



# Issue Brief

## Obama Administration FY 2017 Budget Proposal: Sustainable Energy, Buildings, Transportation and Climate

February 2016

On February 9, 2016, President Obama released his **\$4.15 trillion fiscal year (FY) 2017 federal budget proposal**, a 5 percent increase over 2016. In his final budget request, President Obama is seeking to increase funding for his top priorities—including clean energy and climate action. The president has called climate change "one of the greatest challenges of our time," and says his proposed budget includes "new investments to help the private sector create more jobs faster, lower the cost of clean energy faster, and help clean, renewable power outcompete dirty fuels in every state."

President Obama is calling for **investment into clean energy research and development to double by 2021**, from \$6.4 billion (in 2016) to \$12.8 billion. This would represent an average increase of 15 percent a year, starting with a **20 percent increase in 2017**. The United States is one of 20 'Mission Innovation' countries that pledged last November to double their investments in clean energy over the next five years.

**The budget seeks \$7.7 billion for clean energy research at 12 federal agencies**, with the Department of Energy receiving the bulk of the funding (80 percent). The extra funding would support the development of clean, renewable energies such as bioenergy, geothermal, hydrogen, solar, water, and wind, as well as clean-vehicle technologies and energy storage. The proposed 2017 budget increases the Department of Energy's (DOE) funding by 10 percent over 2016 estimated levels, raises the Environmental Protection Agency's (EPA) budget by 4.23 percent, and increases the Department of Transportation's (DOT) funding by 10.27 percent.

One of the budget proposal's highlights is a **\$10.25-a-barrel tax on crude oil**, which would raise \$319 billion over 10 years to make the transportation system more sustainable. The money raised would go toward an annual \$32.4 billion push to fund mass transit (which would receive an extra \$20 billion a year over current funding levels), clean vehicle research, an urban planning initiative, and research on self-driving cars.

This issue brief outlines the Obama administration's FY 2017 budget request for several clean energy programs within key agencies.

### DEPARTMENT OF ENERGY

The President's FY 2017 budget request for the Department of Energy (DOE) is **\$32.5 billion, a 10 percent increase** from last year's enacted funding levels. **This funding increase is driven in large part by new funding for Mission Innovation**, a 20-nation public-private collaborative effort to double clean energy investment over the next five years. Mission Innovation was announced in the run-up to the successful international negotiations on climate change that took place in Paris at the end of 2015. The public sector investments in research and development to drive forward Mission Innovation will be amplified by the Breakthrough Energy Coalition, an associated private investment project involving 28 investors, which will focus on early-stage and innovative investments.

<b>Overall DOE Energy Appropriations (Dollars in thousands)</b>			
<b>Program</b>	<b>FY 2015 Current</b>	<b>FY 2016 Enacted</b>	<b>FY 2017 Budget Request</b>
Energy Efficiency and Renewable Energy	1,840,847	2,069,194	2,898,400
Electricity Delivery and Energy Reliability	143,901	206,000	262,300
Fossil Energy	783,829	869,100	638,450
Nuclear Energy	821,883	986,161	993,896
Office of Technology Transitions	0	0	8,400
21 <sup>st</sup> Century Clean Transportation Plan Investments	0	0	1,335,000
Office of Indian Energy	0	0	22,930
Science	5,132,813	5,347,000	5,627,069
Advanced Research Projects Agency- Energy (ARPA-E)	279,982	291,000	500,000
Energy Information Administration	117,000	122,000	131,125
Loan Guarantee Program	17,000	17,000	10,000
Advanced Technology Vehicles Manufacturing Loan	4,000	6,000	5,000
Excess Fees and Recoveries, FERC	-17,325	-23,587	-9,426
<b>Sub Total</b>	<b>9,123,930</b>	<b>9,889,868</b>	<b>12,423,144</b>

**The Department of Energy proposal strongly supports the Administration's energy goals**, including reducing domestic greenhouse gas emissions 17 percent by 2020, 26-28 percent by 2025, and 83 percent by 2050 (all with respect to 2005 levels), as well as generating 80 percent of U.S. electricity from clean energy by 2035.

The 2017 request increases the **Energy Efficiency and Renewable Energy (EERE)** budget **40 percent over 2016 enacted levels**, to \$2.9 billion for continued investments in an array of clean transportation, energy and manufacturing initiatives. **Electricity Delivery and Energy Reliability** would grow 27 percent to \$262 million. Funding for **Fossil Energy Programs** would shrink 26.5 percent to \$638 million, with \$600 million for Fossil Energy Research and Development—\$240 million of which is available from last year's balance. **Nuclear Energy's** budget would increase 0.8 percent to \$994 million to support continued R&D in fuel cycle and advanced reactor technologies as well as continued funding for waste management. The DOE Office of Science, which is the federal government's largest funder of basic research in the physical sciences, would grow 6.1 percent to \$5.67 billion.

In 2015, DOE created the **Office of Technology Transitions** to increase the commercialization of DOE's research through increased technology-to-market work throughout the agency. DOE is asking for \$8.4 million to support the new office. The proposal also funds the President's new **21st Century Clean Transportation Plan** at a mandatory funding level of \$1.335 billion to carry out clean energy research and development in the transportation sector; advance biofuels; and establish a facility to study how vehicle automation and connectivity will affect the energy system.

The budget also **greatly increases funding for the Advanced Research Projects Agency – Energy (ARPA-E)**, which has shown a good track record in successfully funding the development of innovative energy technologies that are not ready for market investment. In line with the agency's original goal to fund ARPA-E at a \$1 billion level, the budget request proposes a 72 percent increase in its budget over 2016 enacted levels to \$500 million, with the intention to ramp funding up to \$1 billion over the next five years.

