional grant recipients, provide higher levels of match for multi-purpose projects, and support nature-based solutions. These changes will help prioritize projects that both enhance water delivery reliability and benefit watershed health. Nevertheless, we remain concerned that some projects funded through WaterSMART grants can increase consumptive use of water, which makes water shortages worse. TNC requests your continued oversight of the grants by including report language similar to the FY20 bill (Senate Report 116–102 at page 65). That language directed “Reclamation to ensure that all projects funded under 42 U.S.C. 10364 are in compliance with 42 U.S.C. 10364(a)(3)(B) and to articulate the use of the conserved water with its annual award announcements.”

Similarly, grants associated with Reclamation’s Drought Response Program frequently fund new groundwater pumping. Given that development of a permanent or long-term new water supply through groundwater pumping is contrary to the other purposes of WaterSMART—to conserve water, build ecological resilience to the impacts of climate change, and provide environmental benefit—TNC requests your oversight to ensure Reclamation prioritizes other drought resilience strategies over new groundwater pumping.

Cooperative Watershed Management Program: The Cooperative Watershed Management Program provides funding to support on-the-ground capacity to develop, plan, and design watershed management projects. With the passage of the IIJA, funding for these capacity-building activities is more important than ever, as stakeholders often need dedicated resources to prepare projects at a more impactful scale. TNC requests full funding for the Cooperative Watershed Management at \$20 million in FY23.

U.S. DEPARTMENT OF ENERGY

TNC supports robust funding for multiple DOE programs that accelerate the advancement of clean energy technologies and facilitate the department’s shift in focus toward decarbonization of the U.S. economy. This includes programs that were created or reauthorized by the Energy Act of 2020 and the IIJA. We encourage Congress to adequately resource community consultation processes across the Department’s technology deployment programs, with specific emphasis in the Office of Clean Energy Demonstrations. Agency staffing for such work must be adequate to the complexity of the issues and the health, economic and civic capacity needs of underserved communities must be foregrounded in developing these projects.

Solar and Wind Energy Technologies: TNC requests full funding to support the overall research, development and deployment mission of these critical energy technology offices, including \$420 million for the Solar Technology Office and \$420 million for the Wind Technology Office.

Clean Energy Demonstration Projects: TNC requests at least \$250 million in FY23 funding to support the newly established Office of Clean Energy Demonstrations for technology-neutral solicitations focused on crosscutting energy challenges. We recommend the Office of Clean Energy Demonstrations prioritize technology demonstrations for the highest emitting sectors.

Industrial Energy Innovation Research and Development: To develop a robust portfolio of emerging technologies, TNC requests \$650 million for industrial decarbonization activities, including \$344 million for Energy Efficiency and Renewable Energy, \$281 million for Fossil Energy and Carbon Management, and \$25 million for the Office of Science.

Advanced Nuclear Energy: TNC requests full funding in FY23 for two critical programs established under the Energy Act of 2020: \$300 million for the Advanced Nuclear Fuel Availability Program and \$250 million for the Advanced Reactor Demonstration Program, including funding all year-three demonstration and risk reduction cost-share requirements in the proposals selected by DOE.

Electric Power Grid Modernization: TNC supports robust funding for several programs to implement DOE's Building a Better Grid Initiative. This request includes \$600 million for the Smart Grid Investment Program and \$500 million for the Transmission Facilitation Program. We also encourage the committee to include language directing the Secretary of Energy to facilitate the development of the Office of Grid Deployment, as authorized by the IIJA.

Carbon Capture, Utilization and Storage (CCUS) and Carbon Removal: TNC supports robust funding for the Office of Fossil Energy and Carbon Management's (FECM) mission to advance the deployment of a full suite of carbon management technologies. TNC requests \$607.5 million for CCUS and Power Systems. This amount would support DOE's research, development and deployment efforts for carbon capture, carbon utilization, carbon storage, and FECM's contributions to the broader carbon dioxide removal crosscut program.

Advanced Vehicle Technologies: TNC supports robust funding to help advance the decarbonization of the transportation sector or the development of new zero-carbon fuels for transportation and other end uses. To that end, we request \$602.731 million for the Vehicle Technologies Office.

Loan Programs Office: TNC supports the role of the DOE Loan Programs Office (LPO) in spurring commercialization and deployment of emerging technologies by providing loans and loan guarantees. TNC requests \$160 million for the Title 17 Innovative Technology Loan Guarantee Program to expand loan authority by \$16 billion; \$300 million for Advanced Technology Vehicles Manufacturing Loan Program (ATVM), and \$20 million for the Tribal Energy Loan Guarantee Program to cover credit subsidy cost or loan guarantees and direct loans. This request aims to provide additional loan authority, credit subsidy funding, and program eligibility tweaks to further improve LPO's ability to finance innovative energy and manufacturing projects in the United States and help fund community grant-making and technical assistance for clean energy planning.

[This statement was submitted by Jimmy Hague, Senior Water Policy Advisor, The Nature Conservancy.]

PREPARED STATEMENT OF THE NUCLEAR ENERGY INSTITUTE¹

The strategic R&D investments directed by this Committee have helped the U.S. reclaim its position as the global leader in nuclear energy innovation. To sustain the undeniable momentum toward widespread deployment of the technological breakthroughs enabled by these investments, NEI recommends a minimum of \$2.6 billion for Office of Nuclear Energy (NE) programs in fiscal year 2023. Recommendations for specific program elements are set forth below. The funding level for those DOE NE program elements that are not discussed below should be consistent with or greater than fiscal year 2022. Recommendations are also provided for specific programs within the Office of Clean Energy Demonstrations, NNSA, the Office of Science, and the NRC.

This increased investment is consistent with achieving first-of-a-kind operations of advanced nuclear reactors by 2030 and supporting the increased use of nuclear energy to achieve a reliable, affordable, decarbonized grid by mid-century or sooner. Congress should also continue to provide adequate funding necessary to meet commitments to affected communities and States conducting cleanup of DOE's shutdown uranium enrichment facilities and former nuclear weapons material production facilities.

DOE Office of Clean Energy Demonstrations.—We thank Congress for its continued support for the two ARDP projects and the establishment of the Office of Clean Energy Demonstrations.

Advanced Reactor Demonstration Program (FY23 Recommendation—\$70 million).

Microreactor Demonstration Program (FY23 Recommendation—\$30 million).—NEI recommends establishing a new demonstration focused on rapid deployment of microreactors. The total program cost would be \$150 million.

¹ NEI is responsible for establishing nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear material licensees, and other organizations and entities involved in the nuclear energy industry.

DOE OFFICE OF NUCLEAR ENERGY

Advanced Reactor Demonstration Program (FY23 Recommendation—\$235 million).—The ARDP program is helping develop a pipeline of technologies for demonstration and NRIC is supporting demonstrations and deployment. NEI recommends: Risk reduction for future demonstrations: \$140 million, NRIC: \$75 million, Regulatory Development: \$15 million and Advanced Reactor Safeguards: \$5 million.

Advanced SMR R&D Support (FY23 Recommendation—\$211 million).—Demonstrating the next generation of advanced light water small modular reactors will support both domestic deployment and export of U.S. technology and enable broad U.S. leadership in new technologies.

Light Water Reactor Sustainability (FY23 Recommendation—\$62 million).—Increased funding will enable the program to accelerate LWR modernization efforts while continuing to support hydrogen demonstrations. Not less than \$12 million should be used to support new or previously awarded hydrogen demonstration projects.

Advanced Reactor Technologies (FY23 Recommendation—\$70 million).—NEI recommends the funding level for the microreactor program and MARVEL should be a minimum of \$16 million and \$20 million, respectively. The latter will support fuel acquisition and construction in FY23. The ARC-20 program should be funded at \$15 million.

