

# **Advancing Clean Energy Domestically and Abroad and Taking Action on Climate Change**

## **Meeting Our Greatest Challenges: The President's Fiscal Year 2017 Budget**

Under the President's leadership, we have turned our economy around and created 14 million jobs. Our unemployment rate is below five percent for the first time in almost eight years. Nearly 18 million people have gained health coverage as the Affordable Care Act has taken effect. And we have dramatically cut our deficits by almost three-quarters and set our Nation on a more sustainable fiscal path.

Yet while it is important to take stock of our progress, this Budget is not about looking back at the road we have traveled. It is about looking forward and making sure our economy works for everybody, not just those at the top. It is about choosing investments that not only make us stronger today, but also reflect the kind of country we aspire to be – the kind of country we want to pass on to our children and grandchildren.

The Budget makes critical investments in our domestic and national security priorities while adhering to the bipartisan budget agreement signed into law last fall, and it lifts sequestration in future years so that we continue to invest in our economic future and our national security. It also drives down deficits and maintains our fiscal progress through smart savings from health care, immigration, and tax reforms.

The Budget shows that the President and the Administration remain focused on meeting our greatest challenges – including accelerating the pace of innovation to tackle climate change and find new treatments for devastating diseases; giving everyone a fair shot at opportunity and economic security; and advancing our national security and global leadership – not only for the year ahead, but for decades to come.

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In President Obama's first inaugural address, he committed this country to combating climate change and protecting the planet for future generations. Together, we have made tremendous progress since then. We have fostered a growing clean energy sector that is creating jobs and reducing our greenhouse gas emissions. We developed the Clean Power Plan, the largest step ever taken to combat climate change here at home, which sets achievable standards to reduce carbon dioxide emissions from power plants and enables states to create tailored plans to meet them. We have led the world in forging an unprecedented international agreement in Paris to combat climate change. While we have seen progress, challenges remain, and the President's Budget takes the next steps to meet those challenges, making sound, strong investments to secure sustained progress.

## **INVESTING IN CLEAN ENERGY**

Since President Obama took office, the Administration has made the largest investments in clean energy in American history. Despite the progress spurred by these investments, the urgency and scale of the climate change challenge demands that we accelerate the pace of innovation. This means continuing to drive down costs, develop new technologies, and encourage the deployment of clean energy solutions.

## **Mission Innovation: Doubling Our Investment in Clean Energy Research and Development.**

During the 2015 Paris climate negotiations, the President joined with other world leaders to launch Mission Innovation, a landmark commitment to dramatically accelerate public and private global clean energy innovation by investing in new technologies that will define a clean, affordable, and reliable global power mix.

Through this initiative, 20 countries have committed to doubling their governmental clean energy research and development investment over five years. These countries represent 75 percent of the world's CO<sub>2</sub> emissions from electricity, and more than 80 percent of the world's clean energy R&D investment. Mission Innovation is complemented by the Breakthrough Energy Coalition, a separate private sector-led effort to mobilize private capital to support clean energy technologies emerging from the R&D pipeline. Mobilizing non-Federal investment has been a key component of the Administration's clean energy innovation strategy, such as through the Administration's Clean Energy Investment Initiative which has catalyzed more than \$4 billion of independent commitments by major foundations, institutional investors, and other long-term investors, along with executive actions to scale up investment in clean energy innovation.

To help make good on this commitment, the U.S. Government will seek to double the federal investment in clean energy research and development from \$6.4 billion in FY 2016 to \$12.8 billion in FY 2021. This investment portfolio spans the full range of research and development activities – from use-inspired basic research to demonstration. Doubling this investment will require about a 15 percent increase in clean energy R&D funding in each of the five years of the pledge. The FY 2017 Budget makes the Administration's commitment clear by providing \$7.7 billion in discretionary funding for clean energy R&D across 12 agencies, which is about 20 percent above the FY 2016 level. Mission Innovation investments include:

*Department of Energy (DOE).* About 76 percent of the government-wide Mission Innovation investment supports DOE research, development, and demonstration activities across the spectrum of clean energy technologies. FY 2017 DOE highlights include:

