Congressional Research Service
Informing the legislative debate since 1914

Energy and Water Development: FY2016 Appropriations

Updated January 27, 2016

Congressional Research Service
https://crsreports.congress.gov
R43966

CRS REPORT
Prepared for Members and
Committees of Congress

Summary

The Energy and Water Development appropriations bill provides funding for Army Corps of Engineers (Corps) civil works projects, the Department of the Interior's Bureau of Reclamation (Reclamation), and the Department of Energy (DOE), as well as the Nuclear Regulatory Commission (NRC) and several other independent agencies. DOE typically accounts for about 80% of the bill's total funding.

President Obama's FY2016 budget request was released February 2, 2015. Including adjustments, the request for Energy and Water Development agencies totaled $36.04 billion, compared with a total of $34.78 billion appropriated for FY2015, an increase of 3.6%. The House approved its version of the FY2016 Energy and Water Development Appropriations bill on May 1, 2015 (H.R. 2028, H.Rept. 114-91), and the Senate Appropriations Committee followed on May 21, 2015 (H.R. 2028, S.Rept. 114-54); both bills provided total budget authority of about $35.4 billion.

After lengthy negotiations, Congress enacted an omnibus funding measure on December 18, 2015, the Consolidated Appropriations Act, 2016 (H.R. 2029, P.L. 114-113). The omnibus measure provided a total of $37.3 billion for energy and water programs for FY2016, an increase of 7.3% over FY2015.

Major Energy and Water Development funding highlights for FY2016 included

- *Waters of the United States.* Language to block a controversial rulemaking to define "waters of the United States" was considered but not adopted;
- *Energy Efficiency in Manufacturing and Vehicles.* DOE's energy efficient manufacturing research would have more than doubled and research on energy efficient vehicles would have risen 59% under the FY2016 budget request, but smaller increases were approved;
- *Nuclear Waste Management.* The House approved $175 million for the statutorily authorized candidate disposal site at Yucca Mountain, NV, while the Senate Appropriations Committee would have authorized and funded an interim storage pilot facility, but none of those provisions were adopted;
- *ITER Fusion Reactor*. Cost, schedule, and management concerns were raised about the International Thermonuclear Experimental Reactor (ITER);
- *Nuclear Weapons Activities.* Congress approved the Administration's requested 10.7% increase for weapons activities and a proposal to combine and transfer two counterterrorism programs within DOE's National Nuclear Security Administration;
- *Waste Isolation Pilot Plant (WIPP) Recovery.* Efforts to resume operations at the WIPP defense transuranic waste repository in New Mexico are to continue in FY2016 with decreased total funding; and
- *Surplus Plutonium Disposition.* Level funding was approved, as requested, for a multibillion-dollar plant to convert surplus nuclear weapons plutonium into civilian nuclear reactor fuel.

For FY2015, appropriations for Energy and Water Development programs were included in the Consolidated and Further Continuing Appropriations Act, 2015 (H.R. 83, Division D). For details, see CRS Report R43567, *Energy and Water Development: FY2015 Appropriations*, coordinated by Mark Holt.

Contents

Introduction and Overview ... 1
Funding Issues and Initiatives ... 3
- Waters of the United States ... 3
- Energy Efficiency in Manufacturing and Vehicles ... 4
- Nuclear Waste Management ... 4
- International Thermonuclear Experimental Reactor ... 4
- Nuclear Weapons Activities ... 5
- Surplus Plutonium Disposition ... 5
- Cleanup of DOE Nuclear Facilities ... 5
- Energy-Water Nexus ... 6

Bill Status and Recent Funding History ... 6
Description of Major Energy and Water Programs ... 7
- Corps of Engineers ... 7
- Bureau of Reclamation ... 9
- Department of Energy ... 10
  - Energy Efficiency and Renewable Energy ... 12
  - Electricity Delivery and Energy Reliability ... 13
  - Nuclear Energy ... 14
  - Fossil Energy Research and Development ... 15
  - Strategic Petroleum Reserve ... 15
  - Science ... 16
  - ARPA-E ... 17
  - Loan Guarantees and Direct Loans ... 17
  - Nuclear Weapons Stockpile Stewardship ... 17
  - Defense Nuclear Nonproliferation ... 19
  - Cleanup of Former Nuclear Sites ... 19
  - Power Marketing Administrations ... 21

Title IV: Independent Agencies ... 21
- Nuclear Regulatory Commission ... 21

Congressional Hearings ... 22
- House ... 22
- Senate ... 23

Figures

Figure 1. Major Components of the Energy and Water Development Appropriations Bill ... 1

Tables

Table 1. Status of Energy and Water Development Appropriations, FY2016 ... 6
Table 2. Energy and Water Development Appropriations, FY2008 to FY2016 ... 6
Table 3. Energy and Water Development Appropriations Summary ... 7
Table 4. Army Corps of Engineers ... 8

Table 5. Bureau of Reclamation 10
Table 6. Department of Energy.....11
Table 7. Independent Agencies Funded by Energy and Water Development Appropriations..... 22

Contacts

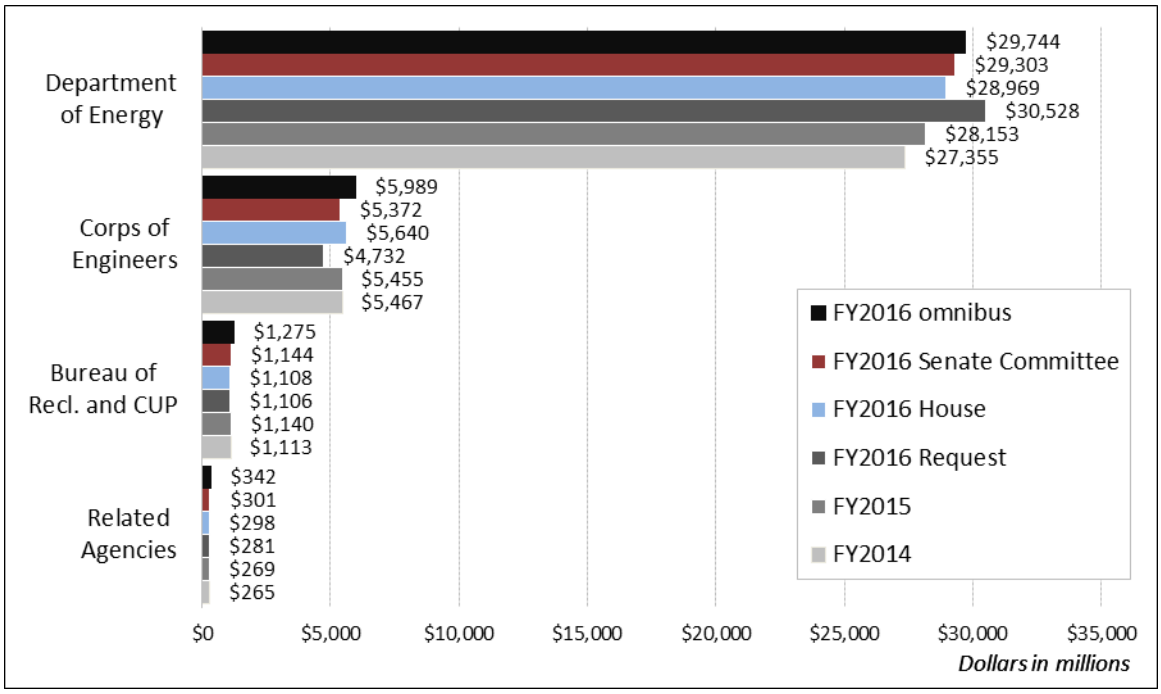
Author Information..... 23
Key Policy Staff 24

Introduction and Overview

The Energy and Water Development appropriations bill includes funding for civil works projects of the U.S. Army Corps of Engineers (Corps), the Department of the Interior's Central Utah Project (CUP) and Bureau of Reclamation (Reclamation), the Department of Energy (DOE), and a number of independent agencies, including the Nuclear Regulatory Commission (NRC) and the Appalachian Regional Commission (ARC).