Versatile Test Reactor (FY23 Recommendation—\$45 million)

Accident Tolerant Fuels (FY23 Recommendation—\$165 million).—The industry is working aggressively to accelerate the commercial development, testing, and licensing of accident tolerant fuels. \$120 million is recommended to continue the participation of the industry-led teams in the cost-shared R&D program including support for the testing, code development, and licensing of ATF with higher fuel utilization, \$10 million is recommended to continue silicon-carbide development, and \$35 million is for laboratory specific work in support of ATF.

Advanced Nuclear Fuel Availability Program (FY23 Recommendation—\$360 million: \$300 million for commercial enrichment and deconversion capacity and \$60 million for downblending of HEU).—Russia, the only commercial supplier of HALEU, is no longer a viable supplier. The urgency to develop a domestic HALEU supply chain has increased and an alternate short-term supply of HALEU must be found to bridge the gap before domestic capacity is available, or else current demonstration projects will be at risk. Therefore, \$300 million is requested for FY23 to support the deployment of a competitive commercial HALEU supply chain in the U.S. in the coming years. In the meantime, the fastest path to support near-term needs is a fresh HEU downblending bridge program. For FY23, \$60 million is requested for the bridge program. The total cost of a downblending bridge program is expected to be less than \$160 million.

TRISO Fuel and Graphite Qualification (FY23 Recommendation—\$37 million)

Gateway for Accelerated Innovation in Nuclear (FY23 Recommendation—\$10 million)

High Enriched Uranium Recovery from EBR-II spent fuel (FY23 Recommendation—\$25.75 million).—This funding level is requested to transition EBR-II spent fuel processing operations to seven days a week, 24 hours a day to meet the needs of the industry.

Nuclear Waste Disposal (FY23 Recommendation—\$100 million).—The estimated taxpayer liability for DOE's failure to satisfy its obligation under the NHPA has reached over \$40 billion with almost \$9 billion already being paid from the Judgment Fund. The funding for Nuclear Waste Disposal should be increased substantially and DOE should be directed to re-establish an organization to resume management of the program and to begin implementation of an integrated nuclear waste management system that allows for private consolidated interim spent fuel storage approaches.

Directed R&D and University Programs (FY23 Recommendation—\$161 million).—Direct funding for university programs provides stability for all programs. We support DOE's proposal to create the new program line that includes NEUP, SBIR/STTR, and TCF.

International Nuclear Energy Cooperation (FY23 Recommendation—\$10 million).—The Office of Nuclear Energy plays a critical role in facilitating international nuclear energy cooperation. This is critical to promoting the adoption of U.S. nuclear technologies abroad, assisting allies and partners in achieving their energy security

and climate goals while creating American jobs and promoting U.S. leadership in nuclear safety, security and nonproliferation.

Program direction (FY23 Recommendation—\$100 million).—The responsibilities that DOE NE is managing have increased substantially over the last few years while the staffing levels have reduced and program direction funding has remained roughly constant. This confluence of events has created challenges in many areas including contracting management and execution. An increase in program direction funding is necessary to ameliorate these issues.

DOE Office of International Affairs (FY23 Recommendation—\$62 million).—The Office of International Affairs plays a vital role in enhancing global energy security and increasing U.S. energy exports and trade. Given the important role that nuclear energy plays in achieving these objectives, industry encourages prioritization of nuclear energy cooperation in close coordination with the Office of Nuclear Energy.

NNSA—Uranium Reserve (FY23 Recommendation—\$150 million).—The uranium reserve will create a national security strategic stockpile and preserve critical fuel cycle capabilities.

Nuclear Regulatory Commission (FY23 Recommendation—\$35 million for Advanced Reactor Regulatory Infrastructure Activities and \$20 million for International Cooperation and Assistance Activities).—Suggested report language: The Committee emphasizes the importance of timely, efficient, and effective regulatory activities related to advanced nuclear energy to meeting crucial climate and energy security goals. The Committee recommends not less than \$35,000,000 for Advanced Reactor Regulatory Infrastructure Activities.

Nuclear Supply Chain (FY23 Recommendation—\$5 million).—The DOE should establish a program that is focused specifically on the nuclear supply chain needed to successfully deploy advanced reactors and \$5 million should be initially provided for this purpose. This new nuclear supply chain program could be established in the Office of Nuclear Energy or within the Office of Manufacturing and Energy Supply Chains.

Low Enriched Uranium Supply for the Existing Fleet (FY23 Recommendation—\$400 million).—The U.S. reactor fleet currently obtains about 20 percent of its enriched uranium from Russia. The U.S. nuclear energy industry is committed to ceasing reliance on Russian enriched uranium. NEI requests \$400 million for FY23 to appropriately fund new programs to increase domestic mining, conversion, and LEU enrichment capacity and increase diversity of supply.

DOE Office of Science Isotope R&D and Production Program (FY23 Recommendation—\$102.451 million).—Suggested report language: The Committee remains interested in ensuring that a sufficient supply of Strontium-90 is available for industrial purposes, utilizing legacy materials, and provides \$5,000,000 within available funds to carry out the findings of the FY-221 Sr-90 plan to prepare capsules for removal and transfer for beneficial use.

[This statement was submitted by Maria Korsnick, President and Chief Executive Officer, Nuclear Energy Institute.]

PREPARED STATEMENT OF THE NUCLEAR WASTE STRATEGY COALITION¹

The NWSC calls upon Congress to appropriate funds in Fiscal Year 2023 to the Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) such that each agency has the sustainable annual funding necessary to undertake critical activities related to developing, managing, and regulating an integrated program for the storage, transportation, and disposal of the Nation's spent nuclear fuel (SNF), Greater-Than-Class C (GTCC) waste, and other high-level radioactive waste (HLW). For DOE, relevant programs include:

- Fuel Cycle Research & Development program, which includes relevant subprograms:
 - Integrated Waste Management Systems (DOE request: \$53 million); and
 - Used Nuclear Fuel Disposition Research & Development (DOE request: \$46.875 million).
- Nuclear Waste Fund Oversight program (DOE request: \$10.205 million).

To conduct activities necessary to develop and manage a multi-generational, national integrated nuclear waste program and carry out the related recommendations herein, DOE needs sustained and significantly more funding for expansion of activi-

¹The NWSC is an ad hoc organization representing the collective interests of member state utility regulators, consumer advocates, attorneys general, and radiation control officials; Tribal governments; local governments; electric utilities with operating and/or shutdown nuclear reactors; and other experts on nuclear waste policy matters.

ties under these items. As a general matter, direction to DOE and the NRC concerning nuclear waste management remains unclear. Despite new Congressional appropriations of \$27.5 million to DOE in Fiscal Year 2021 and in Fiscal Year 2022 for “expenses necessary for nuclear waste disposal activities to carry out the purposes of the Nuclear Waste Policy Act of 1982, Public Law 97–425, as amended, including interim storage activities,” this funding did not establish the meaningful integrated nuclear waste management program that our Nation needs but has lacked for more than a decade. Thus, our testimony focuses on the need for Congress to:

- Direct and sufficiently fund the establishment of a national integrated nuclear waste management program that addresses storage, transportation, and disposal;
- Direct and sufficiently fund the formation of a new, independent waste management organization and the orderly transition of these responsibilities from DOE; and
- Provide sustainable annual access to the Nuclear Waste Fund (NWF) for a national integrated program, whether managed by DOE or, preferably, a new, independent entity.