- Over \$105 million for new innovation initiatives to accelerate the rate of invention and successful commercialization of sustainable transportation, renewable power, and energy efficiency technologies, including expanded innovation partnerships with the National Laboratories;
- Over \$110 million for new Regional Clean Energy Innovation Partnerships that will support clean energy R&D solutions targeted to the unique characteristics of each region, and drawing upon the strengths of each region's innovation ecosystem;
- Over \$261 million for advanced clean energy manufacturing R&D projects and facilities, including two new National Network for Manufacturing Innovation institutes;
- Over \$880 million in cutting-edge sustainable transportation technologies to increase the affordability and convenience of advanced vehicles and domestic renewable fuels;
- Over \$500 million to increase the use and reduce the costs of clean renewable power from solar, wind, water, and geothermal energy, including \$213 million to support the SunShot Initiative mission to make solar energy fully cost-competitive with traditional energy sources before the end of this decade;
- Over \$1.8 billion in basic clean energy research on energy production, conversion, storage, and use, as well as advancing our understanding of the earth and its climate;

- Over \$804 million for programs and infrastructure that support the advancement of nuclear energy technologies, including R&D in advanced nuclear reactor technologies, life extension for existing power plants, and advanced nuclear fuels;
- Over \$177 million to support grid modernization, resiliency, and integration of clean energy into the grid; and
- Nearly \$564 million in research focused predominantly on development and deployment of carbon capture and storage technologies as well as other approaches to improve the emissions performance of energy generated from fossil fuels.

*Advanced Research Projects Agency – Energy (ARPA-E).* The Budget includes \$350 million in Mission Innovation discretionary funding for DOE’s ARPA-E, which supports transformational applied clean energy R&D across a wide array of technologies.

Beyond these discretionary funds, the Budget also includes \$150 million in mandatory funding for ARPA-E in 2017 as part of the ARPA-E Trust proposal, which seeks \$1.85 billion over five years in mandatory funding for the program. Under this proposal, the FY 2021 budget for ARPA-E would equal approximately \$1 billion.

*National Science Foundation (NSF).* The Budget includes \$512 million for NSF research in a wide array of energy technology areas such as the conversion, storage, and distribution of diverse power sources, and the science and engineering of energy materials.

*National Aeronautics and Space Administration (NASA).* The Budget includes \$348 million for clean energy research at NASA in areas such as revolutionary aircraft technologies and configurations to enable fuel-efficient, low-carbon air transportation.

*U.S. Department of Agriculture (USDA).* The Budget includes \$106 million at USDA for competitive and intramural research funding to support development of bio-based energy sources that range from sustainable and economical forest systems and farm products to increased production of cellulosic biofuels. These investments build on an ongoing commitment to advance renewable energy deployment and increase access to clean energy for all Americans.

*Department of Housing and Urban Development (HUD).* The Budget expands HUD’s clean energy R&D efforts to help facilitate behavior changes among builders, property owners and tenants that result in improved energy efficiency or expanded use of low- and no-carbon energy sources. This \$10 million effort includes the creation of an advisory group of researchers, builders, tenants, and homeowners to design and implement studies on how to facilitate long-term behavior change in the housing sector, and the evaluation of a clean energy pilot intended to incentivize multifamily property owners and tenants to reduce energy consumption.

*U.S. Agency for International Development (USAID).* USAID will establish a new R&D effort through the Global Development Lab and the Global Climate Change Initiative that will support joint efforts in clean energy – such as electric vehicles or affordable energy-self-sufficient, or net-zero-energy, housing and community buildings – that are important to developing nations.

## **Supporting Adoption of Clean Energy.**

Achieving a climate-smart economy requires a multifaceted approach that goes beyond R&D. For example, in addition to the \$7.7 billion for Mission Innovation clean energy R&D, the Budget provides over \$1.3 billion in discretionary funding for deployment support efforts, for a total of \$9 billion for clean energy technology programs across 12 Federal agencies. This suite of programs accelerates the evolution and adoption of clean energy sources such as solar, wind, and low-carbon fossil fuels, as well as energy-efficient technologies, products, and process improvements, including clean energy manufacturing. The Budget also provides funding for the Environmental Protection Agency (EPA) to continue efforts to address climate change through commonsense standards and voluntary partnership programs, and by supporting State efforts to implement the Clean Power Plan. EPA will provide guidance, tools, direct technical assistance, and \$25 million in grants to States as they continue to develop their Clean Power Plan strategies and prepare for implementation. The Budget also provides \$210 million to USDA for a range of clean energy programs that support the deployment of renewable energy systems, biomass feedstock production, and energy efficiency improvements.