President Obama's FY2016 budget request, released February 2, 2015, would have provided $36.04 billion for agencies in the Energy and Water Development bill—3.6% above the $34.78 billion appropriated for FY2015.[1] The FY2016 request for DOE was up by 8.4%, led by a proposed 13.0% increase in energy programs. The Corps would have been reduced by 13.2%, and the Bureau of Reclamation would have received a 3.0% cut. **Figure 1** compares the major components of the Energy and Water Development bill.

Figure 1. Major Components of the Energy and Water Development Appropriations Bill



Sources: Agency budget justifications, congressional appropriations explanatory statements, Congressional Budget Office. Includes some rescissions and other adjustments.

The House approved its version of the FY2016 Energy and Water Development Appropriations Bill (H.R. 2028, H.Rept. 114-91) May 1, 2015, by a vote of 244-177. Total funding in the bill, including rescissions, was $35.4 billion, 1.8% below the Administration's request. The House provided $5.64 billion for the Corps, 19.2% above the request, and $28.97 billion for DOE, 5.1% below the request. The House total for the Bureau of Reclamation was nearly the same as the request.

[1] Bill totals include some rescissions and other adjustments.

The Senate Appropriations Committee reported its version of H.R. 2028 (S.Rept. 114-54) on May 21, 2015. Total funding in the bill was $35.37 billion, including rescissions, slightly below the House-passed level. Compared with the House level, the Senate committee bill increased DOE funding by $333 million (1.2%) and decreased the Corps by $268 million (4.7%). The Senate measure did not include the House amendments discussed below.

Congress enacted an omnibus funding measure for the entire federal government on December 18, 2015, the Consolidated Appropriations Act, 2016 (P.L. 114-113). The omnibus measure provided a total of $37.3 billion for energy and water programs for FY2016, an increase of 7.3% over FY2015. Funding in the omnibus measure included $29.7 billion for DOE (up 5.7%), $6.0 billion for the Corps (up 9.8%), $1.3 billion for Reclamation (up 11.8%), and $342 million for independent agencies (up 27.0%).[2]

President Obama strongly opposed the House Appropriations Committee bill in an April 28, 2015, Statement of Administration Policy. The Administration particularly criticized the bill's reductions in the President's budget request for energy efficiency and renewable energy and strongly objected to a prohibition on the Corps rulemaking on the definition of "waters of the United States." According to the Administration statement, the President's senior advisors would have recommended a veto of the House Committee bill.[3]

Several amendments generated substantial debate and were adopted by the House after recorded votes:

- Prohibiting DOE from using funds in the bill to enforce light bulb efficiency standards. Offered by Representative Michael C. Burgess; adopted 232-189. This prohibition was included in Division D, Sec. 312 of P.L. 114-113.
- Prohibiting DOE from using a report on lifecycle greenhouse gas emissions when making determinations on liquefied natural gas exports. Offered by Representative Keith J. Rothfus; adopted 232-172. It was not included in P.L. 110-114.
- Prohibiting funds in the bill from being used for DOE's Climate Model Development and Validation program. Offered by Representative Paul A. Gosar; adopted 224-184. It was not included in P.L. 110-114.
- Prohibiting funds in the bill from being used to purchase water to meet stream flow requirements in California. Offered by Representative Tom McClintock; adopted 228-183. It was not included in P.L. 110-114.
- Prohibiting funds in the bill from being used to limit Clean Water Act exemptions for certain agricultural activities. Offered by Representative Doug LaMalfa; adopted 239-174. Similar language was included in Division D, Sec. 110 of P.L. 114-113.
- Prohibiting funds in the bill from being used to deliver water to the Trinity River above minimum requirements or to supplement flows in the Klamath River.

[2] For details, see the Explanatory Statement for the Consolidated Appropriations Act, 2016, Division D, *Congressional Record*, December 17, 2015, Book II, p. H10056, https://www.congress.gov/crec/2015/12/17/CREC-2015-12-17-bk2.pdf. The grand total in the Explanatory Statement includes $26.9 million in rescissions but excludes $111.1 million in additional scorekeeping adjustments that would reduce the grand total to $37.2 billion, the subcommittee allocation shown in S.Rept. 114-197. See Senate Committee on Appropriations, *Comparative Statement of New Budget Authority FY2016*, January 12, 2016, p. 11.

[3] Office of Management and Budget, Statement of Administration Policy, H.R. 2018—Energy and Water Development and Related Agencies Appropriations Act, 2016, April 28, 2015, https://www.whitehouse.gov/omb/114/legislative_sap_date_2015.

Offered by Representative Doug LaMalfa; adopted 228-183. It was not included in P.L. 110-114.

Congressional consideration of the annual Energy and Water Development appropriations bill is affected by certain procedural and statutory budget enforcement measures. The procedural budget enforcement is primarily through limits associated with the budget resolution on total discretionary spending and spending under the jurisdiction of each appropriations subcommittee. Statutory budget enforcement is derived from the Budget Control Act of 2011 (BCA; P.L. 112-25).

The BCA established limits on defense and nondefense discretionary spending. These limits are in effect for each of the fiscal years between FY2012 and FY2021, and are primarily enforced by an automatic spending reduction process called sequestration. The Bipartisan Budget Act of 2013 (P.L. 113-67) established higher levels for the FY2014 and FY2015 spending limits than what would have otherwise been in effect. The original BCA process to calculate the limits would have again become effective starting in FY2016, but higher limits were enacted by the Bipartisan Budget Act of 2015 (P.L. 114-74).

(For more information on discretionary spending limits, see CRS Report CRS Report R44062, *Congressional Action on FY2016 Appropriations Measures*, by Jessica Tollestrup.)

For FY2015, appropriations for Energy and Water Development programs were included in the Consolidated and Further Continuing Appropriations Act, 2015 (H.R. 83). Energy and Water funding totaled $519 million above the request and $653 million above FY2014, including rescissions. The consolidated appropriations measure passed the House on December 11, 2014, and the Senate on December 13, 2014, and was signed by the President on December 16, 2014 (P.L. 113-235). For details, see CRS Report CRS Report R43567, *Energy and Water Development: FY2015 Appropriations*, coordinated by Mark Holt.

Funding Issues and Initiatives

The Administration's FY2016 Energy and Water Development appropriations request and subsequent congressional action have highlighted several significant areas of debate. The issues described in this section—listed approximately in the order they appear in the Energy and Water Development bill—were selected based on the total funding involved and the percentage of increases or decreases, the amount of congressional attention, and their impact on broader public policy considerations.