CONSEQUENCES OF INACTION ON NUCLEAR WASTE MANAGEMENT

The national nuclear waste management program established under the 1982 Nuclear Waste Policy Act (NWPA) was effectively terminated more than a decade ago by executive action. Subsequently, Congress has failed to provide meaningful direction or funding for that program or any national integrated nuclear waste management program. Since 1983, approximately \$56 billion has been credited to the NWF, including over \$21.5 billion collected from electric ratepayers and over \$30 billion in interest that continues to accumulate (approximately \$1.7 billion a year). The approximate \$44 billion balance sits stranded in U.S. Treasury Securities and unappropriated for its intended purpose. These facts have resulted in a de facto national policy of inaction that negatively impacts:

- Host States & Communities. The de facto policy indefinitely strands 80,000 metric tons of commercial SNF and HLW at operating and decommissioned reactor sites in 34 States without their consent. At shutdown sites, the stranded waste impedes beneficial property reuse.
- All U.S. Taxpayers. The de facto policy has already cost U.S. taxpayers more than \$9 billion, and this liability is growing by approximately \$2 million per day.
- Electric Customers. While no longer paying fees into the NWF per court order, ratepayers in more than 40 States paid billions of dollars that are not being used for their intended purpose.

NWSC CALL FOR ACTION & SPECIFIC REQUESTS/RECOMMENDATIONS

Starting with the subcommittee’s markup of the fiscal year 2023 EWD bill, Congress should take action to mitigate these real consequences of the Federal Government’s inaction. To recognize that the Federal Government can and should establish a national integrated nuclear waste management program, and to set such a program up for success, Congress should immediately take the following steps:

1. Direct and sufficiently fund the establishment of a national integrated nuclear waste management program that is designed to make progress on permanent disposal in parallel with progress on consolidated interim storage (CIS) and transportation.

DOE has conducted significant transportation work over the years and has recently re-initiated work on a consent-based siting (CBS) process to facilitate Federal CIS facilities. However, regarding the critical need for permanent disposal, DOE not only has taken Yucca Mountain off the table but also has suggested it cannot take action on permanent disposal until Congress provides new direction and funding. Thus, other than disposal-related R&D, DOE is not making measurable progress on permanent disposal, which frustrates progress on the other two critical parts of an integrated program—CIS and transportation. We are not alone in stressing an integrated approach. In its report, *Commercial Spent Nuclear Fuel: Congressional Action Needed to Break Impasse and Develop*

a Permanent Disposal Solution.² GAO relayed that “nearly all of the experts we interviewed said the United States needs an integrated waste management strategy” (p. 30) and recommended that Congress direct DOE accordingly.

At a minimum, Congress should consider directing and funding constructive, near-term, disposal-related actions by Federal agencies, such as (i) Development of generic repository standards by the Environmental Protection Agency and NRC; and (ii) Expansion of DOE’s CBS work to incorporate disposal facilities in addition to CIS facilities. While the NWSC has numerous concerns about the CBS initiative, we want it to be successful, and the lack of progress on permanent disposal is perhaps the biggest impediment to siting CIS facilities.

Finally, we continue to request that the subcommittee provide: (i) Funds for NRC and DOE to carry out their respective roles regarding siting and/or licensing of a repository and, simultaneously, private or Federal CIS facilities; (ii) Funds for the continuation and expansion of constructive SNF transportation initiatives (assessment of infrastructure needs at shutdown sites; testing, certification, and procurement of railcars, licensed transportation containers, components; etc.); and (iii) Increased financial and technical assistance to Tribal, State, and local governments for transportation-related emergency preparedness training and activities—both by DOE and by private transportation to non-federal CIS facilities licensed by the NRC.

2. Direct and sufficiently fund the formation of a new, independent waste management organization and the orderly transition of these responsibilities from DOE.

Although the NWSC continues to support the establishment of a dedicated office in DOE that focuses on nuclear waste management, DOE has exhibited no interest in implementing this change.³ We believe the Blue Ribbon Commission on America’s Nuclear Future (BRC) recommendation for a new, single-purpose organization remains the best solution for governance reform. While the DOE team seems committed to progress, the current structure falls short in comparison to a model that provides additional accountability and reasonably insulates the organization from political interference and excessive turnover in key positions. A new waste management organization could be structured in numerous ways, but we urge consideration of the government-owned corporation model (see S.3322, last introduced by the late Senator George Voinovich in 2010)⁴ instead of models that set up government agencies with both politically-appointed leadership and oversight boards that tend to change with every administration and lack the long-term continuity needed to make progress on this issue.

3. Provide sustainable annual access to the NWF for a national integrated program, whether managed by DOE or, preferably, a new, independent entity.

We call upon the EWD subcommittee to take the lead on reforming the Federal budgetary treatment of the NWF such that sustainable annual access is provided to the funds collected from electric customers—as well as to the annually accumulating interest of approximately \$1.7 billion—to support the development and management of a multi-generational, national integrated nuclear waste storage, transportation, and disposal program. Recognizing the importance of funding to program success, the BRC, members of Congress,⁴ and several other experts have urged NWF reforms. While appreciating the budgetary complexities involved in implementing these necessary reforms, the NWSC notes that Congress has recently navigated around such complexities to access similar funds (e.g., Land and Water Conservation Fund, Harbor Maintenance Trust Fund) and should find a similar path to ensure that the NWF is used for its intended purpose.

²U.S. Government Accountability Office. (2021). Commercial Spent Nuclear Fuel: Congressional Action Needed to Break Impasse and Develop a Permanent Disposal Solution (GAO–21–603).

³See May 3, 2021 letter from eight organizations to DOE Secretary Granholm and Nov. 23, 2021 response letter from DOE Secretary Granholm to NWSC Chair Katie Sieben.

⁴United States Nuclear Fuel Management Corporation Establishment Act of 2010, as introduced by the late Senator George Voinovich (S.3322) and Congressman Fred Upton (H.R.5979).

BILLS PROPOSING TO PROHIBIT USE OF FEDERAL FUNDS FOR PRIVATE CIS

The NWSC opposes new measures proposing the outright prohibition on use of Federal funds (i.e., the Judgment Fund) for private interim storage of SNF until such time that a permanent repository is available to accept the SNF. This includes S.3741 as introduced in the Senate and its identical companion in the House (H.R.6901).

The NWSC strongly reiterates the need to make progress on permanent disposal in parallel with progress on CIS and transportation and appreciates state, Tribal, and community resistance to becoming de facto permanent sites given the Federal Government's inaction on disposal. That is precisely why we are urging in the strongest terms immediate action by Congress and the Administration to reestablish a national integrated nuclear waste management program.

Respectfully, the consequence of the approach advanced in S.3741 and H.R.6901 is to leave the Nation without any potential near-term options to make progress on removing SNF from existing sites and reducing the growing financial burden on all U.S. taxpayers. Simply, we need Congress and the Administration to refrain from taking options off the table and to instead focus on facilitating options and meaningful progress on SNF management. The NWSC has repeatedly (and again herein) suggested positive, widely endorsed approaches (by the BRC, GAO, Members of Congress, et al.) that Congress and the Administration should pursue.

We also highlight concerns about authorizing in appropriations bills. From a stakeholder perspective, the appropriations process does not lend itself to sufficient notice and debate of provisions that have a substantial impact. To be clear, the inclusion of new language that would prohibit the use of Federal funds (i.e., the Judgment Fund) for private interim storage of SNF until such time that a permanent repository is available to accept the SNF substantially impacts NWSC members, and if such language must be considered at all, we urge that it be vetted in the authorizations committees with subject matter jurisdiction.

CONCERNS WITH PRIOR SENATE EWD APPROPRIATIONS LANGUAGE

The NWSC reiterates concerns with certain Senate-proposed provisions (e.g., Section 306 of S. 2470, 116th Cong., 2019). First, such language would fail to move forward on CIS and permanent disposal in parallel, a key element of a successful integrated nuclear waste management program. Second, establishment of specific consent-based siting requirements by statute is unnecessary, as potential hosts should have the flexibility to negotiate the process and conditions that best serve the interests of their jurisdictions. Third, it would not address underlying funding concerns while expanding Congressional authority to tap the NWF and increase the potential for restarting the fee on electric customers. Finally, such language raised consequential questions about whether DOE will be allowed to engage Federal or private CIS initiatives and whether CIS access may be limited.