The Office of Indian Energy (IE) is shown as having no historical funding as its previous budget came from departmental administration. The budget request for IE is \$23 million, which includes a doubling of its budget for technical assistance to \$6 million and a continued \$12 million in grants for deployment and assistance in setting up energy systems.

The President's FY 2017 Energy Efficiency and Renewable Energy budget request for DOE includes the following:

*Renewable energy programs:*

- **An 18 percent increase in funding for the Solar Energy program to \$285 million**, to help the SunShot Initiative achieve its goal of a solar energy price of \$0.06/kWh without subsidies by 2020, and to support the DOE's crosscutting goal of grid modernization.
- **A 63 percent increase in funding for the Wind Energy program to \$156 million**, to support three offshore wind demonstration projects and R&D to achieve \$0.167/kWh offshore wind generation by 2020.
- **A 14 percent increase in funding for the Water Power program to \$80 million**, to continue funding for HydroNEXT, a project that researches and develops ways to increase hydropower on pre-existing dams, water conveyance systems, and streams, as well as research marine and hydrokinetic technologies.
- **A 40 percent increase in funding for the Geothermal Technologies program to \$100 million**, to fully implement the Frontier Observatory for Research in Geothermal Energy (FORGE), a site that tests innovative geothermal technologies. The request also supports the Subsurface Technology and Engineering RD&D crosscut, an effort to decrease the risks and costs of geothermal development by using lessons learned in other subsurface sectors.

*Sustainable transportation programs:*

- **A 5 percent increase in funding for the Hydrogen and Fuel Cell Technologies program to \$106 million**, which will focus on cutting the cost of fuel cells used in the transportation sector to \$40/kWh, and increasing their durability to 5,000 hours (equal to 150,000 miles), by 2020. The request also supports efforts to more cheaply source hydrogen from renewable resources.
- **A 51 percent increase in funding for the Vehicle Technologies program to \$469 million**, in support of the "EV Everywhere Grand Challenge" to cut the combined cost of battery and electric drive systems in electric vehicles by up to 50 percent by 2022. The proposed budget supports research in battery storage, advanced power electronics and electric drive R&D; studying lightweight materials and manufacturing processes for the Advanced Materials crosscut; and a new "Transportation as a System" initiative to research system-level energy efficiency opportunities in vehicles.
- **A 24 percent increase for the Bioenergy Technologies program to \$279 million**, to develop advanced cellulosic and algal-based gasoline, jet and diesel fuel (i.e., non-food sourced "drop-in" biofuels) at a price of \$3 per gallon gasoline equivalent (gge). The funding will also support a competition to create demonstration projects for advanced biofuels.

*Energy efficiency programs:*

- **A 23 percent increase for the Weatherization and Intergovernmental Assistance Program to \$326 million**, to fund low-income weatherization services for about 35,700 homes in FY 2017, and to support the State Energy Program, which will help state and local government facilities and operations share best practices to decrease their annual energy use two percent by 2020.
- **A 59 percent increase in funding for the Federal Energy Management program to \$43 million**, to assist all Federal agencies in achieving the Administration's ambitious energy, water, emissions and general sustainability goals through the use of commercially available energy efficiency technologies.
- **A 14 percent increase for the Advanced Manufacturing program to \$261 million**, which will fully fund one new Clean Energy Manufacturing Innovation Institute, while continuing funding for the five existing institutes. These institutes will be part of an interagency National Network of Manufacturing Institutes, focused on convening universities, companies, and the government to solve industry problems and improve U.S. competitiveness. The request also funds R&D in industrial efficiency and clean energy manufacturing technologies.
- **A 44 percent increase in funding for the Building Technologies program to \$289 million**, to support R&D on emerging technologies in lighting, heating and cooling, and building envelopes, in order to achieve the goal of cutting national energy use 50 percent. The funding would also create an integrated Low-Global Warming Potential (Low-GWP) Advanced Cooling (HVAC) R&D program to study short and long-term ways to mitigate the climate impact of refrigerants. The proposed budget also funds a Metropolitan Systems project to help cities become more affordable, low-carbon, livable, economically viable, and resilient to natural disasters.

<b>(Dollars in thousands)</b>			
<b>Program</b>	<b>FY 2015 Current</b>	<b>FY 2016 Enacted</b>	<b>FY 2017 Budget Request</b>
Vehicle Technologies	272,526	310,000	468,500
Bioenergy Technologies	175,915	225,000	278,900
Hydrogen and Fuel Cell Technologies	94,830	100,950	105,500
<b>Total, Sustainable Transportation</b>	<b>543,271</b>	<b>635,950</b>	<b>852,900</b>
Solar Energy	230,800	241,600	285,100
Wind Energy	105,936	95,450	156,000
Water Power	59,999	70,000	80,000
Geothermal Technology	54,288	71,000	99,500
<b>Total, Renewable Energy</b>	<b>451,023</b>	<b>478,050</b>	<b>620,600</b>
Advanced Manufacturing	194,175	228,500	261,000
Federal Energy Management Program	27,000	27,000	43,000
Building Technologies	168,153	200,500	289,000
Weatherization and Intergovernmental Programs	243,000	265,000	326,000
<b>Total, Energy Efficiency</b>	<b>632,328</b>	<b>721,000</b>	<b>919,000</b>
Facilities and Infrastructure (NREL)	56,000	62,000	92,000
Program Direction	160,750	155,000	170,900
Strategic Programs	21,000	21,000	28,000
<b>Total, Corporate Support</b>	<b>237,750</b>	<b>238,000</b>	<b>290,900</b>
Crosscutting Innovation Initiatives	0	0	215,000
<b>Subtotal EERE</b>	<b>1,864,372</b>	<b>2,073,000</b>	<b>2,898,400</b>
Adjustments (Inc. Use & Rescission of Prior Year Balances )	-23,525	-3,806	0
<b>Total EERE (discretionary)</b>	<b>1,840,847</b>	<b>2,069,194</b>	<b>2,898,400</b>
21 <sup>st</sup> Century Clean Transportation Plan Investments (mandatory)	0	0	1,335,000
<b>Total (mandatory and discretionary)</b>	<b>1,840,847</b>	<b>2,069,194</b>	<b>4,233,400</b>

