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Energy Efficiency and Renewable Energy (EERE): Appropriations and the FY2016 Budget Request

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Summary

The U.S. Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy (EERE) is the principal government agency responsible for renewable-energy technologies and energy-efficiency efforts. EERE works with industry, academia, national laboratories, and others to conduct research and development (R&D) and to issue grants to state governments. EERE oversees an expansive collection of nearly a dozen technologies and programs—from vehicle technologies to solar energy to advanced manufacturing to weather and intergovernmental programs—each having its own respective mission and program goals.

EERE receives its funding from the annual energy and water development (E&W) appropriations bill. The Administration's FY2016 budget request for EERE is $2.7 billion, an increase of $799 million (42%) from the FY2015 enacted level of $1.9 billion. The bulk of the request is split between three areas: nearly 38% for energy-efficiency programs, nearly 24% for renewable-energy programs, and some 29% for sustainable-transportation programs. The EERE request is approximately 9% of the $29.9 billion FY2016 request for DOE.

The EERE budget request aligns with other plans issued by the Administration, including the President's Climate Action Plan (CAP) and the Clean Power Plan (CPP). One highlight of the request is that it includes funding for the formation of two additional Clean Energy Manufacturing Innovation Institutes ($70 million each) along with annual support for the four existing institutes ($14 million each). The request also identifies several sustainable-transportation and renewable-power goals that include achieving cost targets set for the respective technologies (for example, supporting the SunShot Initiative goal to make solar power cost-competitive without subsidies by 2020, equivalent to a cost of solar power of $.06 per kilowatt-hour).

Some congressional criticisms regarding the EERE budget request include the large funding increase, a lack of balance in what has been described as an "all of the above" approach to energy-technology funding, and Clean Energy Manufacturing Innovation Institute funding commitments, among other things. Congress has not completed action on the FY2016 E&W appropriations bill. The House-passed bill, H.R. 2028, contains $1.66 billion for EERE, a decrease from both the FY2016 request and the FY2015 enacted level. On the Senate side, the Senate Appropriations Committee reported its version of H.R. 2028 with a funding level of $1.95 billion, a decrease from the FY2016 request and a slight increase over the FY2015 enacted level. The Administration has issued a veto threat, particularly for the House funding levels, in part because it finds that the House bill would "underfund critical activities" performed by EERE.

The President signed into law a continuing resolution (P.L. 114-53) on September 30, 2015, providing EERE with appropriations essentially at the FY2015 level through December 11, 2015, or until enactment of the FY2016 E&W appropriation bill.

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Introduction

This report discusses appropriations for the U.S. Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy (EERE) and summarizes congressional action related to EERE funding and oversight. The Administration is proposing to fund EERE for FY2016 at a level 42% higher than the FY2015 enacted level.[1] The funding level provided by Congress could impact goals set by EERE, including sustainable-transportation goals (e.g., vehicle electrification and biofuels) and energy-efficiency goals (e.g., establishment of two additional Clean Energy Manufacturing Innovation Institutes), and it could impact EERE assistance with industry competitiveness, among other things. The report places current funding for these activities within the context of recent and historical federal energy research and development (R&D) expenditures. This report does not discuss the opportunities, challenges, economic value, or commercial status of the various renewable-energy technologies and energy-efficiency initiatives selected by EERE, nor does it delve into the goals of the individual EERE programs or congressional oversight of certain EERE issues.[2]

Background

EERE

EERE leads the DOE's effort to accelerate development and facilitate deployment of energy-efficiency and renewable-energy technologies and market-based solutions that strengthen U.S. energy security, environmental quality, and economic vitality. EERE is led by the Assistant Secretary of Energy Efficiency and Renewable Energy, and it is organized into four offices: Office of Transportation, Office of Renewable Power, Office of Energy Efficiency, and Office of Operations and Strategic Innovation.[3] EERE reports that it invests in only what it considers to be the highest-impact activities. EERE collaborates with industry, academia, national laboratories, and others to develop technology-specific road maps and then focuses on early stage R&D, technology-validation and risk-reduction activities, and the reduction of market barriers to the adoption of market-ready new technologies. EERE also manages a portfolio of programs that support state and local governments, tribes, and school leaders. In addition, EERE oversees the

[1] Currently, there is a continuing resolution (P.L. 114-53) providing the U.S. Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy (EERE) with appropriations essentially at the FY2015 level through December 11, 2015, or until enactment of the FY2016 energy and water development (E&W) appropriations bill. For more information on the continuing resolution, see CRS Report R44214, *Overview of the FY2016 Continuing Resolution (H.R. 719)*, by Jessica Tollestrup.