Waters of the United States

The Corps requested but did not receive a $5 million increase for Clean Water Act (CWA) rulemaking activities, including developing a final rule to define "waters of the United States (WOTUS)" jointly with the Environmental Protection Agency (EPA). While FY2016 funding was being considered in Congress, the Corps and EPA promulgated the final rule on June 29, 2015.[4] Waters under CWA jurisdiction are subject to CWA regulatory requirements; for example, they cannot be dredged or filled without a Corps permit. H.R. 2028, as approved by the House, would have barred the Corps from developing, adopting, implementing, or enforcing any change to rules or guidance pertaining to the CWA definition of "waters of the United States," but the restriction was not included in the Senate bill or the final omnibus act. Similar provisions were included in proposed FY2015 appropriations bill language during the 113th Congress, but were not enacted.

[4] Environmental Protection Agency and the Army Corps of Engineers, 80 *Federal Register* 37054, June 29, 2015.

For more information, see CRS Report R43943, *EPA and the Army Corps' "Waters of the United States" Rule: Congressional Response and Options*, by Claudia Copeland.

Energy Efficiency in Manufacturing and Vehicles

DOE's energy efficient manufacturing research funding would have more than doubled under the Administration request, with most of the increase going to the establishment of two new Clean Energy Manufacturing Institutes as part of the National Network for Manufacturing Innovation.[5] Research on energy efficient vehicles would have risen 59% under the FY2016 budget request. The main activity increased under the vehicles program would have been the Electric Vehicle Everywhere Grand Challenge Program, a 10-year program announced in March 2012 to encourage production of cost-competitive plug-in electric vehicles. The funding request was included in DOE's Energy Efficiency and Renewable Energy program, which would have seen a total increase of 42%, from $1.914 billion in FY2015 to $2.723 billion in FY2016. The proposed increases were largely rejected by the House and by the Senate committee. The enacted omnibus funding measure provided $2.073 billion for energy efficiency and renewables, including a 14% increase in manufacturing research and a 10% boost in vehicle technologies.

Nuclear Waste Management

Funding for the disposition of highly radioactive "spent," or "used," fuel from nuclear power plants would have risen 52%—from $71.5 million to $108.4 million—in the Administration's request. The additional funding would have expanded DOE's efforts to develop a "consent based" waste management system as an alternative to a planned repository at Yucca Mountain, NV, which the Administration is no longer pursuing. But the House, as it has in the past, rejected funding for the Administration's nuclear waste management program and provided $175 million to continue the Yucca Mountain licensing process. Following the pattern of recent years, the Senate committee did not include funding for Yucca Mountain but authorized a pilot consolidated nuclear waste surface storage facility. The omnibus funding measure provided $85 million for used nuclear fuel disposition but did not include the House funding for Yucca Mountain or the Senate Committee pilot storage facility. For more information, see CRS Report RL33461, *Civilian Nuclear Waste Disposal*, by Mark Holt.

International Thermonuclear Experimental Reactor

The International Thermonuclear Experimental Reactor (ITER), under construction in France, continues to draw congressional concerns about management, schedule, and cost. The United States is to pay 9.09% of the project's construction costs, including contributions of components, cash, and personnel. The total U.S. share of the cost is currently estimated at between $4.0 billion and $6.5 billion, up from $1.45 billion to $2.2 billion in 2008. The Administration's proposed U.S. contribution for FY2016 was $150.0 million, the same as the FY2015 level. The House approved the Administration request, while warning that future support would depend on management reform. The Senate committee proposed eliminating ITER funding. P.L. 114-113 provided $115 million, along with reporting requirements on the project's schedule and management.

[5] For details, see CRS Report R42625, *The Obama Administration's Proposal to Establish a National Network for Manufacturing Innovation*, by John F. Sargent Jr.

Nuclear Weapons Activities

Maintaining U.S. nuclear bombs and missile warheads is the responsibility of DOE's National Nuclear Security Administration (NNSA). The Administration requested $8.85 billion for NNSA's Weapons Activities in FY2016, a 10.7% increase over the comparable funding level in FY2015. For FY2016, the Administration proposed to combine two counterterrorism programs that had been located in Weapons Activities—Nuclear Counterterrorism Incident Response, and Counterterrorism and Counterproliferation—and transfer them to Defense Nuclear Nonproliferation, also run by NNSA. P.L. 114-113 provided the Administration's full request for Weapons Activities, including the transfer and consolidation of the counterterrorism and counterproliferation programs.

Surplus Plutonium Disposition

The Mixed-Oxide Fuel Fabrication Facility (MFFF), which would make fuel for nuclear reactors out of surplus weapons plutonium, has faced sharply escalating construction and operation cost estimates. After Congress rejected the Administration's proposal for FY2015 to place the controversial South Carolina project in "cold standby," DOE requested level funding of $345 million for continued construction in FY2016. DOE completed a congressionally mandated study of MFFF and a potentially less expensive alternative plutonium disposal method during FY2015, to dilute the surplus plutonium for disposal at the Waste Isolation Pilot Plant (WIPP) in New Mexico. P.L. 114-113 provided $340 million for MFFF construction, plus $5 million for planning and design of the "dilute and dispose" option. For more information, see CRS Report R43125, *Mixed-Oxide Fuel Fabrication Plant and Plutonium Disposition: Management and Policy Issues*, by Mark Holt and Mary Beth D. Nikitin.

Cleanup of DOE Nuclear Facilities

DOE's Office of Environmental Management (EM) is responsible for environmental cleanup and waste management at the Department's nuclear facilities. P.L. 114-113 provided $6.22 billion for EM, a $400 million increase above the request of $5.82 billion, but did not fund a request of $472 million for the federal contribution to the Uranium Enrichment Decontamination and Decommissioning Fund. The nearly flat funding request—$5.82 billion requested in FY2016 compared with $5.86 billion enacted in FY2015—would have been coupled with efforts by DOE to negotiate changes in its environmental compliance requirements that could modify cleanup milestones at some sites, according to DOE's budget justification. The milestones are specified in enforceable environmental compliance agreements among DOE, the Environmental Protection Agency, and the states. DOE called for similar milestone renegotiations in its FY2015 budget justification.

DOE efforts to resume operations at WIPP have continued in FY2016. DOE plans to resume limited waste disposal operations sometime in the first quarter of calendar year 2016.[6] WIPP is the centralized geologic repository for the permanent disposal of transuranic wastes generated at other DOE sites. WIPP operations ceased after two incidents in February 2014, one involving a truck fire and the other involving a radiological release. P.L. 114-113 provided $300 million for WIPP within the Environmental Management appropriation, of which $82 million was allocated to recovery activities. The total FY2016 appropriation for WIPP is $57 million above the request of $243 million, and $20 million below the FY2015 appropriation of $320 million.

[6] See the DOE WIPP website for status information: http://www.wipp.energy.gov/wipprecovery/recovery.html.

Energy-Water Nexus

DOE proposed a new Energy-Water Nexus crosscutting activity for FY2016 that would analyze the relationships between energy and water use and conduct research on water and energy systems. In justifying the new activity, DOE noted that energy is a major user of the nation's water and that extraction, distribution, and treatment of water requires large amounts of energy. DOE offices that would be involved in this crosscut include Energy Policy and Systems Analysis, International Affairs, Energy Efficiency and Renewable Energy, Fossil Energy, Indian Energy Policy and Programs, and Science. Funding for Energy-Water Nexus activities, to be provided through existing program offices, would total $38.4 million in FY2016. The initiative is currently being implemented by the Secretary of Energy's Water-Energy Tech Team,[7] although it was not specifically mentioned in P.L. 114-113. For more information, see CRS Report R43200, *Energy-Water Nexus: The Water Sector's Energy Use*, by Claudia Copeland, and CRS Report R43199, *Energy-Water Nexus: The Energy Sector's Water Use*, by Nicole T. Carter.