The budget request continues to fund **six crosscutting initiatives** originally proposed last year, and proposes one new initiative. They include work on grid modernization, supercritical carbon dioxide (sCO<sub>2</sub>)-based power generation, subsurface technology and engineering, the energy-water nexus, exascale computing, cybersecurity, and—the latest initiative—advanced materials for energy innovation. DOE's crosscutting initiatives showcase an overlay of priorities which elaborate on the funding levels above. Crosscuts are a way to organize work which transcends office silos and leverage multi-disciplinary efforts to maximize progress.

In addition, DOE is requesting funding for a new program, Crosscutting Innovation Initiatives, which will help speed up the commercialization and innovation of clean energy technology. This program is separate from DOE's overall crosscutting initiatives, and will operate under EERE. The project will strengthen regional clean energy innovation, speed up the development of next-generation clean energy, and encourage innovation and technology transfer from Federal research to markets.

<b>DOE Crosscut Summary</b> (Dollars in thousands)			
<b>Crosscuts</b>	<b>FY 2015 Current</b>	<b>FY 2016 Enacted</b>	<b>FY 2017 Budget Request</b>
Energy-Water Nexus	12,318	28,250	96,100
Exascale Computing Initiative	149,000	252,624	285,000
Grid Modernization	185,852	295,447	378,530
Subsurface Science, Technology and Engineering RD&D	164,699	207,180	258,315
Supercritical CO2	29,466	32,300	36,300
Advanced Materials for Energy Innovation	42,751	48,000	113,450
Cybersecurity	310,006	323,941	333,479
Double Counting Offset	-44,756	-62,000	-45,500
<b>Total, Crosscut Summary</b>	<b>849,336</b>	<b>1,125,742</b>	<b>1,455,674</b>

## USDA / DOE BIOENERGY PROGRAMS

### Department of Energy Bioenergy Office

The Bioenergy Technologies Office (BETO) is part of DOE's Sustainable Transportation initiative, within the Office of Energy Efficiency and Renewable Energy. **The FY 2017 budget proposes funding of \$279 million for BETO, a 24 percent increase over FY 2016 appropriations.** In FY 2017, BETO will focus on algae, microbial waste and cellulosic feedstocks in an effort to overcome technical barriers towards developing 'drop-in' biofuels from these sources at \$3.00 per gallon of gasoline equivalent by the end of 2017.

A collaborative program between BETO and the Vehicle Technologies office, the **Co-Optimization of Fuels and Engines (Optima) is funded at \$15 million.** This program "establishes a link early in the R&D cycle of both fuels and engines ... to create optimized solutions for fuels and engines" and was first authorized in FY 2016.

#### Within the Bioenergy Technologies program:

- \$22 million is requested for feedstock supply and logistics;
- \$30 million is requested for advanced algal systems;
- \$141 million is requested for conversion technologies, an increase of 65 percent over FY 2016 levels;
- \$75 million is requested for demonstration and market transformation and \$11 million for strategic analysis and sustainability.

### Department of Energy Advanced Research Projects Agency (ARPA-E)

ARPA-E is conducting basic and applied research into plant genetics, microbes, biomass conversion, and biofuels. Major contributors to these efforts are the DOE Bioenergy Research Centers, three regional centers that undertake the research necessary to build a cost-effective and sustainable advanced cellulosic biofuels industry. Funding for the DOE Bioenergy Research Centers is set at \$90 million for FY 2017.

The Basic Energy Sciences program at ARPA-E includes Chemical Transformations Research that focuses on "the efficient conversion of traditional and new feedstocks into higher-value fuels and other chemicals" with one priority feedstock being biomass. The program is funded at \$106 million for FY 2017.

## Department of Energy Fossil Energy Research & Development Office

Within the office of Fossil Energy Research & Development, **biomass is included in the Carbon Capture and Sequestration (CCS) and Advanced Power Systems budget.** Technology developments in gasification systems to "facilitate co-feeding of coal with biomass or waste" is among the technologies listed in **advanced combustion systems, which is funded at \$30 million for FY 2017.** The total carbon capture budget is set at \$170 million, and the carbon storage budget is \$91 million for FY 2017.

## U.S. Department of Agriculture (USDA) Bioenergy, Renewable Energy & Forestry Programs

Now in its third year of funding, the *Agricultural Act of 2014* (Farm Bill) continues to fund energy efficiency, renewable energy, and conservation programs established under its energy title. While President Obama's FY 2017 budget request for energy title programs is \$9 million less than FY 2015 funding levels, the request is similar to the mandatory funding levels outlined by the Farm Bill. **The Farm Bill contains robust mandatory funding for its energy title programs** over its five-year authorization, however Changes In Mandatory Spending (CHIMPS) enacted through the appropriations process have reduced mandatory funding outlined by the Farm Bill since 2014 (see table notes).