[2] For more information on clean energy, energy efficiency, and EERE programs, see CRS Report R43966, *Energy and Water Development: FY2016 Appropriations*, by Mark Holt; CRS Report R44004, *DOE's Office of Energy Efficiency and Renewable Energy: FY2016 Appropriations*, by Fred Sissine; CRS Report R40913, *Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs*, by Lynn J. Cunningham and Beth Cook; CRS Report R43815, *Energy Efficiency: DOE's Regional Standards for Indoor (Non-Weatherized) Residential Gas Furnaces*, by Fred Sissine and Adam Vann; CRS Report RS22858, *Renewable Energy R&D Funding History: A Comparison with Funding for Nuclear Energy, Fossil Energy, and Energy Efficiency R&D*, by Fred Sissine; CRS Report R42028, *Lighting Industry Trends*, by Fred Sissine; and CRS Report R42147, *DOE Weatherization Program: A Review of Funding, Performance, and Cost-Effectiveness Studies*, by Fred Sissine.

[3] DOE was established under the Department of Energy Organization Act of 1977 (P.L. 95-91). Section 203 of the act identifies eight assistant secretary positions and the functions they are to cover. EERE Organization Chart, August 24, 2015.

National Renewable Energy Laboratory (NREL)—the only national laboratory solely dedicated to researching and developing renewable-energy and energy-efficiency technologies.[4]

Administration Support for Energy Efficiency and Renewable Energy

The Obama Administration has repeatedly expressed support for energy efficiency and renewable energy, citing job creation, environmental protection, and U.S. manufacturing competitiveness as some of the reasons for doing so. For instance, the Administration touts the expansion of energy efficiency as one of the tactics contributing to reductions in greenhouse-gas emissions and providing savings for households.[5] The Administration also conveys its support for the use of renewables in a clean-energy future with the generation of electricity from wind and solar, among other things.[6] Additionally, the Administration's Clean Power Plan (CPP)—which calls for a reduction in carbon dioxide (CO_2) emissions from existing fossil fuel-fired electric power plants—includes renewable energy and energy efficiency as strategies that states may use to meet their specific emission-rate or mass-based targets.[7]

FY2011-FY2015 Appropriations

EERE receives its appropriations from the annual energy and water development (E&W) appropriations bill.[8] For each of the last five years, DOE has requested increased funding to support EERE programs and objectives, and Congress's response has been to provide funding at levels lower than what was requested. Appropriations for EERE have averaged $1.85 billion annually for the last five years (see **Table 1**). The appropriations are split into four major categories: sustainable transportation, energy efficiency, renewable energy, and corporate support (e.g., program administration). From FY2011 to FY2015, approximately two-thirds of the appropriations were split between sustainable transportation and energy efficiency, while roughly a quarter of the appropriations was spent on renewable energy and just over 10% was spent on corporate support.

FY2016 Request

DOE requested $2.7 billion to support EERE programs and objectives for FY2016, an increase of $799 million (42%) from the FY2015 enacted level of $1.9 billion (see **Table 1**).[9] The EERE FY2016 request is approximately 9% of the FY2016 overall DOE FY2016 request of $29.9 billion. The FY2016 EERE request would again allocate approximately two-thirds of the

[4] There are other national laboratories that conduct energy-efficiency and renewable-energy work, such as Lawrence Berkeley National Laboratory and Oak Ridge National Laboratory.

[5] The White House, *Economic Report of the President*, February 2015; White House, *The President's Climate Action Plan*, June 2013.

[6] The White House, *Economic Report of the President*, February 2015.

[7] For more information, see CRS Report R44145, *EPA's Clean Power Plan: Highlights of the Final Rule*, by Jonathan L. Ramseur and James E. McCarthy.

[8] The E&W appropriations bill has funded all DOE offices and programs since 2005. Prior to 2005, DOE received its appropriations from both the E&W appropriations bill and the Interior, Environment, and Related Agencies appropriation bill.

[9] DOE, *FY2016 Budget Request*, vol. 3, February 2015.

appropriations to sustainable transportation and to energy efficiency, when the two categories are combined. However, energy efficiency would receive slightly more in its share of the two categories combined than it did in FY2015 (38% in FY2016, as compared with 33% in FY2015). The FY2016 request allocates close to 25% and 10% of the request for renewable energy and corporate support, respectively. It could be argued that the three categories that, when combined, receive the bulk of the appropriations—sustainable transportation, renewable energy, and energy efficiency—encompass a diverse array of activities, making it difficult to ascertain the impact of individual activities solely based on the appropriations provided at the organizational or thematic level.