URANIUM ENRICHMENT DECONTAMINATION & DECOMMISSIONING (D&D) TAX

The NWSC opposes reinstatement of a uranium enrichment D&D tax. Although supportive of environmental cleanup of enrichment sites, U.S. nuclear-generating utilities and their customers should not be singled out again to pay for D&D of DOE facilities developed for national defense.

CLOSING

The NWSC appreciates your leadership and urges you to take action this session to ensure meaningful progress toward a national integrated nuclear waste management program.

[This statement was submitted by Katrina McMurrian, Executive Director, Nuclear Waste Strategy Coalition.]

PREPARED STATEMENT OF THE OREGON WATER RESOURCES CONGRESS

The Oregon Water Resources Congress (OWRC) continues to support increased funding for the U.S. Department of the Interior's Bureau of Reclamation's (Reclamation) Water and Related Resources program and requests that a minimum of \$2 billion be included in the fiscal year 2023 Budget, an increase from the \$1.7 billion enacted for fiscal year 2022. Reclamation's highly effective WaterSMART Initiative has been woefully underfunded for years and needs significant resources to meet the broad and diverse water supply and infrastructure needs in the 17 western States Reclamation serves. Additional funding will help leverage State and local resources,

support collaborative partnerships, and enhance coordination between other Federal agencies.

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 one-third of all irrigated land in Oregon. These water stewards operate complex water management systems, including water supply reservoirs, canals, pipelines, pumps, and hydropower facilities. About one-half of our members are in Reclamation Projects and most of our members have been awarded grants under the WaterSMART program or have contracts with Reclamation.

WATERSMART INITIATIVE IN OREGON

Reclamation's WaterSMART Initiative and related programs have been successfully used in Oregon to implement an array of water conservation, water efficiency, and infrastructure modernization projects. OWRC strongly supports increased funding for Reclamation's WaterSMART Grants and the Water Conservation Field Services Program (WCFSP)—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.

The WCFSP is a key component in supporting irrigation districts and similar water delivery systems' water conservation efforts. The WCFSP has provided a breadth of technical assistance to irrigation districts and provided partial funding for materials used to pipe and line canals, water measurement and other technology, and water conservation plans—all supporting water conservation efforts being implemented by these districts. Providing increased funding for WCFSP projects will yield immediate and cost-effective water conservation measures in all 17 western States served by Reclamation.

Additionally, we believe the management of the WCFSP should remain with the Regional Offices to retain the close connection between Reclamation and Project managers and ensure 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 water needs in Oregon. These projects have been a key ingredient in 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. The following projects are examples of how the WaterSMART Initiative has been recently used in Oregon:

2021 Water and Energy Efficiency Projects:

—*Klamath Irrigation District, Supervisory Control and Data Acquisition and Automation Improvements.*—The District, located in southern Oregon, will install twenty-one new Supervisory Control and Data Acquisition components on gates and canals throughout the system that do not currently have automated controls. The project will provide near real-time data on flow rates, water elevations, and control device statuses, and is expected to result in annual water savings of 19,500 acre-feet by reducing spills, over-deliveries, and seepage. Conserved water can be stored in Upper Klamath Lake for a longer period, which may benefit fish species, including the endangered Short nosed Sucker and

Coho Salmon, by increasing lake levels and reducing lake temperatures, while also providing a more reliable supply for growers during times of shortage. In addition, conserved water may be available for the fall waterfowl migration at the Lower Klamath National Wildlife Refuge. The project has significant support from stakeholders, including the Klamath Basin National Wildlife Refuge Complex, the Farmers Conservation Alliance, and Ducks Unlimited. Reclamation Funding: \$500,000, Total Project Cost: \$1,071,774

—*North Unit Irrigation District, Optimized Conveyance Efficiency and Control in Main Canal.*—The District, located in central Oregon, will upgrade the automation at nine gated check structures and seven measuring stations along the main canal of its distribution system. The improvements will increase conveyance efficiency and operational control, resulting in an expected annual water savings of 3,337 acre-feet. Overallocation of the Deschutes River and an agreement to adapt dam operations to reduce impact on endangered species has limited District water usage to 60–75 percent of a water user's minimum water right. The district has shut down periodically because of drought and shortage. Water conserved because of the project will be stored within Haystack Reservoir for a more controlled and targeted release during the irrigation season to avoid further reductions during times of drought. Reclamation Funding: \$244,871, Total Project Cost: \$511,611

2020 Water and Energy Efficiency Projects:

—*Klamath Irrigation District, C-4-a Canal Lining/Piping Project.*—The District will convert 1.5 miles of the currently open Canal to 3,000 feet of Ethylene Propylene Diene Monomer lining and 5,000 feet of high-density polyethylene pipe. The project is expected to result in an annual water savings of 664 acre-feet which is currently lost to seepage, evaporation, and operational spills. The project is expected to improve lake levels to benefit fish species such as the endangered Shortnose Sucker, and to provide a potential late season supply for other water users in times of shortage. In addition, conserved water may be available for the fall waterfowl migration at the Lower Klamath National Wildlife Refuge. Water and Energy Efficiency Grant: \$210,650 Total Project Cost: \$421,301

—*Middle Fork Irrigation District, Coe Branch Pipeline and Irrigation Efficiency Project.*—The District will install a high-density polyethylene pipe from its existing diversion on Coe Creek to an existing settling pond to provide clean irrigation water to its users. When sedimentation worsens in Coe Creek, the District must meet irrigation demand with water from Laurance Reservoir and its tributaries. The district will use the settling pond to remove glacial sediment from the water before it is delivered to irrigators, thereby avoiding diversions from Laurance Lake. By more efficiently and effectively removing sediment, the project will also allow water users to install high-efficiency micro-sprinklers. Water and Energy Efficiency Grant: \$266,600 Total Project Cost: \$1,460,400

2021 Small-Scale Water Efficiency Projects

—*North Unit Irrigation District, Lateral 41-9 and 58-3-2 Piping Project.*—The District, in central Oregon, will convert two open canals with 4,450 linear feet of buried high-density polyethylene pipe. This project will reduce water lost to seepage, improve conveyance efficiency, and reduce problematic sediment transport. This project is prioritized through several planning efforts, including the District's System Improvement Plan. Reclamation Funding: \$74,691, Total Project Cost: \$149,383

—*Talent Irrigation District, East Main Canal Chamberland Shotcrete Project.*—The District, in southern Oregon, will line two unlined sections of the East Main Canal totaling 320 linear feet, with reinforced shotcrete liner. The upgrade will increase the efficiency and reliability of water deliveries. The project supports the District's Water Management and Conservation Plan of 2018. Reclamation Funding: \$16,220, Total Project Cost: \$32,441

—*West Extension Irrigation District, Irrigation Main Water Meter Project, Boardman East.*—The District, in northeast Oregon, will install nine magnetic meters at the head of six piped laterals. The project will allow the District to see at a glance how much water is being delivered down each lateral. This project will help the District better manage their water supply, resulting in improved water supply consistency and resilience to drought. The metering of these laterals is identified in the 2016 update of the District's Boardman Master Plan. Reclamation Funding: \$32,500, Total Project Cost: \$65,000

Further innovative projects like the ones above could be developed and implemented in Oregon if more funding is made available through the WaterSMART Ini-

tiative. 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.

We respectfully request the appropriation of at least \$2 billion for Reclamation's Water and Related Resources program for fiscal year 2023. Providing increased funding for the WaterSMART Initiative is a wise investment that will leverage resources, increase strategic partnerships, and yield immediate and long-term benefits for our Nation's economy, environment, and communities. Thank you for the opportunity to provide testimony regarding the fiscal year 2023 budget for the U.S. Bureau of Reclamation.