Bill Status and Recent Funding History

Table 1 indicates the steps taken during consideration of the FY2016 funding legislation.

Table 1. Status of Energy and Water Development Appropriations, FY2016

(budget authority in billions of current dollars)

Subcommittee Markup		House Report	House Passed	Senate Report	Senate Passed	Conf. Report	Final Approval		Public Law
House	Senate						House	Senate	
4/15/2015	5/19/2015	4/24/2015	5/1/2015	5/21/2015			12/18/2015	12/18/2015	12/18/2015

Table 2 includes budget totals for energy and water development appropriations enacted for FY2008 through FY2016.

Table 2. Energy and Water Development Appropriations, FY2008 to FY2016

(budget authority in billions of current dollars)

FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
30.9	40.5[a]	33.4	31.7	34.4[b]	36.0[c]	34.1	34.8	37.3

Source: Compiled by CRS.

Notes: Figures exclude permanent budget authorities and reflect rescissions.

a. Includes $7.5 billion for Advanced Technology Vehicle Manufacturing Loan Program.

b. Includes $1.7 billion in emergency funding for the Corps of Engineers.

c. Includes $5.4 billion in emergency funding for the Corps of Engineers.

[7] DOE, "Water Energy Tech Team," undated website, http://www.energy.gov/water-energy-tech-team.

Description of Major Energy and Water Programs

The annual Energy and Water Development Appropriations bill includes four titles: Title I—Corps of Engineers—Civil; Title II—Department of the Interior (Central Utah Project and Bureau of Reclamation); Title III—Department of Energy; and Title IV—Independent Agencies, as shown in **Table 3**. Major programs in the bill are described in this section in the approximate order they appear in the bill. Funding details for many of these programs are provided in separate CRS reports as indicated.

Table 3. Energy and Water Development Appropriations Summary

(budget authority in millions of current dollars)

Title	FY2014 Approp.	FY2015 Approp.	FY2016 Request	FY2016 House	FY2016 S.Com	FY2016 omnibus
Title I: Corps of Engineers	5,468	5,455	4,732	5,640	5,372	5,989
Title II: CUP and Reclamation	1,113	1,140	1,106	1,107	1,144	1,275
Title III: Department of Energy	27,355	28,153	30,528	28,968	29,302	29,744
Title IV: Independent Agencies	265	269	281	298	301	342
Subtotal	34,200	35,045	36,647	36,015	36,119	37,350
Rescissions and Scorekeeping Adjustments[a]	-74	-265	-611	-613	-751	-27
E&W Total	**34,126**	**34,780**	**36,036**	**35,402**	**35,368**	**37,323[b]**

Source: Administration budget requests, H.Rept. 113-486, S.Rept. 114-54, Congressional Budget Office, H.R. 2029 explanatory statement, https://www.congress.gov/crec/2015/12/17/CREC-2015-12-17-bk2.pdf.

a. Budget "scorekeeping" refers to official determinations of spending amounts for congressional budget enforcement purposes. These scorekeeping adjustments may include offsetting revenues from various sources and rescissions.

b. The grand total in the Explanatory Statement includes $26.9 million in rescissions but excludes $111.1 million in additional scorekeeping adjustments that would reduce the grand total to $37.185 billion, the subcommittee allocation shown in S.Rept. 114-197. See Senate Committee on Appropriations, Comparative Statement of New Budget Authority FY2016, January 12, 2016, p. 11.

Corps of Engineers

The U.S. Army Corps of Engineers is an agency in the Department of Defense with both military and civilian responsibilities. Under its civil works program, which is funded by the Energy and Water Appropriations bill, the Corps plans, builds, operates, and maintains a wide range of water resources facilities. Corps appropriations are generally authorized in water resources development acts. Most recently, Congress enacted a new water resources development act in June 2014, the Water Resources Reform and Development Act of 2014 (WRRDA, P.L. 113-121). This bill authorized new Corps projects and studies and altered numerous Corps policies and procedures.[8]

[8] For detailed background on the WRRDA 2014 legislation, see CRS Report R43298, *Water Resources Reform and Development Act of 2014: Comparison of Select Provisions*, by Nicole T. Carter et al.

Corps funding is part of the ongoing debate over congressionally directed spending, or "earmarks." Unlike highways and municipal water infrastructure programs, federal funds for the Corps are not distributed to states or projects based on a formula or delivered via competitive grants. Generally about 85% of the appropriations for Corps civil works activities are directed to specific projects.

In addition to specific projects identified for funding in the President's budget, for decades Congress annually identified during the discretionary appropriations process many additional Corps projects to receive funding.[9] In the 112th Congress, site-specific project line items added by Congress (i.e., earmarks) became subject to House and Senate earmark moratorium policies. As a result, Congress generally has not added funding at the project level since FY2010. In lieu of the traditional project-based increases, Congress has included "additional funding" for select categories of Corps projects (e.g., "ongoing navigation work"), and provided direction and limitations on the use of these funds.[10]

For more information, see CRS In Focus IF10176, *Army Corps of Engineers: FY2016 Appropriations*, by Charles V. Stern.

Table 4. Army Corps of Engineers

(budget authority in millions of current dollars)

Program	FY2014 Approp.	FY2015 Approp.	FY2016 Request	FY2016 House	FY2016 S.Com.	FY2016 omnibus
Investigations and Planning	125.0	122.0	97.0	113.5	109.0	121.0
Construction	1,656.0	1,639.5	1,172.0	1,635.0	1,641.0	1,862.3
Mississippi River and Tributaries (MR&T)	307.0	302.0	225.0	275.0	330.0	345.0
Operation and Maintenance (O&M)	2,861.0	2,908.5	2,710.0	3,094.3	2.909.0	3,137.0
Regulatory	200.0	200.0	205.0	199.6	200.0	200.0
General Expenses	182.0	178.0	180.0	179.0	178.0	179.0
FUSRAP[a]	103.5	101.5	104.0	104.0	101.5	112.0

[9] While congressional earmarks make up a relatively small percentage of most agency budgets, a significant number of Corps projects historically received additional funding from Congress for construction or operational expenditures.

[10] In recent years, Congress has provided the Corps funding above the President's request in appropriations legislation and provided guidance to the agency on how to distribute the additional funding for several broad categories of projects in accompanying reports or explanatory text. Generally, Congress has instructed the Corps to make additional project level allocations in a "work plan" and report back to Congress. Some of the categories to be funded in the work plan were designated by Congress as only being available for projects which were not included in the Administration's budget request. Recent Work Plan allocations are available at http://www.usace.army.mil/Missions/CivilWorks/Budget.aspx.

Program	FY2014 Approp.	FY2015 Approp.	FY2016 Request	FY2016 House	FY2016 S.Com.	FY2016 omnibus
Flood Control and Coastal Emergencies (FC&CE)	28.0	28.0	34.0	34.0	28.0	28.0
Office of the Asst. Secretary of the Army	5.0	3.0	5.0	4.8	3.0	4.8
Rescission		-28.0			-128.0	
Total Title I	**5,467.5**	**5,454.5**	**4,732.0**	**5,639.1**	**5,371.5**	**5,989**

Source: FY2016 budget request and Work Plans for FY2013, FY2014, and FY2015; S.Rept. 114-54; P.L. 113-2; H.R. 2029 explanatory statement.

a. Formerly Utilized Sites Remedial Action Program.