U.S. Department of Agriculture Farm Bill Energy Title Programs (Dollars in thousands)						
Program	FY 2015 Actual		FY 2016 Estimated		FY 2017 Budget Request	
	Mandatory	Discretionary	Mandatory	Discretionary	Mandatory	Discretionary
Sec. 9002 Biobased Markets Program	3,000	-	3,000	-	3,000	-
Sec. 9003 Biorefinery Assistance Guaranteed Loans	30,000 <sup>a</sup>	-	27,000 <sup>a</sup>	-	0	-
Sec. 9004 Repowering Assistance Payments	4,000 <sup>b</sup>	-	0	-	0	-
Sec. 9005 Bioenergy for Advanced Biofuels	14,000 <sup>c</sup>	-	14,000 <sup>c</sup>	-	15,000	-
Sec. 9006 Biodiesel Fuel Education Program	1,000	-	1,000	-	1,000	-
Sec. 9007 Rural Energy for America Loans	9,000 <sup>d</sup>	1,000	9,000 <sup>d</sup>	1,000	15,000	4,000
Sec. 9007 Rural Energy for America Grants	37,000 <sup>d</sup>	-	38,000 <sup>d</sup>	-	35,000	15,000
Sec. 9008 Biomass Research and Development	3,000	-	3,000	-	3,000	-
Sec. 9010 Biomass Crop Assistance Program	7,000 <sup>e</sup>	-	10,000 <sup>e</sup>	-	24,000 <sup>e</sup>	-
<b>Total USDA Farm Bill Energy Title Programs (mandatory + discretionary)</b>		<b>109,000</b>		<b>106,000</b>		<b>115,000</b>

<sup>a</sup> The Farm Bill had allocated up to \$50 million of mandatory funding for FY 2015 and FY 2016.  
<sup>b</sup> The Farm Bill had provided \$12 million of mandatory funding for FY 2015.  
<sup>c</sup> The Farm Bill had provided \$15 million of mandatory funding for FY 2015 and FY 2016.  
<sup>d</sup> The Farm Bill had provided \$50 million of mandatory funding for Sec. 9007 loans and grants for FY 2015 and FY 2016.  
<sup>e</sup> The Farm Bill provides \$25 million of mandatory funding for Sec. 9010 Biomass Crop Assistance Program in FY 2015, FY 2016 and FY 2017.

The President's FY 2017 USDA budget request includes stable or increased funding levels for other programs that will continue to put farms, forests and rural economies on a more sustainable path. Research on climate change and its impacts on crop yields, food security, and food safety received attention throughout the budget request. Conservation, bioenergy, and related program requests include:

- **\$2.45 billion for U.S. Forest Service wildland fire management and an additional \$864 million for fire suppression activities,** to be administered through a separate wildfire suppression cap, which would be tapped when the wildland fire management budget is exhausted. According to USDA, fire suppression has grown from "13 percent of the agency's budget in the 1990s to over 56 percent in 2016." As fire-related costs have soared, "the chronic depletion of critical restoration and non-fire programs as fire suppression costs rise is felt across critical programs."

- **\$4.7 billion for the mandatory funding of 2017 Farm Bill conservation programs.** This includes conservation programs at both the Forest Service and the Natural Resources Conservation Service (NRCS). According to USDA, an additional 2.9 million acres of planned conservation could occur with FY 2017 funding levels. Included in the conservation programs is the new Regional Conservation Partnership Program (RCPP), a collaborative program between producers and partners to address regional water and soil quality, as well as wildlife, drought, and flood issues. RCPP is budgeted at \$43 million in mandatory funding for 2017. The program has thus far leveraged \$800 million in public-private investments.
- **Research programs that address climate change and its role in forest and agricultural sustainability were significantly expanded:**
  - **\$1.4 billion in discretionary funding for the National Institute of Food and Agriculture (NIFA).** NIFA is responsible for funding agricultural research through partnerships with land-grant universities. NIFA oversees the Agriculture and Food Research Initiative (AFRI).
    - **\$325 million in mandatory funding for the Agriculture and Food Research Initiative (AFRI) and \$375 million in discretionary funding,** which would fully fund the program to \$700 million. The funding would include an increase of \$25 million for sustainable bioenergy. AFRI is USDA’s peer-reviewed research program; research areas include water for food production systems, sustainable bioenergy production, and climate variability and change.
  - **Total funding for the USDA’s Agricultural Research Service (ARS) is set at \$1.2 billion, with \$213 million requested for Environmental Stewardship.** The ARS request includes funding for USDA’s Regional Climate Hubs. ARS priorities for 2017 include \$95 million for updating aging research facilities, \$19 million for climate-resilient agriculture research and \$15 million for water use efficiency and water management practices. The research focus of ARS includes climate change, water resources, and environmental stewardship.
  - **An increase of \$626,000 from a base of \$1.5 million is requested to fund research on conservation and drought mitigation adaptation** by farmers and ranchers through the Economic Research Service.
- Through the **Rural Utilities Service (RUS), \$6.5 billion is provided for loans and grants to rural electric cooperatives** to increase access to energy efficiency projects, renewable energy, and telecommunication upgrades in rural America. USDA estimates that the funding will benefit 6 million rural residents.