Sincerely,

[This statement was submitted by April Snell, Executive Director, Oregon Water Resources Congress.]

PREPARED STATEMENT OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS

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 with funding of \$8.8 billion in fiscal year (FY) 2023. In particular, we urge you to provide \$378 million for Mathematical, Computational, and Computer Sciences Research in the Advanced Scientific Computing Research (ASCR) program within the Office of Science. We also emphasize the importance of support for graduate students through the Computational Sciences Graduate Fellowship and request that \$21 million be provided in FY 2023.

WRITTEN TESTIMONY

On behalf of SIAM, we submit this written testimony for the record to the subcommittee on Energy and Water Development Appropriations of the United States Senate.

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.

SIAM appreciates your Committee's leadership on and recognition of the critical role of the Department of Energy (DOE) Office of Science and its support for mathematics, science, and engineering in enabling a strong U.S. economy, workforce, and society. DOE was one of the first Federal agencies to champion computational science as one of the three pillars of science, along with theory and experiment, and SIAM deeply appreciates and values DOE activities.

SIAM is grateful for the strong funding that the Office of Science received in FY 2022, and we join with the research community to request that you continue this momentum by providing the Office of Science with \$8.8 billion for fiscal year 2023. The requested amount is necessary for ensuring continued support for areas such as mathematics and scientific research to help address national priorities, foster economic growth, and create jobs.

Advanced Scientific Computing Research.—Activities within the Advanced Scientific Computing Research (ASCR) program play a key role in supporting research that begins to fulfill the needs described above. Within the overall amount for ASCR, we urge you to provide \$378 million for Mathematical, Computational, and Computer Sciences Research in FY 2023, consistent with the President's FY 2023 budget request. This level of funding is needed to ensure the long-term health and viability of the high-performance computing (HPC) ecosystem that DOE relies on for conducting groundbreaking discovery science while supporting increased investment in priority areas such as quantum computing and artificial intelligence.

Core research activities within ASCR enable the development of critical tools for computational science, modeling, and data analysis that enhance advanced computing capabilities and seed new areas of research with potential for revolutionary advancements. Sustained investment in basic research ultimately enabled the global leadership in HPC that the U.S. currently enjoys. While our strength in HPC is ex-

emplified by the groundbreaking exascale systems currently being assembled, this position is increasingly being challenged by overseas competitors.

We strongly support the Administrations plan's to reorientate ASCR toward longer term research as the Exascale Computing Initiative comes to fruition and funding for the associated Exascale Computing Project continues its planned decline. This shift is underpinned by strategic visioning exercises that have produced several recommendations for reinvigorating ASCR's research agenda. These include a substantial reinvestment in foundational science and increased support for high-risk/high-reward research activities, especially at universities.¹ Such an approach will help maintain the long-term viability and vibrancy of the broader HPC research community as ASCR looks toward the post-exascale future.

In addition to the critical role that it already plays in priority areas like artificial intelligence and quantum information science, ASCR's research portfolio will be a critical asset to the Department's efforts to drive innovation in climate and Earth systems predictability and renewable energy. Specifically, research in applied mathematics and computational science will enable new capabilities in environmental sensing and edge computing with applications in Earth systems prediction and climate forecasting. In addition, advancements in modeling, simulation, and optimization can help improve grid reliability and the integration of renewable energy sources into the broader power distribution system.

Supporting the Pipeline of Mathematicians and Scientists.—SIAM is grateful for Congress's strong support of the Computational Sciences Graduate Fellowships (CSGF) in FY 2022, providing a \$5 million increase after it had been flat funded since FY 2015, but requests that \$21 million be provided for the Computational Science Graduate Fellowship (CSGF) in FY 2023 within the overall amount for research. Researchers trained in computational science and working in universities, national laboratories, and industry are essential to propel advances in many DOE critical research areas. This program 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.

The increase we are requesting to CSGF reflects the growing need for an expanded workforce in emerging areas of importance to DOE such as artificial intelligence and data science. As international competition in science and engineering intensifies, maintaining U.S. leadership in these areas will increasingly depend on our ability to cultivate a scientific workforce with strong research experience and close ties to DOE. An increase in funding to CSGF would also enable ASCR to address a consistent oversubscription in the program and advance diversity, equity, and inclusion through expanded outreach to minority serving institutions.

In addition to CSGF, this level of funding for the research program would support increases for the Reaching a New Energy Sciences Workforce (RENEW) initiative, started in FY 2022, and support the new Accelerate and FAIR initiatives, which would further broaden and diversify the applied mathematics and computer science research communities by increasing opportunities for students and institutions that are currently underrepresented.

The Role of Mathematics in Meeting Health, Energy, and Security Challenges.—Support for applied mathematics and computational science is critical to sustaining the Nation's global scientific and technological leadership, energy production capabilities, and national security. By exploiting DOE's world class supercomputing capabilities, mathematicians and computational scientists supported by the abovementioned programs pioneer new modeling and simulation techniques that enable substantial breakthroughs in materials synthesis, energy distribution, and human physiology among other complex areas where laboratory experiments or field observations are too costly, time consuming, or simply insufficient. This was demonstrated recently in the midst of the novel coronavirus pandemic. Researchers at Oak Ridge National Laboratory (ORNL) developed a computational model of the novel coronavirus. They then ran the model on ORNL's supercomputer, Summit, and were able to identify 77 molecular compounds that could serve as the basis for therapeutic drugs to counter COVID-19.²

¹Advanced Scientific Computing Advisory Committee (ASCAC), subcommittee on Exascale Transition, "Transition Report", https://science.osti.gov/-/media/ascr/ascac/pdf/meetings/202004/Transition_Report_202004-ASCAC.pdf?la=en&hash=5164916FE5158EE8919C26804B4CF7F6DDA36E9D.

²https://chemrxiv.org/articles/Repurposing_Therapeutics_for_the_Wuhan_Coronavirus_nCov-2019_Supercomputer-Based_Docking_to_the_Viral_S-Protein_and_Human_ACE2_Interface/11871402/3.

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 of energy 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.

Thank you again for your ongoing support of the DOE Office of Science. 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 2023 appropriations process.

[This statement was submitted by Dr. Susanne C. Brenner, President; Dr. Anne Gelb, Vice President for Science Policy; and Dr. Suzanne L. Weekes, Executive Director, Society for Industrial and Applied Mathematics.]

PREPARED STATEMENT OF STANFORD SYNCHROTRON RADIATION LIGHTSOURCE

Dear Chair Feinstein and Ranking Member Kennedy,

As a faculty member at Iowa State University, I appreciate the strong support you have provided for the Energy and Water Development Appropriations Bills since they have funded the large-scale X-ray light sources that are operated by the Department of Energy's Office of Science, Basic Energy Sciences (DOE-BES). These facilities, such as the Stanford Synchrotron Radiation Lightsource (SSRL) in Menlo Park California use electricity to create beams of X-ray light that are many millions of times brighter than the sun. They are essential for the US to remain internationally competitive on the world research stage, and represent a pinnacle of technological achievement. Examples of their use include the development of advanced materials that will form the basis of transformative technologies, allowing our society to do more with less, such as ultra-high density digital storage media or new energy storage, and are vital for a low-carbon future. During the recent Covid-19 pandemic the X-ray light sources delivered scientific data that was pivotal in the development of new drugs and treatments; more than 90 percent of drug discovery over the last decade has resulted from work performed at X-ray light sources. In other research areas, unique insights from X-ray light have allowed safe and effective cleanup of legacy environmental contamination of nuclear materials, and have proved pivotal in understanding the optimum ways to maintain the Nation's nuclear stockpile. My research group relies on large-scale X-ray light sources for developing new materials for water treatment.