Bureau of Reclamation

Most of the large dams and water diversion structures in the West were built by, or with the assistance of, the Bureau of Reclamation. While the Army Corps of Engineers built hundreds of flood control and navigation projects, Reclamation's mission was to develop water supplies, primarily for irrigation to reclaim arid lands in the West for farming and ranching.

Today, Reclamation manages hundreds of dams and diversion projects, including more than 300 storage reservoirs in 17 western states. These projects provide water to approximately 10 million acres of farmland and a population of 31 million. Reclamation is the largest wholesale supplier of water in the 17 western states and the second-largest hydroelectric power producer in the nation. Reclamation facilities also provide substantial flood control, recreation, and fish and wildlife benefits. Operations of Reclamation facilities are often controversial, particularly for their effect on fish and wildlife species and conflicts among competing water users.

As with the Corps of Engineers, the Reclamation budget is made up largely of individual project funding lines and relatively few "programs." Also similar to the Corps, these Reclamation projects have often been subject to earmark disclosure rules. The current moratorium on earmarks restricts congressional steering of money directly toward specific Reclamation projects as had been done in the past.

Reclamation's single largest account, Water and Related Resources, encompasses the agency's traditional programs and projects, including construction, operations and maintenance, dam safety, and ecosystem restoration, among others.[11] Reclamation also typically requests funds in a number of smaller accounts, and has proposed additional accounts in recent years. Congress has provided Reclamation additional appropriations in recent years to address drought conditions in the West, including $50 million in additional funding for Western Drought Response in FY2015.

[11] The Water and Related Resources Account is largely funded by the Reclamation Fund, which receives and distributes receipts related to a number of federal activities (including royalties received from oil and gas leasing on federal lands). For more on this fund and financing of selected Reclamation Projects, see CRS Report R41844, *The Reclamation Fund: A Primer*, by Charles V. Stern.

Implementation and oversight of the Central Utah Project (CUP) is conducted by a separate office from Reclamation within the Department of the Interior. The Administration has proposed for several years to shift those responsibilities to Reclamation.

For more information, see CRS In Focus IF10175, *Bureau of Reclamation: FY2016 Appropriations*, by Charles V. Stern.

Table 5. Bureau of Reclamation

(budget authority in millions of current dollars)

Program	FY2013 Approp.	FY2014 Approp.	FY2015 Approp.	FY2016 Request	FY2016 House	FY2016 S.Com.	FY2016 omnibus
Water and Related Resources	848.2	954.1	978.1	805.2	950.7	988.1	1,119,0
Policy and Administration	56.9	60.0	58.5	59.5	59.5	58.5	59.5
CVP Restoration Fund (CVPRF)	50.4	53.3	57.0	49.5	49.5	49.5	49.5
Calif. Bay-Delta (CALFED)	37.6	37.0	37.0	37.0	37.0	37.0	37.0
San Joaquin Restoration Fund[a]	-	-	-	35.0	0	0	0
Indian Water Rights Settlement[a]	-	-	-	112.5	0	0	0
Rescission	0	0	-.5	0	0	0	0
Gross Current Reclamation Authority	**993.0**	**1,104.4**	**1,130.1**	**1,098.7**	**1,096.7**	**1,133.2**	**1,265.0**
Central Utah Project (CUP) Completion	**21.0**	**8.7**	**9.9**	**7.3**	**9.9**	**9.9**	**10.0**
Total, Title II Current Authority (CUP and Reclamation)	**1,014.0**	**1,113.1**	**1,140.0**	**1,106.0**	**1,106.5**	**1,143.0**	**1,275.0**

Source: FY2016 budget request, H.R. 83 Explanatory Statement, S.Rept. 114-54, H.R. 2029 explanatory statement.

Notes: Totals may not add due to rounding. CVP: Central Valley Project.

a. As in previous requests, the Administration's request includes funding for these items, which have in the past been funded within the Water and Related Resources Account, as new accounts. For FY2015, the House and the Senate subcommittee again rejected the Administration's proposal for these new accounts. The FY2016 request shows FY2015 appropriations under these categories for comparability.

Department of Energy

The Energy and Water Development bill has funded all DOE programs since FY2005. Major DOE activities include research and development (R&D) on renewable energy, energy efficiency, nuclear power, and fossil energy, the Strategic Petroleum Reserve, energy statistics, general science, environmental cleanup, and nuclear weapons and nonproliferation programs. **Table 6** provides the recent funding history for DOE programs, which are briefly described further below. DOE's full budget justifications are available at http://energy.gov/cfo/reports/budget-justification-supporting-documents.

Table 6. Department of Energy

(budget authority in millions of current dollars)

Program	FY2014 Approp.	FY2015 Approp.	FY2016 Request	FY2016 House	FY2016 S.Com.	FY2016 omnibus
ENERGY PROGRAMS						
Energy Efficiency and Renewable Energy	1,901.7	1,923.9	2,723.0	1,668.8	1,950.0	2,073.0
Electricity Delivery and Energy Reliability	147.3	147.0	270.1	187.5	152.3	206.0
Nuclear Energy	888.4	833.4	907.6	936.2	950.2	986.2
Fossil Energy R&D	561.9	571.0	560.0	605.0	610.0	632.0
Naval Petroleum and Oil Shale Reserves	20.0	20.0	17.5	17.5	17.5	17.5
Elk Hills School Lands Fund	0	15.6	0	0	0	0
Strategic Petroleum Reserve	189.4	200.0	257.0	212.0	200.0	212.0
Northeast Home Heating Oil Reserve	8.0	1.6	7.6	7.6	7.6	7.6
Energy Information Administration	117.0	117.0	131.0	117.0	122.0	122.0
Non-Defense Environmental Cleanup	231.8	246.0	220.2	229.2	244.0	255.0
Uranium Enrichment Decontamination and Decommissioning Fund	598.6	625.0	542.3	625.0	614.0	673.7
Science	5,066.4	5,067.7	5,339.8	5,100.0	5,143.9	5,350.2
Advanced Research Projects Agency-Energy (ARPA-E)	280.0	280.0	325.0	280.0	291.0	291.0
Nuclear Waste Disposal	0	0	0	150.0	0	0
Departmental Admin. (net)	126.4	126.0	153.5	74.0	131.0	131.0
Office of Inspector General	42.1	40.5	46.4	46.4	46.4	46.4
Office of Indian Energy	0	0	20.0	0	0	0
Advanced Technology Vehicles Manufacturing Loans	6.0	4.0	6.0	6.0	6.0	6.0
Title 17 Loan Guarantee	20.0	17.0	17.0	17.0	17.0	17,0
Tribal Indian Energy Loan Guarantee	0	0	11.0	0	0	0
Rescission (Clean Coal Technology)	0	-6.6	0	0	0	0
TOTAL, ENERGY PROGRAMS	**10,205.0**	**10,232,7**	**11,555.0**	**10,279.2**	**10,502.8**	**11,026.6**
DEFENSE ACTIVITIES						
National Nuclear Security Administration (NNSA)						
Weapons Activities	7,781.0	8,186.7[a]	8,846.9	8,713.0	8,882.4	8,846.9
Nuclear Nonproliferation	1,954.0	1,616.6	1,940.3	1.907.6	1,705.9	1,940.3
Naval Reactors	1,095.0	1.234.0	1,375.5	1,322.8	1,300.0	1,375.5