*Financing Clean Energy.* The Budget also includes \$4 billion in loan authority for the Title 17 Loan Guarantee Program, which supports commercial scale innovative energy projects. The funding can be used under one of three existing solicitations: Advanced Fossil; Renewable Energy and Efficient Energy Projects, which include the deployment of innovative distributed energy resources; and Advanced Nuclear. The Budget also includes \$68.5 million for USDA's Rural Energy for America program that will support \$357 million in loan guarantees and grants to promote energy efficiency, renewable energy, and small business development in rural communities.

*Grid Modernization.* Energy innovation in a clean energy economy also depends on a modernized grid. A modernized grid will deliver reliable, affordable, clean energy to consumers where, when, and how they want it. Programs across DOE work on grid modernization activities. The Budget includes \$48 million for grid modernization technology deployment activities, in addition to \$177 million for R&D within Electricity Delivery and Energy Reliability, the DOE office which leads grid modernization activities.

*Builds a Clean Energy Infrastructure.* To enhance national energy security and create jobs in new industries, the Budget invests in renewable energy development programs, providing about \$97 million to review and permit renewable energy projects on public lands and in offshore waters. Under the President's Climate Action Plan, these funds will allow the Department of the Interior to continue progress toward its goal of increasing approved capacity authorized for renewable energy resources affecting Interior-managed lands up to at least 16,600 Megawatts since FY 2009, while ensuring full environmental review.

## **Clean Energy Tax Proposals.**

In order to provide a strong, consistent incentive to encourage investments in clean energy, create American jobs, and support American companies and manufacturers, the Budget simplifies, expands, and makes permanent important tax incentives for clean energy investment, including tax credits for production from and investment in qualified renewable energy facilities. In addition, the Budget proposes two new complementary tax credits to accelerate commercial deployment of carbon capture, utilization, and storage.

The Budget also proposes to eliminate inefficient fossil fuel subsidies that impede investment in clean energy sources and undermine efforts to address the threat of climate change. In total, the Budget would repeal on average \$4 billion per year in tax subsidies to oil, gas, and other fossil fuel producers and, separately, expand the Oil Spill Liability Trust Fund tax.

### **Building a Clean Transportation System for the 21<sup>st</sup> Century.**

A key step in our effort to fight climate change will include making smart and strategic investments to create a new, cleaner, sustainable transportation system. Today, our transportation sector accounts for 30 percent of U.S. greenhouse gas emissions. To address the challenges of the 21<sup>st</sup> century, we need a transportation system that reduces our reliance on fossil fuels, cuts carbon pollution, and strengthens our resilience to the impacts of climate change. A new approach to our transportation system can also help speed goods to market, expand Americans' transportation options, build connected communities, and integrate new technologies like clean autonomous – or self-driving – vehicles.

President Obama's budget lays out a bold new plan for achieving these goals by building a 21<sup>st</sup> Century Clean Transportation System. The proposal would invest \$320 billion over 10 years in new, clean infrastructure and R&D investments. It is funded by a new fee paid by oil companies. The President's plan would increase American investments in clean transportation infrastructure by roughly 50 percent while reforming the investments we already make to help reduce carbon pollution, cut oil consumption, and create new jobs. The new fee on oil will also encourage American innovation and leadership in clean technologies, reduce our reliance on oil, and help reshape our transportation landscape for the decades ahead.

The Budget provides funding for clean energy R&D and deployment as part of the Administration's 21<sup>st</sup> Century Clean Transportation Plan and related programs. Examples include:

- \$500 million in FY 2017 to scale-up clean transportation R&D through initiatives to accelerate cutting the cost of battery technology; advance the next generation of low-carbon biofuels, in particular for intermodal freight and fleets; and establish a smart mobility research center to investigate systems-level energy implications of vehicle connectivity and automation.
- \$100 million at NASA in FY 2017 to support a new era of low-carbon-emission aircraft by initiating a series of experimental aircraft in partnership with industry and universities.
- \$750 million in FY 2017 for regional low-carbon fueling infrastructure to expand access to alternative fuels by 2020 and launch an Electric Vehicle Accelerator Communities program with the goal of deploying 10,000 new grid connected solar powered charging stations by 2025 through public-private partnerships.
- Over \$6 billion per year on average for a 21st Century Regions grant program to empower metropolitan and regional planners to implement regional-scale transportation and land-use strategies that achieve significant reductions in per capita greenhouse gas (GHG) emissions and vehicle miles traveled, while improving climate resilience.