I have seen firsthand how DOE BES User Facilities enable discoveries that drive the Nation's economy, strengthen national security, and improve quality of life. Therefore, as the budget for DOE in fiscal year 2023 is developed, I urge you to work to increase the fiscal year 2023 DOE science budget, in particular for scientific user facilities that serve a large number of science and technology areas and researchers in the US.

Despite challenging budgetary times, it remains clear that US interests gain real benefits from innovations enabled by the Federal investment in major science facilities, and in particular SSRL. We therefore urge you to work to increase funding for SSRL and the other DOE BES laboratories, as this is a strong investment to strengthen the scientific and engineering workforce and build the US economy.

Sincerely,

[This statement was submitted by Joe Charbonnet, PhD, Assistant Professor, Iowa State University.]

PREPARED STATEMENT OF THE UNITED BARRIER TECHNOLOGIES, INC.¹

Chairwoman Feinstein, Ranking Member Kennedy, and Members of the Energy and Water subcommittee on Appropriations, thank you for the opportunity to sub-

¹United Barrier Technologies is focused on developing new innovative flood control solutions that will transform the Flood Control Industry.

mit the following testimony in support of funding an additional \$4 million for U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC), Coastal & Hydraulics Laboratory for test and evaluation of new innovative flood control barriers. Current flood control solutions, levees and floodwalls, are outdated, unreliable and expensive, and are unable to protect our Nation from increasing flooding due to climate change. Congress should allocate greater resources for new innovative flood control barriers.

The Socioeconomic Impacts of Flooding. Flooding is the most pervasive natural disaster in the United States. For example, Hurricane Harvey caused \$125 billion in damages. Harvey's hurricane flooding forced 39,000 people out of their homes, destroyed one million motor vehicles and forced 200,000 homes to lose power.²

In spring 2019, the Midwest experienced severe flooding causing over \$20 billion in damages to public and private property and losses to crops and livestock. Over 80 levee systems within the Army Corps levee portfolio were overtopped or breached. Over 700 miles of levees were damaged.³

Climate change and the concentrating of population and economic activity in flood-prone areas are increasing flood risk. This has implications for prosperity and economic security as well as societal wellbeing because flooding, typically, affects the poorest and most marginalized populations more deeply. It is incumbent on the Federal Government to test and evaluate new modern flood control barriers with vastly improved resilience to flood risk.

Deficiencies of Levees and Floodwalls. Sumerians pioneered using earthen levees to protect against major flooding in southern Mesopotamia from around 3500 B.C. Today, the United States continues to rely on these ancient, pre-industrial, flood control solutions. There are over 100,000 miles of levees and floodwalls throughout the United States. These legacy flood control solutions have significant flaws including:

- (1) *Permanent Structures that Block Public View and Water Access.* These permanent structures are huge, elongated, monolithic, structures that block the public's view and access to water. These restrictions negatively impact property values, tourism, business, the community's aesthetic appeal and the public's enjoyment of the seas. For these reasons, any proposals for the construction of these legacy solutions are often met with considerable public resistance and litigation.
- (2) *Permanent Structures that Fail.* Levees and floodwalls have unacceptably high failure rates. Dirt is an essential element that makes up levees. However, the presence of water causes dirt to become unstable. As a result, as water levels rise, so do the risks of levee structural failures. Research shows that levees start to fail at 50 percent of their protective height.⁴ Home owners living near levees have a 25 percent+ chance of having their homes destroyed by flood waters caused by failed levees.⁵
- (3) *Permanent Structures that Have Negative Impacts on the Environment.* They:
 - Interfere with the natural development of plant life (flora).
 - Interfere with the natural development of animal life (fauna).
- (4) *Expensive to Build.* The average cost for levees and floodwalls is \$57 million per linear mile. These costs include planning, materials, equipment, labor and cost creep due to long construction times.

Requirements for the Next Generation Flood Control Barriers. The general public wants mobile flood control barriers that allow views of the water and access to the water, barriers that will not fail, barriers with minimal impacts to the environment and barriers that can be deployed at a reasonable cost. It is imperative that ERDC investigate new innovative flood control solutions with the following characteristics:

- (1) *New Flood Control Barriers Should be Mobile.* Mobile, railcar-based barriers can be rolled into position only during flood emergency periods, and kept out of site in storage yards when not needed. In short, the barrier should be visible to the public when necessary and out of view when not. This will allow the public to maintain views of the water and access to

²How Much Damage Did Hurricane Harvey Cause? <https://www.hurricaneharveyfirm.com/blog/2020/january/how-much-damage-did-hurricane-harvey-cause/>.

³Infrastructure Report Card: Levees <https://infrastructurereportcard.org/wp-content/uploads/2017/01/Levees-2021.pdf>.

⁴Obtaining Fragility Curves on Levees Subjected to Flooding. https://www.ecsmge-2019.com/uploads/2/1/7/9/21790806/0622-ecsmge-2019_lopez-acosta.pdf.

⁵Levees in the USACE Galveston District. <https://www.swg.usace.army.mil/Portals/26/docs/PAO/Levee.pdf>.

the water. Communities will also maintain their aesthetic appeal and property values.

- (2) *The Flood Control Barriers Should be Made of Very Heavy Steel.* Heavy steel barriers are highly reliable and cannot be breached by water. Their weight can be supplemented with ballast flood water taken from the flood location. Transitioning to steel barriers will also invigorate the steel and railcar industries in the United States.
- (3) *Minimal Environmental Impact and Climate Change Adaptable.* The railroad tracks have a small footprint and minimal impact on flora and fauna. The mobile barriers can adapt to climate change by swapping out shorter railcars with new taller ones.
- (4) *Provide Flood Protection for Marginalized Communities.* A mobile flood control barrier can be deployed cost-effectively to low-income communities. The only infrastructure needed is railroad track. Railroad track can also provide much-needed transportation options, including: trolleys, bike paths and walkways.
- (5) *Lower Cost.* The average cost for mobile flood control barrier systems should be approximately \$30 million per linear mile. These costs include railcars, installation of the railroad tracks, storage, labor, system management and other costs. In addition, the system's mobility provides for shared use of the railcars with other locations, which will dramatically lower the \$30 million system cost.

Need for Engineer Research and Development Center (ERDC) Funding. ERDC is the premier research and development center for the Army Corps of Engineers to conduct test and evaluation of new innovative solutions to mitigate the risks of flooding. This new research project will better protect properties and infrastructure and reduce the impacts of flooding on peoples' lives and livelihoods. Investments in this technology will spur economic development, create jobs and protect the environment and public health.

Report Language.

We recommend the following report language:

The Committee provides not less than \$4,000,000 for U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC) to conduct prototyping and test and evaluation of innovative mobile flood control barrier systems. The Committee supports efforts to develop the next generation of flood control barriers to improve cost, performance, and overcome the deficiencies of permanent, fixed barriers.

We thank the Committee for your consideration of this testimony.

[This statement was submitted by Phillip M. DeLaine, Jr., President, United Barrier Technologies, Inc.]

PREPARED STATEMENT OF THE WATERREUSE ASSOCIATION

Thank you for providing the opportunity to submit written testimony on Fiscal Year 2023 appropriations. I write today on behalf of the WaterReuse Association and its members to highlight the importance of the U.S. Bureau of Reclamation's (USBR) Title XVI-WIIN Water Reclamation and Reuse Competitive Grants Program and the Desalination and Water Purification Program. The Title XVI-WIIN Program and Desalination and Water Purification Program have helped communities across the West build drought resilience, keep nutrients and other pollutants out of sensitive waterways, save billions of dollars relative to importing water, and grow sustainable economies. They are key economic and climate resiliency tools.