Program	FY2014 Approp.	FY2015 Approp.	FY2016 Request	FY2016 House	FY2016 S.Com.	FY2016 omnibus
Office of Admin./Salaries and Expenses	377.0	369.6	402.7	385.5	375.0	363.8
Total, NNSA	**11,207.0**	**11,407.3**	**12,565.4**	**12,328.9**	**12,263.3**	**12,526.5**
Defense Environmental Cleanup	5,000.0	5,000.0	5,055.6	5,055.6	5,180.0	5,289.7
Defense Uranium Enrichment D&D	0	463.0	471.8[b]	471.8	614.0	0
Other Defense Activities	755.0	754.0	774.4	767.6	764.0	776.4
TOTAL, DEFENSE ACTIVITIES	**16,962.0**	**17,624.3**	**18,867.2**	**18,623.8**	**18,821.3**	**18,592.7**
POWER MARKETING ADMINISTRATION (PMAs)						
Southeastern	0	0	0	0	0	0
Southwestern	11.9	11.4	11.4	11.4	11.4	11.4
Western	95.9	93.4	93.4	93.4	93.4	93.4
Falcon and Amistad O&M	0.4	0.2	0.2	0.2	0.2	0.2
Colorado River Basins Fund	-23.0					
TOTAL, PMAs	**85.2**	**105.0**	**105.0**	**105.0**	**105.0**	**105.0**
Subtotal, DOE	**27,251**	**28,152.9**	**30,527.2**	**29,018.4**	**29,429.2**	**29,744.2**
Offsets	**-26.2**	**-236.1**	**0**	**-51.2**	**-125.9**	**-26.9**
Total, DOE	**27,225**	**27,916.8**	**30,527.2**	**28,967.2**	**29,303.2**	**29,717.3**

Source: H.R. 83 Explanatory Statement, FY2015 budget request, H.Rept. 113-486, S.Rept. 114-54, Congressional Budget Office, H.R. 2029 explanatory statement. Totals may not add due to rounding.

a. This is the level as enacted in the FY2015 appropriations bill. NNSA proposed to change its budget structure for FY2016, such as transferring Nuclear Counterterrorism Incident Response from Weapons Activities to Defense Nuclear Nonproliferation. The FY2015 Weapons Activities figure comparable to the FY2016 figure is $8,007.7 million.

b. Budget request proposed creating a new line item.

Energy Efficiency and Renewable Energy

President Obama has declared energy efficiency and renewable energy (EERE) to be a high priority, stressing their importance to jobs, economic growth, and U.S. manufacturing competitiveness. For example, the 2013 *Economic Report of the President* noted that "President Obama has set a goal of once again doubling generation from wind, solar, and geothermal sources by 2020." Congress has not supported most of the President's proposed annual funding increases, although a boost of about $150 million was approved for FY2016.

The Sustainable Transportation program area includes hydrogen and fuel cell technologies, bioenergy, and vehicle technology. DOE's electric vehicle program is driven by the 10-year EV-Everywhere Challenge (launched in 2012), which aims to achieve parity for plug-in electric vehicle (EV) affordability and convenience by 2022. A key supporting technology goal is to cut battery production cost from $300/kilowatt-hour (kwh) of battery capacity in 2014 to $125/kwh by 2022. The fuel cell program targets a cost below $40 per kilowatt (kw) and a durability of 5,000 hours (equivalent to 150,000 miles) by 2020. For hydrogen produced from renewable resources, the target is to bring the cost (dispensed and untaxed) below $4.00 per gasoline gallon-

equivalent (gge) by 2020. Bioenergy goals include the development of "drop-in" liquid fuels that would be largely compatible with existing energy infrastructure. The program aims to help the non-food "drop-in" biofuels reach a wholesale finished-fuel cost under $3 per gge by 2017 and $3/gge for algal biomass productivity by 2020.

Renewable energy programs focus on electricity generation from solar, wind, water, and geothermal sources. DOE's SunShot Initiative is aimed at halving the cost of solar power to 6 cents per kwh to make solar power cost-competitive without subsidies by 2020. There are three key goals for the wind program. First, for land-based windfarms, there is a goal for the energy cost of utility-scale turbines to drop from 8 cents to 5.7 cents/kwh by 2020 and 4.2 cents/kwh by 2030. Second, for offshore settings, the goal is to cut energy costs from 21 cents/kwh in 2010 to 17 cents/kwh (unsubsidized) by 2020. Third, there is an overall goal to increase installed windfarm capacity from 60 billion watts (gigawatts, gw) in 2012 to 125 gw by 2020 and 300 gw by 2030. The geothermal program aims to lower the risk of resource exploration and cut power production costs to 6 cents/kwh for hydrothermal power by 2020 and for newly developed technologies by 2030.

In the energy efficiency program area, the advanced manufacturing program has a general goal of reducing the energy use of manufactured goods across targeted product life-cycles by 50% over 10 years. More specific objectives include (1) 50% energy savings through advanced materials and industrial processes, (2) helping leading companies cut energy intensity by 25% over 10 years, and (3) facilitating installation of 40 gigawatts of combined heat and power equipment by 2020.[12] The building technologies program has a goal of reducing building energy use 50% by 2030. The program strategy is designed with three linked paths: Improve building components (envelope/windows, heating/ventilation/air conditioning, lighting, and sensors/controls), strengthen market demand (through cooperation with private industry), and raise energy efficiency levels for new equipment (via standards) and new buildings (via model codes).

The EERE program also provides grants to fund energy efficiency improvements and energy planning. Weatherization grants support state and local governments in providing home energy services to low-income families that help them reduce energy costs and save money. State energy grants support both administrative and program activities at many state energy offices.

Electricity Delivery and Energy Reliability

The DOE Office of Electricity Delivery and Energy Reliability (OE) has the mission of supporting more economically competitive, environmentally responsible, secure, and resilient U.S. energy infrastructure. To achieve that mission, OE supports electric grid modernization and resiliency through research and development (R&D), demonstration projects, partnerships, facilitation, modeling and analytics, and emergency preparedness and response. It is the federal government's lead entity for energy sector-specific responses to energy security emergencies—whether caused by physical infrastructure problems or by cybersecurity issues.

DOE's 2015 Grid Modernization Multi-Year Program Plan describes the Department's vision for "a future electric grid that provides a critical platform for U.S. prosperity, competitiveness, and innovation by delivering reliable, affordable, and clean electricity to consumers where they want it, when they want it, how they want it." To help achieve this vision, DOE has established three key national goals:

- 10% reduction in the economic costs of power outages by 2025;

[12] DOE, EERE-Advanced Manufacturing Office, *FY14 Budget At-a-Glance*, http://www1.eere.energy.gov/office_eere/pdfs/budget/manufacturing_ataglance_2014.pdf.

- 33% decrease in the cost of reserve margins while maintaining reliability by 2025; and
- 50% decrease in the net integration costs of distributed energy resources by 2025.[13]

For more details, see CRS Report R44357, *DOE's Office of Electricity Delivery and Energy Reliability (OE): A Primer, with Appropriations for FY2016*, by Fred Sissine.

Nuclear Energy

DOE's nuclear energy program has four major stated goals:

- Improve the safety, reliability, and economics of nuclear power plants;
- Implement a "consent based" strategy for developing nuclear waste storage and disposal facilities;
- Develop improved waste management and fuel cycle technologies; and
- Understand and minimize the risks of nuclear proliferation and terrorism.