## DOE / HUD ENERGY-EFFICIENT / SUSTAINABLE BUILDINGS PROGRAMS

### U.S. Department of Housing and Urban Development (HUD)

**HUD’s FY 2017 budget proposes \$48.9 billion in budget authority, an increase of \$1.9 billion over the FY 2016 appropriation.** This budget reflects the need to address a national shortage of affordable rental housing, cited in recent studies such as *The State of the Nation’s Housing 2015* (Joint Center for Housing Studies, Harvard University: 2015). The 2017 HUD budget seeks to support 4.5 million households through rental assistance, reduce homelessness, and support community revitalization efforts, particularly in tribal communities. **Energy efficiency** is a goal throughout HUD’s housing programs, with the recognition that lower utility costs benefit those who receive housing assistance as well as the federal government and taxpayers who help fund it. Energy efficient housing is more affordable housing.

Energy-related and resilience items included in the Department’s FY 2017 budget request:

- \$10 million for an advisory group of researchers, builders, tenants, and homeowners to **facilitate long-term behavior change** in the housing sector and to evaluate a clean energy pilot intended to incentivize multifamily property owners and tenants to reduce energy consumption.
- \$4.5 billion for the **Public Housing Operating Fund**, which provides subsidies to Public Housing Authorities (PHAs) to help fund the operating expenses of public housing units. The FY 2017 budget provides additional flexibility for PHAs to use their operating funds for capital fund activities (and vice versa) and includes a utilities conservation pilot program to encourage PHAs to undertake energy and water conservation measures and reduce federal costs.

- \$1.8 billion for the **Public Housing Capital Fund**. As part of the Administration’s Climate Action Plan, HUD’s goal is to complete "cost effective, energy efficient, and healthy retrofits of 79,490 HUD supported affordable homes in FY 2016 and 80,500 in FY 2017." The Capital Fund also includes a request of up to \$20 million for an **Emergency and Natural Disaster Reserve**.
- \$300 million for new **Local Housing Policy Grants**. These are competitive grants for localities and regional coalitions to use for policy evaluation, design and codes assistance, stakeholder outreach and education and other activities to create a more elastic and diverse housing supply.
- \$700 million for the **Indian Housing Block Grant** and **Title VI Loan Guarantee** programs to increase the quantity, quality and energy efficiency of affordable homes in Indian Country.
- \$185 million for **Research and Technology**, which supports research, five housing surveys, technical assistance and training, data analysis, and best practices information. \$5 million is proposed for a new **Multifamily Pilot to Reduce Energy Consumption**.
- \$11.5 million for the Department’s **Manufactured Housing Standards Program**. HUD maintains a nationwide building code (the HUD Code) and serves as the oversight and enforcement body for the nation’s manufactured housing industry. HUD estimates there are 6.9 million manufactured homes currently in use, providing 9.5 percent of the total single-family housing stock. It is also a key source of affordable housing. Important efforts undertaken in 2015 included making further improvements to the HUD Code by updating energy efficiency standards.

## Department of Energy

The FY 2017 EERE budget proposal includes **\$289 million for Building Technologies**, an **increase of \$88.5 million** over FY 2016 appropriations. The funding supports the goal of reducing U.S. building energy consumption by 50 percent (from the 2010 Annual Energy Outlook baseline). For 2017, the emphasis is on emerging technology R&D in lighting, heating and cooling, and the building envelope. A new multi-year program, with \$40 million in proposed funding for 2017, is seeking a "paradigm shift" away from today’s refrigerant-based equipment to technologies with low/no-global warming potential (GWP). The 2017 budget continues to support the establishment of minimum energy efficiency standards for equipment and appliances and initiates a Metropolitan Systems activity to develop tools for cities to "become low carbon, affordable, livable, economically viable, and more resilient to extreme events." BTO will also assist in the crosscutting activity to improve the efficiency and resiliency of the electric grid.

<b>Department of Energy Building Technologies Programs</b>			
<b>Dollars in Thousands</b>			
	<b>FY 2015 Enacted</b>	<b>FY 2016 Enacted</b>	<b>FY 2017 Budget Request</b>
Commercial Buildings Integration	27,643	32,000	28,000
Emerging Technologies	55,740	85,915	169,000
Equipment and Buildings Standards	53,359	57,485	54,000
NREL Site-Wide Facility Support	2,500	2,100	0
Metropolitan Systems	0	0	15,000
Residential Buildings Integration	22,758	23,000	23,000
Penn State Consortium for Building	10,000	0	0
<b>Total, Building Technologies</b>	<b>172,000</b>	<b>200,500</b>	<b>289,000</b>

Please see the Department of Energy budget analysis for more information on DOE Building Technologies Programs.

## General Services Administration

GSA is the landlord for the federal government, owning and leasing space in nearly 10,000 buildings in more than 2,000 communities nationwide. In addition to office buildings, GSA properties include courthouses, laboratories, post offices, data centers and land ports of entry.

**GSA reports it has improved energy and water efficiency by 26.6 percent and 28.7 percent respectively across the federal portfolio from 2007 to 2014.** At the Wayne N. Aspinall Federal Building in Denver, CO, photovoltaic panels on the roof provide enough energy to power the building's peak demand; it became the first net-zero building listed on the National Register of Historic Places. The agency has increased the use of Energy Savings Performance Contracts (ESPCs), implementing 16 contracts since 2012 that will further improve energy performance at 93 buildings across the country.

The GSA's 2017 budget request includes **\$10 million for the Energy and Water Retrofit and Conservation Measures Program**, which implements energy and water retrofit and conservation measures in government-owned buildings. GSA is identifying suitable projects in federal buildings: they must have positive savings-to-investment ratios and provide reasonable payback periods. In addition to energy and water retrofit work, the projects will include geothermal and other High Performance Green Building retrofit work, as well as design and construction work for new facilities that incorporate these technologies.