Given the critical role that water recycling plays in water resources management and the overwhelming demand for projects as authorized in section 4009(c) of Public Law 114-322, we urge you to include \$20 million for Title XVI-WIIN in Energy and Water Development appropriations legislation for fiscal year 2023. Along with direct appropriations provided by the Infrastructure Investment and Jobs Act of 2021, this funding will help USBR meet the overwhelming demand for Title XVI-WIIN program dollars. In addition to our request for Title XVI-WIIN, we support a funding level that meets demand for USBR's Desalination and Water Purification Program in fiscal year 2023. The Desalination Program invests in projects in Reclamation States that involve ocean or brackish water desalination. In the arid West, desalination is an important tool that can help communities increase their water supply.

The WaterReuse Association is a not-for-profit trade association for water utilities, businesses, industrial and commercial enterprises, non-profit organizations, and research entities that engage in and on water recycling. WaterReuse and its state and

regional sections represent more than 200 water utilities serving over 60 million customers, and over 300 businesses and organizations across the country. Our mission is to engage our members in a movement for safe and sustainable water supplies, to promote acceptance and support of recycled water, and to advocate for policies and funding that increase water reuse.

Since Title XVI's inception in 1992, Congress has authorized 53 Title XVI recycling projects producing more than 400,000 acre-feet of drought-resistant water supply. To date, USBR has obligated over \$700 million in Federal funding, which has been leveraged with non-federal funding to implement more than \$3.3 billion in water reuse improvements—a nearly 5:1 leverage ratio. Due to the popularity of Title XVI-WIIN, the program has a large backlog exceeding \$700 million in Federal cost share for eligible projects, and demand is expected to grow as more projects become eligible. While the IIJA will help USBR meet some of this demand, additional discretionary appropriations are and will continue to be needed.

Water projects funded through the Title XVI program have been used to increase the supply of fresh drinking water, generate sustainable irrigation water for landscaping and agricultural use, restore sensitive ecosystems, and help industries expand and create jobs, among other purposes. The program is not limited to the reuse of municipal wastewater—it also helps communities identify beneficial uses for industrial, agricultural, and domestic wastewater, as well as impaired ground and surface water. Investments through the Title XVI competitive grants program have helped both urban and rural communities across the West build a strong and secure economic future.

A recent GAO report (GAO-19-110) highlighted a number of illustrative Title XVI projects. For example, program investments helped one drought-stricken water district in California develop infrastructure to use more than 2 billion gallons of recycled water to irrigate sports fields, golf courses, parks, school grounds, and medians. Another project is providing drought-resistant recycled water to farmers to irrigate 45,000 acres of farmland, reducing demand on the area's over-drafted groundwater basin. Other Title XVI projects have been used to prevent saltwater intrusion into aquifers, restore marshes, wetlands, and other habitat, and create potable drinking water.

Thank you for considering our requests and please do not hesitate to reach out if you have any questions.

Sincerely,

[This statement was submitted by Greg Fogel, Director of Government Affairs and Policy, WaterReuse Association.]

PREPARED STATEMENT OF THE WINNEBAGO TRIBE OF NEBRASKA

Chairwoman Feinstein, Ranking Member Kennedy and Members of the Committee, thank you for taking public testimony on appropriations for the United States Army Corps of Engineers for Fiscal Year 2023.

WINNEBAGO LANDS LEGISLATION

My name is Victoria Kitcheyan, and I am the Chairwoman of the Winnebago Tribe of Nebraska. I am here to tell our story of forced removals by the United States Army, our reservation that was established by treaty along the banks of the Missouri River and the wrongful condemnation of our lands by the United States Army Corps of Engineers.

Today, the Winnebagos make our home on a reservation along the hills and banks of the Missouri River in Northeastern Nebraska and Northwestern Iowa. We have over 5,000 Tribal members and Tribal enterprises that employ thousands of employees in Nebraska and Iowa and around the world.

The Winnebago people are originally from present-day Wisconsin. In the mid-1800s, our people were forcibly removed by the United States Army from Wisconsin to Minnesota, Iowa, South Dakota, and finally in 1865 to the Winnebago Indian Reservation in Nebraska and Iowa. Our treaty promised that land was “set apart for the occupation and future home of the Winnebago Indians, forever....” I will say that again—Forever.

Unfortunately, the United States did not live up to this promise. After enduring a history of removals, our land, reserved by treaty, was still taken from us as recently as 1970—52 years ago. At that time, the U.S. Army Corps began condemning lands along the Missouri River including our lands reserved by treaty which was then broken.

In 1970, the Army Corps improperly and illegally condemned almost 2,000 acres of land of our reservation in Iowa and Nebraska. The Corps filed two condemnation proceedings against the Tribe, one in Iowa and one in Nebraska. Usually, the U.S. would be required to defend the Tribe as part of its trust responsibility for our land, however, because the Army Corps itself is a Federal entity, the U.S. could not defend our interests. The Tribe had to defend its own interests in multiple lawsuits, in multiple States, in multiple courts, on extremely short notice and with limited resources. One of our councilmen at the time, Louis "Louie" Larose, tells an account that the Tribe only had one day get a lawyer to defend its lands.

The Tribe lost in both courts. When the Tribe appealed to the Federal Court of Appeals, the Tribe prevailed in its lawsuit in Nebraska. The Appeals Court found that the Army Corps did not have Congressional authorization to condemn our Reservation lands.

The Tribe also appealed the Iowa case to the Federal Court of Appeals. After years of litigation and appeals, the Eighth Circuit Court of Appeals found that the condemnation was illegal but the Court did not have the authority to order the Army Corps to return the land to the Tribe because of *res judicata*, the matter was already decided.

To this day, the Tribe has been fighting for the return of our land. The Tribe exhausted its remedies in the court system. After decades of seeking redress from the U.S. Army Corps and United States Department of the Interior ("Interior"), the Tribe was told to go to Congress. So we did. Legislation was introduced in the U.S. House of Representatives in the 115th and the 116th Congresses but did not pass.

Last year, the Winnebago Land Transfer Act was introduced to right this wrong and restore our homelands. We thank the legislation's bi-partisan sponsor and original co-sponsors, Representative Sharice Davids, a member of our sister Tribe, the Ho-Chunk Nation, Representative Darren Soto, and Representative Randy Feenstra, our congressman on the Iowa side of our reservation where these lands are located, and co-sponsor Representative Cindy Axne.

The bill would transfer the Tribe's former reservation lands from the Army Corps back to Interior. The land in this bill is mostly woodland and marsh along the Iowa side of the Missouri River and a recreational, hunting and fishing area. Once restored to us, the Winnebago Wildlife and Parks Department would be responsible for this land just like all of our land. The Department oversees hunting and fishing on 10,000 acres of woodland on the Nebraska side of the Missouri River. Hunters come from all over the country to hunt at Winnebago. The Department has the experience and resources to regulate recreational and conservation activities and ensure Winnebago laws and regulations are enforced. The Department's website provides information on fees and regulations and offers an online process to obtain hunting and fishing licenses. The Tribe would not make much change to the conservation measures in place now by the U.S. Army Corps and the State of Iowa Department of Natural Resources.

On October 5, 2021, the subcommittee for Indigenous Peoples of the United States held a legislative hearing for the first time on the bill. We are grateful that Interior supports our legislation. Secretary Deb Haaland, the first Native American Secretary, has made restoration of Tribal homelands one of her top priorities.

Upon passage of our legislation, we hope that the U.S. Army Corps of Engineers makes the timely and efficient transfer of the land back to us a priority. Only then would the United States right this wrong and ensure that our Tribe's homelands are protected, respected and preserved.

For 50 years, the Winnebago People have waited for their land to be returned. Councilman Larose has served on the Winnebago Tribal Council intermittently for the past 50 years. He was the Tribe's Chairman in the early 1970s when the land at Snyder's Bend was illegally condemned by the United States Army Corps of Engineers. He bore witness to the proceedings where our lands were lost. He sits on the Council today and has fought hard for the return of these lands. During his service to the Tribe, he has not given up on getting our land back and we have never been closer to the moment when our land will finally be returned to the Tribe.