Some of the highlights and major changes presented in the EERE FY2016 request, as reported by DOE, include the following:

- Sustainable Transportation
  - Support the Electric Vehicle (EV) Everywhere Grand Challenge by reducing the combined battery and electric drive system costs of a plug-in electric vehicle by up to 50% (by 2022, from a 2012 baseline).[10]
  - Support a new SuperTruck II initiative to research, develop, and demonstrate a suite of technologies with the goal of improving the freight-hauling efficiency of heavy-duty Class 8 long-haul vehicles by 100% by 2020 (with respect to comparable 2009 vehicles) and demonstrating applicability of these technologies to heavy-duty Class 8 regional-haul vehicles as well.[11]
  - Work to eliminate technical barriers to increased transportation use of alternative and renewable fuels, with a focus on natural gas and drop-in biofuels.[12]
  - Support the conversion of cellulosic and algal-based feedstocks to bio-based gasoline, diesel, and jet fuel at a target cost of $3.00 per gallon of gasoline equivalent (gge), with an emphasis on drop-in hydrocarbon biofuels.
  - Collaborate with the Navy and the Department of Agriculture (USDA) to demonstrate commercial-scale biorefineries to produce military-specification fuels.[13]
  - Support reduced cost and increased durability of a fuel cell system and invest in R&D for technologies that can lower the cost of hydrogen from renewable resources to less than $4.00/gge.[14]
- Renewable Energy
  - Support the SunShot Initiative goal of making solar power cost-competitive without subsidies by 2020, equivalent to a cost of solar power of $0.06 per kilowatt-hour.[15]

[10] The EV Everywhere Grand Challenge is a DOE-wide initiative that seeks to enable the United States to produce a wide array of plug-in electric vehicle models, including plug-in hybrids and all-electric vehicles, that are as affordable and convenient as gasoline-powered vehicles by 2022.

[11] This initiative follows the initial SuperTruck program established in 2009 with a challenge by DOE to truck manufacturers and suppliers to improve freight efficiency by 50% compared to a baseline vehicle, among other things.

[12] Drop-in biofuels are generally described as biofuels that are indistinguishable from conventional petroleum-based fuels that may be used with existing infrastructure with no changes.

[13] DOE signed a 2011 memorandum of understanding with the Navy and the Department of Agriculture to assist in the development and support of a sustainable commercial biofuels industry.

[14] A fuel cell uses the chemical energy of hydrogen or another fuel to cleanly and efficiently produce electricity.

- Provide funding, technical assistance, and interagency coordination for three offshore wind-technology demonstration projects.[16]
- Support the HydroNEXT Initiative, a multiyear program that will focus on new and innovative technologies for generating electricity from water resources.[17]
- Support full implementation of the Subsurface Technology and Engineering research, development, and demonstration (RD&D) crosscut, which will address common technical RD&D challenges confronting the Geothermal Technologies Program, as well as other DOE offices.

- Energy Efficiency
  - Support the establishment of two additional Clean Energy Manufacturing Innovation Institutes.[18]
  - Continue to support activities that assist and enable federal agencies to meet energy-related goals.
  - Pursue initiatives under the commercial and residential buildings programs that assist with overcoming market barriers to adoption of cost-effective energy-efficiency technologies and solutions.
  - Support rulemaking and standards certification and enforcement of both residential appliances and commercial products.
  - Provide access to home-weatherization services for low-income households.[19]
  - Establish a new program that will provide competitive grants and technical assistance to local governments for energy program and project planning, development, and implementation.[20]

EERE is also involved in key initiatives that involve other DOE offices. For instance, EERE reports that it is working on a coordinated strategy "of uniform policies and pilot programs aimed at significantly increasing meaningful interactions between the clean energy sector and DOE National Laboratories to help commercialize EERE technologies and strengthen clean energy R&D at the labs." Further, EERE reports that it participates in the following DOE crosscutting

(...continued)

[15] Established in 2011, the SunShot Initiative conducts research, manufacturing, and marketing to make solar energy resources in the United States more affordable and accessible.

[16] For more information on the three projects, see the DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 138.

[17] DOE reports that "HydroNEXT is pursuing a comprehensive technology research, development, demonstration, and deployment strategy across three resource classes to increase the contribution of clean, renewable hydropower to the nation's energy mix: existing water infrastructure, undeveloped streams, and pumped-storage hydropower." For more information on the three projects, see DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 156.