The Reactor Concepts program area includes research on advanced reactors, including advanced small modular reactors, and research to enhance the "sustainability" of existing commercial light water reactors. Advanced reactor research focuses on "Generation IV" reactors, as opposed to the existing fleet of commercial light water reactors, which are generally classified as generations II and III. Nuclear technology development under this program focuses on "fast reactors," using high-energy neutrons, fluoride salt-cooled high-temperature reactors, and high temperature gas-cooled reactors. Cost-shared research with the nuclear industry is also conducted on extending the life of existing commercial light water reactors beyond 60 years, the maximum operating period currently licensed by the Nuclear Regulatory Commission (NRC). This subprogram is also conducting research to understand the Fukushima disaster and to develop accident prevention and mitigation measures.

The nuclear energy program also provides design and licensing funding for small modular reactors (SMRs), which range from about 40 to 300 megawatts of electrical capacity. Support under this subprogram is currently being provided to the NuScale Power SMR, which has a generating capacity of 50 megawatts. Under the company's current concept, up to 12 reactors would be housed in a single pool of water, which would provide emergency cooling. The NuScale SMR is intended to be ready for commercial operation by around 2025, according to DOE.[14]

The Fuel Cycle Research and Development program conducts "long-term, science-based" research on a wide variety of technologies for improving the management of spent nuclear fuel, according to DOE. In general, the program is investigating ways to separate radioactive constituents of spent fuel for re-use or to be bonded into stable waste forms. Within this subprogram, DOE is also conducting work toward establishing a new spent fuel management system, consistent with the Administration's moves to terminate the previously authorized waste repository program at Yucca Mountain in Nevada. Other major research areas in the Fuel Cycle R&D program include the development of accident-tolerant fuels for existing commercial reactors, evaluation of fuel cycle options, development of improved technologies to prevent

[13] DOE, *Grid Modernization Multi-Year Program Plan, November 2015*, http://energy.gov/sites/prod/files/2016/01/f28/Grid%20Modernization%20Multi-Year%20Program%20Plan.pdf.

[14] DOE Office of Nuclear Energy, "Small Modular Nuclear Reactors," http://www.energy.gov/ne/nuclear-reactor-technologies/small-modular-nuclear-reactors.

diversion of nuclear materials for weapons, and technology to increase nuclear fuel resources, such as uranium extraction from seawater.

Fossil Energy Research and Development

DOE's Fossil Energy R&D Program focuses primarily on carbon capture and storage for coal-fired power systems. Major activities include the following:

- Carbon Capture subprogram for separating CO_2 in both pre-combustion and post-combustion systems;
- Carbon Storage subprogram on long-term geologic storage of CO_2, including small- and large-scale CO_2 injection tests;
- Advanced Energy Systems subprogram on improving availability and efficiency of fossil energy systems integrated with CO_2 capture. The sub-program focuses on gasification, oxy-combustion, advanced turbines, and other energy systems.
- Cross-Cutting Research on innovative systems;
- Supercritical Transformational Electric Power (STEP) Generation Program, developing technology to replace the conventional steam cycle in electric turbine-generators with supercritical carbon dioxide; and
- Natural Gas Technologies R&D, with a focus on environmentally sound technologies for shale gas development.

Strategic Petroleum Reserve

The Strategic Petroleum Reserve (SPR), authorized by the Energy Policy and Conservation Act (P.L. 94-163) in 1975, consists of caverns built within naturally occurring salt domes in Louisiana and Texas. The SPR provides strategic and economic security against foreign and domestic disruptions in U.S. oil supplies via an emergency stockpile of crude oil. The program fulfills U.S. obligations under the International Energy Program, which avails the United States of International Energy Agency (IEA) assistance through its coordinated energy emergency response plans, and provides a deterrent against energy supply disruptions.

By early 2010, the SPR's capacity reached 727 million barrels.[15] The federal government has not purchased oil for the SPR since 1994. Beginning in 2000, additions to the SPR were made with royalty-in-kind (RIK) oil acquired by the Department of Energy in lieu of cash royalties paid on production from federal offshore leases. In September 2009, the Secretary of the Interior announced a transitional phasing out of the RIK Program. DOE has been conducting a major maintenance program to address aging infrastructure and a deferred maintenance backlog at SPR facilities.

In the summer of 2011, the President ordered an SPR sale in coordination with an International Energy Administration sale under treaty obligation because of Libya's supply curtailment. The U.S. sale of 30.6 million barrels reduced the SPR inventory to 695.9 million barrels.

In March 2014, DOE's Office of Petroleum Reserves conducted a test sale that delivered 5.0 million barrels of crude oil over a 47-day period that netted $468.6 million in cash receipts to the U.S. government (SPR Petroleum Account).

[15] For details on the SPR, see CRS Report R41687, *The Strategic Petroleum Reserve and Refined Product Reserves: Authorization and Drawdown Policy*, by Anthony Andrews and Robert Pirog.

Science

The DOE Office of Science conducts basic research in six program areas: advanced scientific computing research, basic energy sciences, biological and environmental research, fusion energy sciences, high-energy physics, and nuclear physics. Through (primarily) these programs, DOE was the third-largest federal funder of basic research and the largest federal funder of research in the physical sciences in FY2014.

DOE's Advanced Scientific Computing Research (ASCR) program focuses on developing and maintaining computing and networking capabilities for science and research in applied mathematics, computer science, and advanced networking. The program plays a key role in the DOE-wide effort to advance the development of exascale computing, which seeks to build a computer that can solve scientific problems a thousand times faster than today's best machines. DOE leadership asserts that the department is on a path to have a capable exascale machine by the early 2020s.

Basic Energy Sciences (BES), the largest program area in the Office of Science, focuses on understanding, predicting, and ultimately controlling matter and energy at the electronic, atomic, and molecular level. The program supports research in disciplines such as condensed matter and materials physics, chemistry, and geosciences. BES also provides funding for scientific user facilities (e.g., the National Synchrotron Light Source II, which began transitioning from construction to operation in FY2015, and the Linac Coherent Light Source-II), and certain DOE research centers and hubs (e.g., Energy Frontier Research Centers, as well as the Batteries and Energy Storage and Fuels from Sunlight Innovation Hubs).

Biological and Environmental Research (BER) seeks a predictive understanding of complex biological, climate, and environmental systems across a continuum from the small scale (e.g., genomic research) to the large (e.g., Earth systems and climate). Within BER, Biological Systems Science focuses on plant and microbial systems, while Biological and Environmental Research supports climate-relevant atmospheric and ecosystem modeling and research. BER facilities and centers include three Bioenergy Research Centers and the Environmental Molecular Science Laboratory at Pacific Northwest National Laboratory.

Fusion Energy Sciences (FES) seeks to increase understanding of the behavior of matter at very high temperatures and to establish the science needed to develop a fusion energy source. FES provides funding for the ITER project, a multi-national effort to design and build an experimental fusion reactor. According to DOE, ITER "aims to generate fusion power 30 times the levels produced to date and to exceed the external power applied … by at least a factor of ten." However, many U.S. analysts have expressed concern about ITER's cost, schedule, and management, as well as the budgetary impact on domestic fusion research.