### **ACCESS TO CLEAN ENERGY FOR ALL**

The Budget supports a wide array of programs that support the deployment of energy efficiency and renewable energy solutions in low- and moderate-income areas. Examples include:

*Rural Utilities Service:* The Budget supports \$6.5 billion in lending to rural electric cooperatives and utilities to support the transition to clean-energy and increased energy efficiency through USDA's Rural Utilities Service. This funding will target cutting carbon pollution and promoting renewable and clean energy, and energy efficiency improvements at electricity generation, transmission, and distribution sites. The Budget also proposes to fund more requests for renewable generation loans by extending financing for non-rural customer loads under authority provided in the Farm Bill.

*Clean Energy at the Community Level.* The Budget provides \$200 million for the HUD Choice Neighborhoods program, a 60 percent increase over the FY 2016 enacted level, which will replace aging public and HUD-assisted housing in about six neighborhoods with modern, mixed-income, energy efficient housing. The Budget also includes DOE funding for technical assistance and competitive awards to help catalyze more extensive clean energy solutions in community development and revitalization efforts.

*Public Housing.* The Budget re-proposes a Utilities Conservation Pilot for HUD's Public Housing program. The Pilot would extend energy incentives to a broad range of housing authorities and reduce the amount of debt financing that would be required to implement repairs, or eliminate the need for debt altogether. The Pilot would allow housing authorities to freeze their Federal subsidies, which reflect current utility consumption costs, in return for committing to reduce energy consumption. This subsidy base would be reduced by one percent per year until it is equal to the Public Housing Agency's actual energy consumption.

*Weatherization Assistance Program.* Through retrofitting residential buildings, DOE's Weatherization Assistance Program (WAP) helps to reduce the cost of low-income household energy bills, which are significantly higher as a share of income relative to higher income households. The FY 2017 Budget provides \$230 million for WAP, \$225 million for formula grants to accomplish approximately 35,700 home retrofits in FY 2017, and \$5 million for training and technical assistance activities that support the development and implementation of a variety of tools needed to implement work quality, training accreditation, and worker certification.

*Diesel Emissions Reduction Act (DERA) Grant Program.* The existing fleet of cars, trucks, and buses is aging, contributing to climate change and putting our children's health at risk. The Budget funds EPA's traditional discretionary DERA Grant Program at \$10 million, using these funds to retrofit or replace older diesel engines. To further protect the health of the most vulnerable populations and reduce childhood exposure to harmful exhaust, the President's proposed 21st Century Clean Transportation Plan further invests in the Program, providing up to \$300 million of mandatory funding in FY 2017 to accelerate the transition to cleaner vehicle fleets.

## **TAKING ACTION TO BUILD COMMUNITY RESILIENCE**

Across the Nation, the effects of climate change are felt by communities, households, governments, and individuals who are on the front lines of the devastation those changes can bring. The Budget demonstrates the Federal government's continued commitment to helping those experiencing these impacts firsthand by investing in programs that help boost the resilience of communities—and the ecosystems upon which they depend—in the face of growing climate-related risks. It invests in programs that advance our scientific understanding of projected impacts, assist communities in planning and preparing for future risks, and deliver risk reduction and adaptation projects on the

ground. Through proactive investments in these areas, we can save lives and reduce long-term costs to communities and our country. These investments include:

- *Flood Resilience.* The Budget includes \$311 million for National Flood Insurance Program (NFIP) Risk Mapping efforts to help communities and businesses understand the flood risks they face and enable them to better prepare for those risks.
- *Coastal Resilience.* The Budget includes a package of proposals of over \$2 billion aimed at reducing the risks facing coastal communities – such as sea-level rise, storm surge, and coastal erosion from flooding – in a fiscally responsible way. These include the Department of the Interior’s (DOI) new Coastal Climate Resilience Program, NOAA’s Regional Coastal Resilience Grants, and localized investments such as the Denali Commission and support for coastal Alaskan communities that are particularly hard hit.
- *Drought Resilience.* The Budget continues the collaborative effort at USDA to provide information on the latest technologies and risk management strategies to help farmers, ranchers and landowners mitigate the impact of climate change through USDA’s regional Climate Hubs. The Budget’s \$98.6 million investment in DOI’s WaterSMART program – which provides critical water data, promotes water conservation initiatives, and invests in technological breakthroughs – complements this effort. Additionally, the Department of Agriculture’s Natural Resources Conservation Service (NRCS) is leading efforts to promote soil health and integrate soil health management practices into conservation programs and technical assistance. The Budget also continues efforts by the NRCS, initiated in 2016, to develop a soil carbon monitoring network to support ongoing GHG monitoring. This network is a key component of USDA’s Climate Strategy as it would allow USDA to verify, for the first time, the United Nations Framework Convention on Climate Change reporting and would also provide the foundation for a farm-scale database to house soil carbon data.
- *Wildland Fire Resilience.* Warmer temperatures and drier conditions anticipated as a result of climate change are projected to increase the frequency and intensity of future wildfires, increasing the risks they pose to nearby communities. It is a priority of the Administration to ensure adequate funds are available to fight wildland fires, protect communities and human lives, and implement appropriate land management activities to improve the resiliency of the Nation’s forests and rangelands. To accomplish this, the Budget again proposes to establish a new budget framework for wildland fire suppression, similar to how other natural disasters are funded. This new framework includes a base funding level of 70 percent of the 10-year average for suppression costs within the discretionary budget cap, and a cap adjustment that would then be used for only the most severe fire activity, which comprises only two percent of wildfires but 30 percent of suppression costs. Paying for the most severe and costly wildfire suppression activity with a cap adjustment reduces the need to transfer funds from other important programs designed to more comprehensively manage wilderness landscapes, including the mitigation of losses to property and timber from wildfire.
- *Multi-Hazard Resilience.* The Budget invests in programs that provide the science and tools, technical assistance, and projects on-the-ground that enable communities to address the full range of climate-related hazards.
  - *Climate Data and Tools.* The Budget provides approximately \$20 million to continue improving data and tools to help Tribes, communities, citizens, businesses, planners, and others manage and improve their resilience to extreme events.

- Resilience AmeriCorps. The Budget provides \$6 million across two agencies to train and support a Resilience AmeriCorps pilot program at the Corporation for National and Community Service (CNCS). This will expand the program by roughly 175 AmeriCorps VISTA members that will assist communities in planning for and addressing climate impacts and will support training and technical assistance from the National Oceanic and Atmospheric Administration (NOAA).
- Corps of Engineers Technical Assistance. The Budget also continues to support the Corps of Engineers programs that are already at work—such as the Flood Plain Management Services Program and the Silver Jackets—by providing \$26 million to local communities to help them plan, develop, and implement nonstructural approaches to reduce flood risk.

## **LEADING GLOBAL EFFORTS TO CUT CARBON POLLUTION AND ENHANCE CLIMATE CHANGE RESILIENCE**

The recent global climate agreement of 195 countries reached in Paris is a tribute to U.S. leadership. To build on the agreement, the Budget provides \$1.3 billion to advance the goals of the Global Climate Change Initiative (GCCCI) through important multilateral and bilateral engagement with major and emerging economies. This amount includes \$750 million in U.S. funding for the Green Climate Fund (GCF), which will help developing countries leverage public and private financing to invest in reducing carbon pollution and strengthening resilience to climate change. Assisting these countries in developing their economies along low-emissions pathways and building climate resilience will play a vital role in addressing some of the most serious risks from climate change both at home and abroad. These efforts will not only help preserve stability and security in fragile regions that are of strategic importance to the United States, but will also help open these regions to U.S. businesses and investment. More broadly, GCCCI funding enables the United States to provide international leadership through the Department of State, the U.S. Agency for International Development, and the Department of the Treasury to support our developing-country partners in their efforts to meet their emissions reduction commitments, including by expanding clean and efficient energy use, reducing deforestation and forest degradation, conserving the world's remaining tropical rainforests, and phasing down the production and consumption of substances with high global warming potential such as hydrofluorocarbons. GCCCI funding will also help support U.S. commitments made in the context of the Paris Agreement and put the United States on a pathway to doubling our grant-based support for international climate adaptation activities by 2020.