[18] DOE reports that the two new Clean Energy Manufacturing Innovation Institutes would be competitively selected in FY2016 and that their priority technology area has been narrowed to four choices. For more information, see DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 200.

[19] Weatherization services include a wide variety of energy-efficiency measures that encompass the building envelope, its heating and cooling systems, its electrical system, and electricity-consuming appliances (e.g., installing insulation, sealing ducts).

[20] For more information, see DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 284.

initiatives: grid modernization,[21] supercritical carbon dioxide (sCO2),[22] subsurface engineering,[23] energy-water nexus,[24] and cybersecurity.[25]

Table 1. EERE FY2011-FY2015 Enacted Appropriations and FY2016 Budget Request

(in millions of dollars)

	FY2011 Enacted	FY2012 Enacted	FY2013 Current	FY2014 Enacted	FY2015 Enacted	FY2016 Request
EERE, Total	*1,795.6*	*1,809.6*	*1,691.8*	*1,901.7*	*1,923.9*	2,723.0
Sustainable Transportation	**580.7**	**634.0**	**584.2**	**615.3**	**602.0**	**793.0**
Vehicle Technologies	300.0	330.0	303.2	289.9	280.0	444.0
Bioenergy Technologies[a]	182.7	200.0	185.2	232.4	225.0	246.0
Hydrogen and Fuel Cell Technologies	98.0	104.0	95.8	93.0	97.0	103.0
Renewable Energy	**411.5**	**480.6**	**444.9**	**449.8**	**456.0**	**645.2**
Solar Energy	263.5	290.0	269.1	257.2	233.0	336.7
Wind Energy	80.0	93.6	86.1	88.2	107.0	145.5
Water Power	30.0	59.0	54.7	58.6	61.0	67.0
Geothermal Technologies	38.0	38.0	35.0	45.8	55.0	96.0
Energy Efficiency	**580.4**	**494.0**	**535.4**	**617.8**	**642.0**	**1,029.6**
Advanced Manufacturing[b]	108.2	116.0	114.3	180.6	200.0	404.0
Building Technologies	210.5	220.0	204.6	178.0	172.0	264.0
Federal Energy Management Program	30.4	30.0	28.3	28.3	27.0	43.1
Weatherization and Intergovernmental Program[c]	231.3	128.0	188.2	231.0	243.0	318.5
Weatherization Assistance Program	171.0	65.0	128.9	171.0	190.0	224.0
Training and Technical	3.3	3.0	2.8	3.0	3.0	4.0

[21] Grid modernization is an initiative that will create tools and technologies that measure, analyze, predict, and control the grid of the future; focus on key policy questions related to regulatory practices, market designs, and business models; ensure the development of a secure and resilient grid; and collaborate with stakeholders to test and demonstrate combinations of promising new technologies.

[22] Supercritical carbon dioxide (sCO2) is a technology-focused crosscutting initiative that will facilitate industry's transition to realize power cycles based on sCO2 as the working fluid as opposed to current steam-based systems.

[23] Subsurface engineering is an initiative to address identified challenges in the subsurface (i.e., underground) through highly focused and coordinated research in wellbore integrity, stress state and induced seismicity, permeability manipulation, and new subsurface signals to ensure enhanced energy security, material impact on climate change via carbon dioxide (CO_2) sequestration, and significantly mitigated environmental impacts from energy-related activities and operations.

[24] The energy-water nexus is an integrated set of cross-program collaborations designed to accelerate the nation's transition to more resilient energy and coupled energy-water systems.

[25] The cybersecurity crosscut supports central coordination of the strategic and operational aspects of cybersecurity and facilitates cooperative efforts, such as the creation of the Joint Cybersecurity Coordination Center for incident response and the implementation of department-wide Identity Credential and Access Management.

	Assistance					
	NREL Site-Wide Facility Report			—	—	0.4
	State Energy Program Grants	50.0	50.0	47.1	50.0	50.0	70.1
	Local Technical Assistance Program				—	—	20.0
Corporate Support[d]		**253.0**	**216.4**	**209.0**	**231.6**	**237.0**	**255.2**
	NREL	11.7	26.4		46.0	56.0	62.0
Use of Prior-Year Balances				-81.6	-2.4	0.0	0.0
Rescissions		-30.0	-15.4	0.0	-10.4	-13.1	0.0

Sources: Department of Energy (DOE), *FY2016 Budget Request*, vol. 3, February 2015; H.Rept. 114-91; H.Rept. 113-486; DOE, *FY2015 Budget Request* vol. 3, March 2014 (to obtain the FY2013 appropriations that DOE identifies as FY2013 current, or the enacted amount plus or minus any adjustments made since the appropriations bill became law); H.Rept. 112-462; and H.Rept. 112-118.