**The Office of Federal High Performance Green Buildings** budget request for FY 2017 is \$4.3 million. The Office supports the federal government as it seeks to operate more effectively and efficiently, and it advances the Administration's sustainability goals by minimizing the federal footprint through efficient use of energy, water, and resources.

## DEPARTMENT OF TRANSPORTATION

The proposed Department of Transportation (DOT) FY 2017 budget requests a total of **\$98.1 billion in mandatory and discretionary funds, a 29 percent increase** above the \$76 billion enacted for 2016. The request fully supports the funding levels authorized in the recently enacted *Fixing America's Surface Transportation (FAST) Act*. It expands that support with new **21<sup>st</sup> Century Clean Transportation Plan Investments** to move the nation toward a cleaner, intermodal transportation network, and to support regional strategies to better connect the many communities that cross administrative boundaries. The proposed clean transportation investments, funded by a \$10.25 per barrel fee on oil are:

- **\$7.5 billion** for the Federal Highway Administration (FHWA) to administer:
  - **21<sup>st</sup> Century Regions** grants empowering Metropolitan Planning Organizations to build multimodal projects
  - **Climate-Smart Performance Formula Funds** for states cutting greenhouse gas emissions
  - **Clean Communities** grants to expand multimodal transportation choices to create more livable communities (transit-oriented development, connections for freeway-divided neighborhoods, bike and pedestrian networks, brownfield cleanup)
  - **Resilient Transportation** grants for competitions emulating the National Disaster Resilience Competition
  - **Future Freight System Program for multimodal projects** increasing efficiency and reducing pollution (\$2 billion)
- **\$6.385 billion** for the Federal Transit Administration (FTA) to:
  - **Supplement formula grants** to achieve a state of good repair and to purchase and maintain buses and railcars (\$5.86 billion)
  - Provide **Bus Rapid Transit Corridor** grants for rapid growth areas (\$525 million)
- **\$3.7 billion** for the Federal Railroad Administration (FRA) to:
  - **Create new or improved passenger rail corridors**, and enhance multimodal connections (\$1.5 billion)
  - Implement the **Positive Train Control (PTC)** safety system (\$1.3 billion)
  - **Mitigate rail impacts on local communities** (enhance crossings, relocate lines) (\$520 million)
  - Achieve compliance with the **Americans with Disabilities Act** at Amtrak stations (\$250 million)
  - Enhance rail planning and research, and establish a **Southeast Corridor Rail Commission** (\$110 million)
- **\$200 million** for a National Highway Traffic Safety Administration (NHTSA) **Autonomous Vehicle Pilot Program**
- **\$1.25 billion** for the Office of the Secretary's **multimodal National Infrastructure Investments (aka TIGER)**

<b>Department of Transportation Programs</b> <b>(Dollars in Thousands)</b>			
<b>Program / Organization</b>	<b>FY 2015 Actual</b>	<b>FY 2016 Enacted</b>	<b>FY 2017 Budget Request</b>
<b>Office of the Secretary</b>	898,000	935,400	1,696,000
National Infrastructure Investments (TIGER)	500,000	500,000	1,250,000
<b>Federal Highway Administration (FHWA)</b> ('16 trust fund except \$100M)	40,941,100	43,049,700	51,505,100
21 <sup>st</sup> Century Clean Transportation Plan Investments	0	0	7,500,000
<b>Federal Transit Administration (FTA)</b>	11,008,400	11,782,600	19,883,700
Transit Formula Program (includes \$199M for Positive Train Control)	8,595,000	9,347,600	9,733,700
Transit Research, Technical Assistance & Training (now in Formula Program)	37,500	0	0
Capital Investment Grants (CIG)/New Starts (31 projects in 18 states)	2,120,000	2,177,000	3,500,000
Washington Metropolitan Area Transit Authority	150,000	150,000	150,000
21 <sup>st</sup> Century Clean Transportation Plan Investments – Rapid-Growth Area	0	0	525,000
21 <sup>st</sup> Century Clean Transportation Plan Investments – Transit Formula	0	0	5,860,000
<b>Federal Railroad Administration (FRA)</b>	1,626,000	1,699,200	6,266,800
Safety and Operations	186,900	199,000	213,300
Intercity Passenger Rail (Capital & Operating)	1,390,000	1,390,000	0
Current Passenger Rail Service	--	--	2,300,000
21 <sup>st</sup> Century Clean Transportation Plan Investments – Rail Service Improve.	--	--	3,700,000
<b>Pipeline and Hazardous Materials Safety Administration</b>	244,500	249,600	295,200
<b>Federal Aviation Administration (FAA)</b>	15,847,500	16,280,700	15,899,900
<b>Federal Maritime Administration (MARAD)</b>	341,200	399,300	428,100
<b>National Highway Traffic Safety Administration (NHTSA)</b>	810,000	869,000	1,181,300

Apart from the \$6.385 billion in clean transportation investments listed above, the **Federal Transit Administration's** budget request for \$19.9 billion sets funding at levels authorized in the FAST ACT, except for **an additional \$1.3 billion in Capital Investment Grants. Taken altogether, these grants would fund 31 New Starts projects in 18 states.** Funding for **low and no emission buses** (\$55 million) is now part of the Bus Discretionary Program reinstated by the FAST Act. The requested funding levels would reverse the deterioration of transit infrastructure, maintain and grow the economic vitality of the nation's communities as their transportation needs evolve (through urbanization and population growth), and concurrently help establish a clean energy economy, combat climate change, and improve public health.