Homelands are the lifeblood of American Indians, Alaska Natives and Native Hawaiians. Our legislation is a prime example and an opportunity for a wrong to be made right. Congress must do everything it can to protect all Tribal homelands.

Congressional relief is our last hope. This bill has now been introduced in Congress three times. We hope the third time is a charm. It is time for Congress to act and pass this bill to restore the promises our country made to us in a treaty, the supreme law of the land.

CARLISLE INDIAN BOARDING SCHOOL

The Boarding School Era is a stain on American history born under genocidal Federal policy against Tribes. We appreciate Interior's leadership and Secretary Haaland's willingness to bring this dark history into the light through the Federal Indian Boarding School Initiative. All Tribes have been impacted by boarding schools in their own way. Implementation of the Initiative in a meaningful way will be costly, lengthy, labor-intensive, and complex. We ask that Congress steadfastly supports this Initiative.

The Tribe is working with the U.S. Army Corps at the War College in Carlisle, Pennsylvania, the site of one of the original Indian boarding schools. We are seeking repatriation of our precious children's remains that are buried in its cemetery. We seek the United States' respect and cooperation to bring them home where they belong. To date, although our discussions with the Army Corps have been fruitful and the Army Corps has been cooperative, their cooperation is ultimately voluntary and could stop at any time. Congress must support this delicate and sacred process and these efforts. We will not give up until we see justice and our children are home.

[This statement was submitted by Victoria Kitcheyan, Chairwoman, Winnebago Tribe of Nebraska.]

LIST OF WITNESSES, COMMUNICATIONS, AND PREPARED STATEMENTS

	Page
Adams, Hon. Marvin L., Ph.D., Deputy Administrator for Defense Programs, National Nuclear Security Administration, U.S. Department of Energy	69
American:	
Council for an Energy-Efficient Economy, Prepared Statement of the	101
Nuclear Society, Prepared Statement of the	102
American Society:	
for Microbiology, Prepared Statement of the	105
of Plant Biologists, Prepared Statement of the	107
Assiniboine and Sioux Rural Water Supply System and Dry Prairie Rural Water System, Prepared Statement of the	109
Association of State Floodplain Managers, Prepared Statement of the	112
Business Council for Sustainable Energy, Prepared Statement of the	114
Caldwell, Admiral James F. Jr., Director, Naval Nuclear Propulsion Program, U.S. Department of Energy	69
Prepared Statement of	85
Carbon Utilization Research Council, Prepared Statement of the	115
Central Arizona Water Conservation District, Prepared Statement of the	118
Clean Hydrogen Future Coalition, Prepared Statement of the	119
Collins, Senator Susan M., U.S. Senator From Maine, Statement of	42
Colorado River:	
Basin Salinity Control Forum, Prepared Statement of the	122
Board of California, Prepared Statement of the	123
Connor, Mr. Michael, Assistant Secretary of the Army (Civil Works)	1
Prepared Statement of	6
Questions Submitted to	36
Summary Statement of	4
Electric Drive Transportation Association, Prepared Statement of the	124
Energy Efficiency Strategy Group Organizations, Prepared Statement of	126
Federal Performance Contracting Coalition, Prepared Statement of the	129
Feinstein, Senator Dianne, U.S. Senator From California:	
Opening Statement of.....	1, 41, 69
Questions Submitted by	36, 39, 63
Gas Turbine Association, Prepared Statement of the	131
Granholm, Hon. Jennifer, Secretary, U.S. Department of Energy	41
Questions Submitted to	63
Summary Statement of	42
Hagerty, Senator Bill, U.S. Senator From Tennessee, Questions Submitted by	36, 38, 64, 99
Hinderstein, Hon. Corey, Deputy Administrator for Defense Nuclear Non- proliferation, National Nuclear Security Administration, U.S. Department of Energy	69
Hoeven, Senator John, U.S. Senator From North Dakota, Questions Sub- mitted by.....	36, 38, 39, 64, 98
Hruby, Hon. Jill, Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration, U.S. Department of Energy	69
Prepared Statement of	72
Questions Submitted to	98

	Page
Hruby, Hon. Jill, Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration, U.S. Department of Energy— Continued	
Summary Statement of	71
Kennedy, Senator John, U.S. Senator From Louisiana:	
Questions Submitted by	63, 70
Statement of	2
Leahy, Senator Patrick, U.S. Senator from Vermont, Questions Submitted by	66
Lincoln Network, Prepared Statement of	133
McConnell, Senator Mitch, U.S. Senator From Kentucky, Questions Sub- mitted by	38
Merkley, Senator Jeff, U.S. Senator From Oregon, Questions Submitted by	98
Methane Action, Prepared Statement of	135
Mni Wiconi Project, Prepared Statement of the	138
National:	
Association of State Energy Officials, Prepared Statement of the	142
Community Action Foundation, Prepared Statement of the	145
Congress of American Indians, Prepared Statement of the	147
Hydropower Association, Prepared Statement of the	149
Nature Conservancy, Prepared Statement of The	151
Nuclear:	
Energy Institute, Prepared Statement of the	154
Waste Strategy Coalition, Prepared Statement of the	156
Oregon Water Resources Congress, Prepared Statement of the	159
Palumbo, Mr. David, Deputy Commissioner of Operations, Bureau of Rec- lamation	12
Prepared Statement of	13
Questions Submitted to	39
Society for Industrial and Applied Mathematics, Prepared Statement of the ...	162
Spellmon, Lieutenant General Scott A., Chief of Engineers and Commanding General, U.S. Army Corps of Engineers	7
Prepared Statement of	9
Questions Submitted to	37
Stanford Synchrotron Radiation Lightsource, Prepared Statement of	164
Tester, Senator Jon, U.S. Senator From Montana, Questions Submitted by	37, 39
United Barrier Technologies, Inc., Prepared Statement of the	164
WateReuse Association, Prepared Statement of the	166
Winnebago Tribe of Nebraska, Prepared Statement of the	167

SUBJECT INDEX

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

	Page
Construction	10
Emergency Management	11
Investigations	9
Operation and Maintenance (O&M)	10
Regulatory Program	10
Reimbursable Program	10
Summary of Fiscal Year 2023 Budget	9

DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

Additional Committee Questions	98
B83 Megaton Nuclear Bomb	90
B-83 Megaton Bomb	92
Columbia Class:	
by 2026	91
Submarine	97
COMPETES/USCIA (CHIPS and Science Act)	94
Defense Nuclear Nonproliferation Appropriation	80
Federal Salaries and Expenses Appropriation	84
Inertial Confinement Fusion	94
Los Alamos National Lab	93
Major Projects	87
Naval Reactors:	
Appropriation	83
Overview	86
NNSA's:	
Accomplishments in 2021	73
Fiscal Year 2023 Budget Request	74
Non-Proliferation Programs	90
Nuclear-Armed Sea-Launched Cruise Missile (SLCM-N)	92
Plutonium Pit Production	93, 95
Technical Base Funding	87
Uranium Processing Facility	95
Weapons Activities Appropriation	74

OFFICE OF THE SECRETARY

Additional Committee Questions	62
Administration's Energy Policy, The	57
Advanced Manufacturing	49
Carbon Capture Utilization and Storage	51
Clean Energy Agriculture	55
Climate Change's Impact on the State of California	45
Consent-Based Siting for Interim Nuclear Waste Storage	47

	Page
Energy:	
Prices.....	43, 60
Storage Technologies	46
Savings Performance Contracts	61
FERC Approval Process	53
Hanford Site	50
Loan Programs Office Investment in Carbon Capture and Utilization Sequestration Projects	52
Offshore Wind Technology	48
Weatherization Assistance Program.....	45, 62

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

Additional Committee Questions	35
Central Utah Project Completion Act (CUPCA)	16