Notes: EERE = DOE's Office of Energy Efficiency and Renewable Energy; NREL = National Renewable Energy Laboratory.

a. Biomass & Biorefinery Systems Research and Development, renamed Bioenergy Technologies in FY2014.

b. Industrial Technologies, renamed Advanced Manufacturing in FY2014.

c. The Weatherization and Intragovernmental Program included $7 million for tribal energy activities for FY2011, $10 million for FY2012, and $9.4 million for FY2013.

d. Corporate support includes facilities and infrastructure, program direction, and strategic programs.

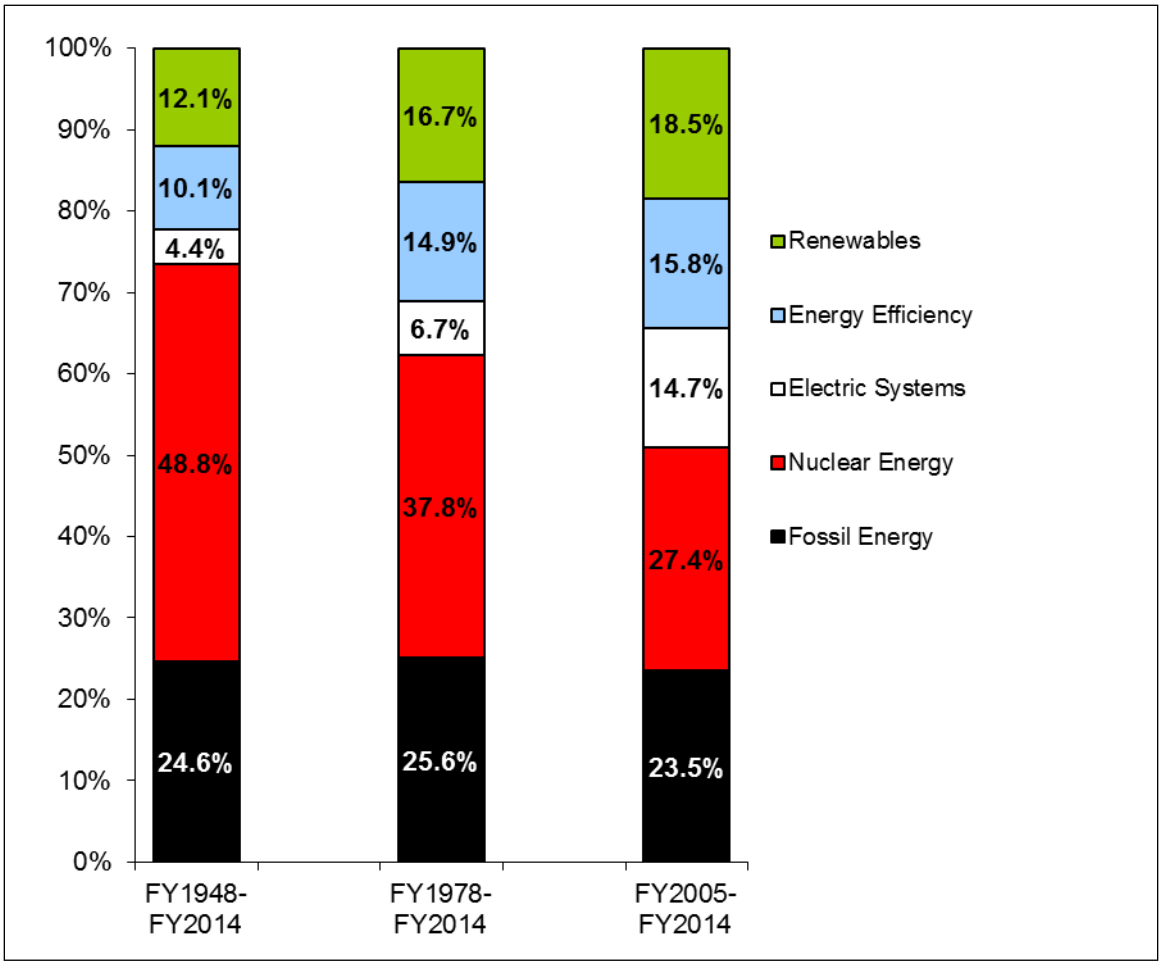
Energy and Energy Efficiency Spending: FY1948-FY2014

The federal government has financially supported energy R&D for more than half a century.[26] The focus of such support has varied over time. The energy crises of the 1970s spurred the federal government to expand its R&D programs to include renewable-energy and energy-efficiency technologies.[27] In real (constant dollar) terms, federal R&D funding for the four main energy technologies (i.e., nuclear, fossil, renewables, energy efficiency) skyrocketed during the 1970s to a peak in FY1979. Afterward, funding dropped steadily, reaching a bottom around 1990. Since then, funding has increased gradually—with the exception of the American Recovery and Reinvestment Act of 2009 (P.L. 111-5) providing a one-year spike mainly for grants. **Figure 1** shows the relative shares of funding for the four types of energy technologies over three time periods: 67 years, 37 years, and 10 years.