**Two new freight programs, established by the FAST Act,** are included in the **Federal Highway Administration's** budget request for \$51.5 billion. The **Nationally Significant Freight and Highway Project Program (NSFHP)** provides for **\$850 million in discretionary grants**, overseen by the new National Surface Transportation and Innovative Finance Bureau (**NSTIFB**) in the Office of the Secretary. The FAST Act limits funding for multimodal projects to about 10 percent of program grants. The **National Highway Freight Program** provides **\$1.1 billion of formula funding for states to improve the National Highway Freight Network** based on their multimodal state freight plans. More than 95 percent of the funding from these programs go to roadways. The budget request includes a third new multimodal freight program in its Clean Transportation plan, to increase the entire network's services and efficiency, while decreasing pollution.

The **Surface Transportation Block Grant Program** (\$11.4 billion), established by the FAST Act, includes the former Surface Transportation Program and sets aside **\$835 million for alternative transportation projects**, such as pedestrian and bike facilities, recreational trails, and safe routes to schools (such projects were formerly under the **Transportation Alternatives Program**). The portion of this program that states must allocate by population grows from 50 percent in 2015 to 55 percent by 2020, incrementally increasing local and regional governments' ability to fund their priorities. The budget request's 21st Century Regions grants (see above) would accelerate this trend.

The request fully supports the \$275 million authorization for the **Transportation Infrastructure Finance and Innovation Act (TIFIA)** program to subsidize up to \$8 billion in loans for public-private partnership projects of national or regional significance – **transit-oriented development projects are now eligible.** The new NSTIFB (see above) will also manage the

TIFIA program. The Congestion Mitigation and Air Quality (**CMAQ**) Improvement program (\$2.4 billion) provides flexible funds for state and local governments to reduce regional congestion and meet air quality standards. The Metropolitan Transportation Planning Program (\$336 million) supports **regional multi-modal planning**.

The **Federal Railroad Administration's** budget request (\$6.3 billion) would nearly **triple FAST-authorized funding for the Federal State Partnership for State of Good Repair to \$400 million**, and increase other current services funding by about 25 percent to \$1.9 billion. The **\$3.7 billion request for the Rail Service Improvement Program** is in the Clean Transportation Plan (see above).

The \$167.5 million Research, Engineering and Development program in the **Federal Aviation Administration's** budget request maintains \$6 million to continue partnerships with industry to **transition general aviation off leaded fuel to an unleaded replacement**. It also maintains \$26 million **to increase efficiency and reduce harmful emissions by advancing alternative jet fuels**. The Pipeline and Hazardous Materials Safety Administration regulates a **2.6 million mile pipeline network** and about 1 million movements of hazardous materials. It requests \$295 million, a \$45.6 million increase over 2016 enacted levels to, among other things, improve data usage to make more effective use of inspection resources, and to improve coordination with state agencies.

Please see the Department of Energy budget analysis regarding vehicle technology, biofuels, hydrogen, fuel cells and additional 21st Century Clean Transportation Plan Initiatives.

## ENVIRONMENTAL PROTECTION AGENCY

The President’s FY 2017 budget request for the Environmental Protection Agency (EPA) is **\$8.27 billion, an increase of \$127 million** (1.56 percent) from FY 2016 enacted funding. The budget provides an increase of \$25 million to help states implement climate change fighting strategies as part of the Clean Power Plan. The budget seeks \$1.65 billion over 10 years to launch the Climate Infrastructure Fund, which would provide funding to retrofit diesel engines in trucks and buses (particularly school buses) to make them more efficient, or to replace them altogether.

The EPA breaks down its budget request into five overall goals. Two of those goals are highlighted below.

<b>Environmental Protection Agency</b>			
<b>(Dollars in Thousands)</b>			
<b>Addressing Climate Change &amp; Improving Air Quality</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Quality</b>	<b>Actuals</b>	<b>Enacted</b>	<b>Budget Request</b>
Address Climate Change	183,505	194,196	279,821
Improve Air Quality	768,402	818,286	794,820
Restore and Protect the Ozone Layer	17,440	16,686	17,454
Minimize Exposure to Radiation	33,772	34,701	39,644
<b>Total, Addressing Climate Change &amp; Improving Air Quality Goal</b>	<b>1,003,120</b>	<b>1,063,870</b>	<b>1,131,739</b>
<b>Cleaning up Communities &amp; Advancing Sustainable Development</b>			
Promote Sustainable & Livable Communities	440,404	432,536	481,556
Preserve Land	217,262	221,304	240,784
Restore Land	1,108,314	1,028,259	1,066,070
Strengthen Human Health & Environmental Protection in Indian Country	87,623	87,453	121,395
<b>Total, Cleaning Up Communities &amp; Advancing Sustainable Development</b>	<b>1,853,603</b>	<b>1,769,552</b>	<b>1,909,805</b>

*Note: totals do not match because of rounding.*

The **Climate Protection Program** of the FY 2017 EPA budget request, part of the "Addressing Climate Change & Improving Air Quality" goal, includes \$115.9 million to support the Climate Action Plan and the ENERGY STAR program. The **\$12.4 million increase in the Climate Protection Program** over the FY 2016 enacted budget includes a **\$7.6 million increase to support the Climate Action Plan**, which focuses on the reduction of hydrofluorocarbons (HFCs) and implementation of the Interagency Methane Strategy. The Climate Protection Program also includes a **\$1.9 million increase for the ENERGY STAR program** to enable local, state-wide, and federal government offices to better measure the greenhouse gas emissions of buildings.