[26] More details about DOE—and earlier (pre-1978)—spending for R&D on energy technologies are available in CRS Report RS22858, *Renewable Energy R&D Funding History: A Comparison with Funding for Nuclear Energy, Fossil Energy, and Energy Efficiency R&D*, by Fred Sissine.

[27] Some of the more critical crises that occurred during this period included the 1973 oil crisis and the 1979 energy crisis.

Figure 1. Federal Energy Appropriations, FY1948-FY2014



Sources: DOE, *Budget Authority History Table by Appropriation*, May 2007; DOE congressional budget requests (several years); DOE (Pacific Northwest Laboratory), *An Analysis of Federal Incentives Used to Stimulate Energy Production*, 1980; DOE, Conservation and Renewable Energy Base Table, February 1990. Deflator Source: *The Budget for Fiscal Year 2015*, Historical Tables, Table 10.1.

Note: The portion shown for nuclear energy includes funding for both nuclear fission and nuclear fusion.

Congressional Action

House

The House passed an E&W appropriations measure, H.R. 2028, that would provide EERE with $1.7 billion for 2016, approximately $266 million below the FY2015 enacted level of $1.9 billion and approximately $1.1 billion below the DOE FY2016 budget request of $2.7 billion (see **Table 2**).[28] Recommendations, exclusions, and other directives pertaining to how the FY2016 EERE

[28] Seven amendments were accepted on the House floor related to EERE. Three of the amendments add funding to EERE appropriations (H.Amdt. 166, Amdt. 169, and H.Amdt. 170). Four of the amendments prohibit the use of funding for certain EERE initiatives (H.Amdt. 192, H.Amdt. 193, H.Amdt. 205, and H. Amdt, 195).

appropriations should be spent are in the Committee on Appropriations report for the 2016 E&W development appropriations bill.[29] Some of the directives contained in the report are as follows:[30]

- Encourages DOE to examine the feasibility of ultraconductive copper;[31]
- Requests DOE to stop taking a small portion of annual funding from EERE technology offices to fund incubator programs;[32]
- Provides zero funding for Advanced Vehicle Competitions[33] and for the Alternative Fuel Vehicle Community Partner projects;[34]
- Encourages DOE to work with the natural-gas industry on additional engines and emission-control technologies that obtain emission advantages when using natural gas in high-efficiency engines;
- Provides zero funding for the joint initiative with the Navy and USDA to develop commercial-diesel and jet-biofuel production capacity for defense purposes;[35]
- Provides zero funding for the Scaling Up Nascent PV at Home (SUNPATH) III program;[36]
- Supports an emphasis on offshore wind technologies that address the unique opportunities and issues across the nation's waterways rather than those technologies currently being considered by the private sector;
- Supports the establishment of one new Clean Energy Manufacturing Innovation Institutes and requests that all future budget justifications include a specific research topic associated with the institute being proposed for funding;[37]

[29] H.Rept. 114-91.

[30] This is not an exhaustive list of all directives contained in the report. Additionally, there is no order of priority for the select directives mentioned.

[31] The Oak Ridge National Laboratory (ORNL) reports that ultraconductive copper is "an emerging materials technology that can potentially transform the energy sector because of its promises of enhanced electrical conductivity, higher strength and better thermal management characteristics." Further, ORNL reports, "While U.S. researchers have been leading the effort in developing ultraconductive copper, the achievement gap is rapidly diminishing due to increasing activities from competitors worldwide.... In order not to be left behind, concerted efforts should be made and resources need to be provided to perform these priority research activities in the U.S." ORNL, *Priority Research Areas to Accelerate the Development of Practical Ultra-conductive Copper Conductors*, ORNL/TM-2015/403, September 2015.

[32] DOE reports that this practice started in FY2014 and that incubator programs "allow EERE to develop, assess, and screen new 'off-roadmap' technologies and solutions for their potential to be 'on-ramped' into future program plans, roadmaps, and project portfolios." DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 10.

[33] DOE reports that the Advanced Vehicle Competitions activity encourages university student engineers to participate in advanced technology development—helping to address the need for more highly trained engineers in advanced vehicle technologies to overcome barriers in the marketplace. DOE requested $2.5 million for the Advanced Vehicle Competitions, the same amount provided in FY2015. DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 44.

[34] DOE reports that the Alternative Fuel Vehicle Community Partner project is a new "funding opportunity to accelerate widespread introduction and adoption of commercially-available advanced vehicle technologies to reduce U.S. dependence on petroleum, increase local fuel diversification, and catalyze adoption of clean transportation technologies." DOE, *FY2016 Budget Request*, vol. 3, February 2015, pp. 23 and 45.

[35] DOE is a partner in a collaborative effort with the Navy and the Department of Agriculture to develop innovative technologies for jet and diesel fuels. DOE received $45.0 million for the effort for FY2015. DOE requested $45.0 million for this effort in FY2016. DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 64.

[36] DOE reports that the goal of the Scaling Up Nascent PV at Home (SUNPATH) program is to support the initial ramp up to pilot-scale manufacturing of innovative new manufacturing processes and tools, thus enabling U.S. industry to overcome a funding gap. DOE request $25.5 million for SUNPATH III for FY2016. DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 120.

- Directs DOE to analyze the impact federal investment may have in strengthening the availability and usage of lithium;
- Directs DOE not to advocate, promote, or discourage the adoption or inclusion of a particular building energy code or code provision, other than the technical and economic analysis work required by statutory mandate, or to provide funding to private third parties or nongovernmental organizations that engage in such advocacy;
- Provides zero funding for competitive awards within the Weatherization Assistance Program to develop and test financing models to support energy-efficiency retrofits;[38] and
- Directs DOE to not promulgate regulations in FY2016 using the May 2013 estimates for the social cost of carbon.[39]

Executive Branch Response

The Office of Management and Budget (OMB) issued a statement announcing its opposition to the House passage of H.R. 2028.[40] OMB reports that if the President were presented with H.R. 2028, his senior advisers would recommend that he veto the bill. Moreover, the statement contains a section on the Administration's opposition to the EERE portion of the bill:

> The proposed [EERE] reductions significantly underfund critical activities that support the development and commercialization of clean energy technologies. At this funding level, the number of research, development, and demonstration projects supported in cooperation with industry, universities, and the national labs would be reduced, limiting innovation and technological advancement, curtailing solutions to cut U.S. dependence on oil and reduce energy waste, and undermining the Nation's industrial competitiveness in the future global clean energy economy. The Congress is urged to fully fund the FY 2016 Budget request of $2.7 billion. The Administration is also disappointed that the bill does not include transfer language necessary to support joint efforts with the Navy and the Department of Agriculture to develop advanced drop-in biofuels for military applications, a provision included in the FY 2015 enacted bill.

(...continued)

[37] See footnote 20.

[38] DOE requests $15 million for this effort for FY2016. DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 270.

[39] Interagency Working Group on Social Cost of Carbon, U.S. Government, *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis—Under Executive Order 12866*, May 2013, Revised July 2015.

[40] Office of Management and Budget, *Statement of Administration Policy*, H.R. 2028—*Energy and Water Development and Related Agencies Appropriations Act, 2016*, April 28, 2015.

Senate

The Senate Committee on Appropriations reported H.R. 2028 with an amendment in the nature of a substitute for FY2016 E&W development appropriations. It would fund EERE at $1.95 billion, an approximate decrease of $26 million from the FY2015 enacted level of $1.92 billion and an approximate decrease of $773 million from the FY2016 budget request of $2.72 billion.[41] Directives, exclusions, and more are provided in the committee report. Some of the directives contained in the report are as follows:[42]

- Urges the Secretary to work with the natural-gas vehicle industry to identify needs and develop solutions for additional engines and emission-control technologies to obtain the emission advantages when using natural gas in high-efficiency engines (consistent with the House bill);[43]
- Provides no less than $20 million to support the Alternative Fuel Vehicle Community Partner projects and $2.5 million for the Advanced Vehicle Competitions (in contrast to the House bill);
- Provides $45 million for DOE to collaborate with the Navy and USDA on advanced biofuel production that meets military fuel specifications (in contrast to the House bill);
- Directs the Secretary to do more to consider biopower as a viable bioenergy technology (e.g., include biopower projects as eligible recipients for funding opportunities) (not mentioned by the House bill);[44]
- Provides zero funding for the proposed Mitigate Market Barriers program (in contrast to the House bill);[45]
- Provides funding to establish an additional Clean Energy Manufacturing Innovation Institute and directs that in future budget requests, the Secretary include the specific research topic to be associated with any proposed institutes (consistent with the House bill); and
- Directs DOE not to initiate any regulations in FY2016 using the May 2013 estimates for the social cost of carbon until a new working group is convened (consistent with the House bill).[46]

[41] S.Rept. 114-54.