The Addressing Climate Change & Improving Air Quality goal also includes **\$25 million in additional funding to help states comply with the Clean Power Plan**, including reducing carbon dioxide (CO<sub>2</sub>) emissions from new and existing power plants, and reducing methane emissions from oil and natural gas drilling sites and landfills. The EPA will lead the Global Methane Initiative (GMI) and work with the Climate and Clean Air Coalition in order to reduce Short Lived Climate Pollutants (SLCP).

The Cleaning Up Communities & Advancing Sustainable Development goal includes an increase of **\$6.4 million dollars to assist with communities** disproportionately impacted by environmental disasters and climate change mitigation. The EPA also requested **\$15.9 million for the Environmental Justice program**, in order to engage minority, low-income and tribal communities and address their concerns regarding climate change. \$17 million will go to climate resilience through Wetlands Program Development Grants.

The FY 2017 EPA budget request also includes:

- \$25 million in additional funding to help states comply with the Clean Power Plan.
- \$17 million for climate resilience through Wetlands Program Development Grants for states, tribes and local governments.
- \$15.9 million for the Environmental Justice program, to engage with disproportionately impacted minority, low-income and tribal communities and address their concerns.

## DEPARTMENT OF STATE & USAID

The Department of State's FY 2017 budget request includes **\$983.9 million for the Global Climate Change Initiative (GCCII)** to help developing countries reduce their greenhouse gas emissions, invest in clean energy, increase energy efficiency, stop deforestation, and mitigate the impacts of climate change. With additional funding from the Treasury Department and the U.S. Agency for International Development, the Obama Administration would provide a **total of \$1.3 billion for the Global Climate Change Initiative**. The GCCII helps reinforce the Paris Climate Agreement by helping countries reduce their greenhouse gas emissions and improve their carbon accounting measures.

Of the \$983.9 million provided by the State Department to the **Global Climate Change Initiative, \$500 million is budgeted for the Green Climate Fund**, which would be supplemented by \$250 million from the Department of Treasury, for a **total of \$750 million**. This is in line with the U.S. pledge to contribute \$3 billion over four years to the Green Climate Fund. Another \$147 million of GCCII funds would be set aside for the Global Environment Facility (GEF), which helps cover the costs of making development projects environmentally friendly.

The State Department's contribution to the Global Climate Change Initiative would also provide **\$310 million in direct assistance to developing countries for climate adaptation and clean energy initiatives**. Of the \$310 million, \$142 million would help poor countries develop and implement their National Adaptation Plans, \$93 million would be specifically set aside for clean energy programs (including modernizing regulatory policies and improving grids), and \$75.5 million would help prevent deforestation and land degradation.

The **U.S. Agency for International Development (USAID)**, under the aegis of the State Department, runs the Power Africa program, which aims to provide renewable energy generation projects to 60 million households and businesses in Africa. The 2017 budget request includes **\$291 million for Power Africa**, a substantial increase from the \$76.7 million request in FY 2016.

## OTHER AGENCY HIGHLIGHTS

**The Department of Commerce's \$9.75 billion budget request** includes \$5.9 billion in budget authority for the National Oceanic and Atmospheric Administration (NOAA), up \$50 million from enacted FY 2016. The request includes \$2.3 billion to fund the next generation of weather and environmental satellites. The agency has requested \$520 million for NOAA's Office of Oceanic and Atmospheric Research (OAR), a \$38 million increase over enacted FY 2016. The NOAA budget request includes \$20 million for its Regional Coastal Resilience Grant program (a 400 percent increase over enacted FY 2016).

Also part of the US Department of Commerce is the **National Institute of Standards and Technology (NIST)**, whose mission is to advance measurement science, standards and technology, and maintain national standards to ensure fairness in the marketplace. Priorities for its Built Environment program are energy efficiency, energy-rating software tools, indoor air quality, hazard prevention, and tools to predict the effects of hazards on building performance.

**The Department of Interior's (DOI) \$13.4 billion budget request includes \$97 million for renewable energy development programs** (\$3 million more than enacted FY 2016). The renewable funding request includes \$34 million for the Bureau of Ocean Management, \$29 million for the Bureau of Land Management, \$11 million for the Fish and Wildlife Service, and \$9 million for the Bureau of Indian Affairs. The agency requests \$171 million (\$31 million over enacted FY 2016 levels) for the U.S. Geological Survey's Climate and Land Use Change initiative, which studies and forecasts impacts on the country's natural resources. The budget proposes \$200 million for the first year of a new 10-year, \$2 billion Coastal Climate Resilience program to support at-risk coastal states, local governments, and their communities as they prepare for and adapt to climate change.

**The Department of Defense's (DOD) budget provides support for energy efficiency initiatives (including improving fuel efficiency), developing new energy technologies, and expanding renewable energy resources.** The Energy Conservation Investment Program (ECIP), which supports renewable energy and energy efficiency projects at military installations, remains at the enacted FY 2016 level of \$150 million. The budget request also includes \$52 million for the Navy Energy Program, \$4 million less than in enacted FY 2016.

This issue brief is available electronically (with hyperlinks and endnotes) at [www.eesi.org/papers](http://www.eesi.org/papers).

---

**Authors: Alison Alford, John-Michael Cross, Paul Haven, Laura Small, Jessie Stolark, Ellen Vaughan**  
**Editors: Carol Werner, Amaury Laporte**

*The Environmental and Energy Study Institute (EESI) is a non-profit organization founded in 1984 by a bipartisan Congressional caucus dedicated to finding innovative environmental and energy solutions. EESI works to protect the climate and ensure a healthy, secure, and sustainable future for America through policymaker education, coalition building, and policy development in the areas of energy efficiency, renewable energy, agriculture, forestry, transportation, buildings, and urban planning.*