[42] This is not an exhaustive list of all directives contained in the report. Additionally, there is no order of priority for the select directives mentioned.

[43] The Secretary referred to in this section refers to the Secretary of Energy.

[44] For more information on biopower, see CRS Report R41440, *Biopower: Background and Federal Support*, by Kelsi Bracmort.

[45] The House provides $10 million for the Mitigate Market Barriers program. DOE reports this new initiative would support the development and evaluation of advanced mitigation technologies that will help to better characterize and reduce potential impacts from wind power on eagles, to support industry in obtaining new permits required by the Bald and Golden Eagle Protection Act, and to better understand and develop mitigation measures to address the impacts of wind on birds and bats to help enable the effective coexistence of sensitive wildlife with expanded wind deployment. DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 126.

[46] DOE, *FY2016 Budget Request*, vol. 3, February 2015, p. 68.

Executive Branch Response

OMB submitted a letter to the Senate Committee on Appropriations communicating its serious concerns with the E&W development appropriations bill for FY2016.[47] OMB expressed its willingness to work with Congress to address the concerns mentioned in the letter. With regard to EERE, the letter states that

> [t]he bill reduces investment in the Department of Energy's Office of Energy Efficiency and Renewable Energy by nearly $790 million, or 29 percent, compared with the President's Budget. This significantly reduced level of funding would slash the number of research, development, and demonstration projects supported in cooperation with industry, universities, and the national labs—curtailing critical innovation and technological advancement in clean and renewable energy, as well as solutions to cut U.S. dependence on oil and reduce energy waste, all while also undermining the Nation's industrial competitiveness in the future global clean energy economy. For example, the bill cuts the Wind Energy program by 68 percent from the President's Budget and cuts funding for atmospheric modeling, advanced component manufacturing, grid integration, and avian species mitigation among other activities necessary to advance both on- and offshore wind.

Table 2. EERE FY2015 Enacted Appropriations, FY2016 Request, FY2016 House Passage, and FY2016 Senate Appropriations Committee Passage

(in millions)

	FY2015 Enacted	FY2016 Request	FY2016 House	FY2016 Senate Approp. Committee
EERE, Total	*1,923.9*	*2,723.0*	*1,657.8*	*1,950.0*
Sustainable Transportation	**602.0**	**793.0**	**514.8**	**614.0**
Vehicle Technologies	280.0	444.0	255.4	292.0
Bioenergy Technologies	225.0	246.0	165.3	225.0
Hydrogen and Fuel Cell Technologies	97.0	103.0	94.1	97.0
Renewable Energy	**456.0**	**645.2**	**326.8**	**423.6**
Solar Energy	233.0	336.7	151.6	241.6
Wind Energy	107.0	145.5	90.5	46.0
Water Power	61.0	67.0	38.7	65.0
Geothermal Technologies	55.0	96.0	46.0	71.0
Energy Efficiency	**642.0**	**1,029.6**	**617.6**	**669.4**
Advanced Manufacturing	200.0	404.0	205.0	214.0
Building Technologies	172.0	264.0	150.4	178.0
Federal Energy Management Program	27.0	43.1	18.8	27.0
Weatherization and Intergovernmental Program	243.0	318.5	243.4	250.4

[47] Office of Management and Budget, *Letter to the Chairman of the Senate Appropriations Committee*, June 2, 2015.

Weatherization Assistance Program	190.0	224.0	190.0	197.0
Training and Technical Assistance	3.0	4.0	3.0	3.0
NREL Site-Wide Facility Report	—	0.4	0.4	0.4
State Energy Program Grants	50.0	70.1	50.0	50.0
Local Technical Assistance Program	—	20.0	—	—
Corporate Support[a]	**237.0**	**255.2**	**218.0**	**243.0**
NREL	56.0	62.0	56.0	62.0
Use of Prior Year Balances	0.0	0.0	-19.3	—
Rescissions	-13.1	0.0	0.0	—

Source: DOE, *FY2016 Budget Request*, Vol. 3, February 2015; H.Rept. 114-91; S.Rept. 114-54.

a. Corporate support includes facilities and infrastructure, program direction, and strategic programs.

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