The High Energy Physics (HEP) program conducts research on the fundamental constituents of matter and energy, including studies of dark energy and the search for dark matter. The FY2016 HEP budget request sought to align the program with the recommendations of the Particle Physics Project Prioritization Panel (P5) report. Nuclear Physics supports research on the nature of matter, including its basic constituents and their interactions. A major project in the Nuclear Physics program is the construction of the Facility for Rare Isotope Beams at Michigan State University. Nearing completion is the Continuous Electron Beam Accelerator Facility Upgrade project.[16]

[16] DOE, *FY2016 Budget Justification*, Volume 4, http://www.energy.gov/cfo/downloads/fy-2016-budget-justification.

For more details, see CRS Report R43963, *DOE's Office of Science and the FY2016 Budget Request*, by Heather B. Gonzalez.

ARPA-E

The Advanced Research Projects Agency–Energy (ARPA-E) was authorized by the America COMPETES Act (P.L. 110-69) to support transformational energy technology research projects. DOE budget documents describe ARPA-E's mission as overcoming long-term, high-risk technological barriers to the development of energy technologies.

For more details, see CRS Report R43986, *ARPA-E and the FY2016 Budget Request*, by Heather B. Gonzalez.

Loan Guarantees and Direct Loans

DOE's Loan Programs Office provides loan guarantees for projects that deploy specified energy technologies, as authorized by Title XVII of the Energy Policy Act of 2005 (EPACT05, P.L. 109-58), and direct loans for advanced vehicle manufacturing technologies. Section 1703 of the act authorizes loan guarantees for advanced energy technologies that reduce greenhouse gas releases, and Section 1705 established a temporary program for renewable energy and energy efficiency projects.

Title XVII allows DOE to provide loan guarantees for up to 80% of construction costs for eligible energy projects. Successful applicants must pay an up-front fee, or "subsidy cost," to cover potential losses under the loan guarantee program. Under the loan guarantee agreements, the federal government would repay all covered loans if the borrower defaulted. This would reduce the risk to lenders and allow them to provide financing at below-market interest rates. The following is a summary of loan guarantee amounts available for various technologies:

- $8.3 billion for non-nuclear technologies under Section 1703;
- $2 billion for unspecified projects from FY2007 under Section 1703;
- $18.5 billion ceiling for nuclear power plants ($8.3 billion committed);
- $4 billion allocated for loan guarantees for uranium enrichment plants;
- $1.183 billion ceiling for renewable energy and energy efficiency projects under Section 1703, in addition to other ceiling amounts, which can include applications that were pending under Section 1705 before it expired; and
- An appropriation of $170 million for subsidy costs for renewable energy and energy efficiency loan guarantees under Section 1703. If the subsidy costs averaged 10% of the loan guarantees, this funding could leverage loan guarantees totaling $1.7 billion.

Nuclear Weapons Stockpile Stewardship

Congress established the Stockpile Stewardship Program in the FY1994 National Defense Authorization Act (P.L. 103-160). The goal of the program, as amended by the FY2010 National Defense Authorization Act (P.L. 111-84, §3111), is to ensure "that the nuclear weapons stockpile is safe, secure, and reliable without the use of underground nuclear weapons testing." The program is operated by the National Nuclear Security Administration (NNSA), a semiautonomous agency within DOE that Congress established in the FY2000 National Defense Authorization Act (P.L. 106-65, Title XXXII).

Stockpile stewardship consists of all activities in NNSA's Weapons Activities account. Most stewardship activities take place at the nuclear weapons complex (the "complex"), which consists of three laboratories (Los Alamos National Laboratory, NM; Lawrence Livermore National Laboratory, CA; and Sandia National Laboratories, NM and CA); four production sites (Kansas City National Security Campus, MO; Pantex Plant, TX; Savannah River Site, SC; and Y-12 National Security Complex, TN); and the Nevada National Security Site (formerly Nevada Test Site). NNSA manages and sets policy for the complex; contractors to NNSA operate the eight sites.

Directed Stockpile Work involves work directly on nuclear weapons in the stockpile, such as monitoring their condition; maintaining them through repairs, refurbishment, life extension, and modifications; conducting R&D in support of specific warheads; and dismantlement. The number of warheads has fallen sharply since the end of the Cold War, and continues to decline. As a result, a major activity of Directed Stockpile Work is interim storage of warheads to be dismantled; dismantlement; and disposition (i.e., storing or eliminating warhead components and materials).

Campaigns are "multi-year, multi-functional efforts" that "provide specialized scientific knowledge and technical support to the directed stockpile work on the nuclear weapons stockpile." Many campaigns have significance for policy decisions. For example, the Science Campaign's goals include improving the ability to assess warhead performance without nuclear testing, improving readiness to conduct nuclear tests should the need arise, and maintaining the scientific infrastructure of the nuclear weapons laboratories. Campaigns also fund some large experimental facilities, such as the National Ignition Facility at Lawrence Livermore National Laboratory. Note that P.L. 113-235 renamed "Campaigns" as "Research, Development, Test, and Evaluation."

Infrastructure and Operations (formerly Readiness in Technical Base and Facilities) has as its main funding elements material recycle and recovery, recapitalization of facilities, and construction of facilities. The latter included two controversial and expensive projects, the Uranium Processing Facility (UPF) at the Y-12 National Security Complex (TN) and the Chemistry and Metallurgy Research Replacement (CMRR) Project, which deals with plutonium, at Los Alamos National Laboratory (NM).

Weapons Activities also has several smaller programs, including the following:

- **Secure Transportation Asset,** providing for safe and secure transport of nuclear weapons, components, and materials.
- **Site Stewardship** seeks to "bring focus on environmental compliance, nuclear materials disposition and developing the needed skills and talent for NNSA's enduring technical workforce at the laboratories and production plants."
- **Defense Nuclear Security** provides operations, maintenance, and construction funds for protective forces, physical security systems, personnel security, and related activities.
- **Information Technology and Cybersecurity** elements include cybersecurity, enterprise secure computing, and Federal Unclassified Information Technology.
- **Legacy Contractor Pensions** provides supplemental funds for pensions for retirees from Los Alamos and Lawrence Livermore National Laboratories who began employment when the University of California was the contractor for those labs.

For more information, see CRS Report R43948, *Energy and Water Development: FY2016 Appropriations for Nuclear Weapons Stockpile Stewardship*, by Jonathan E. Medalia.

Defense Nuclear Nonproliferation

DOE's nonproliferation and national security programs provide technical capabilities to support U.S. efforts to prevent, detect, and counter the spread of nuclear weapons worldwide. These nonproliferation and national security programs are administered by NNSA's Office of Defense Nuclear Nonproliferation, which was reorganized in 2015.

Global Materials Security has two major program elements. The "First Line of Defense" focuses on increasing the security of vulnerable stockpiles of nuclear material in other countries. The "Second Line of Defense" is intended to "improve partner countries' abilities to deter, detect, and interdict illicit trafficking," according to DOE's FY2016 budget justification. Activities toward achieving those goals include the provision of equipment and training, workshops and exercises, and collaboration with international organizations.

Materials Management and Minimization conducts activities to minimize and, where possible, eliminate stockpiles of weapons-useable material around the world. Major activities include conversion of reactors that use highly enriched uranium (useable for weapons) to low enriched uranium, removal and consolidation of nuclear material stockpiles, and disposition of excess nuclear materials.

Nonproliferation and Arms Control works on "strengthening the nonproliferation and arms control regimes in order to reduce proliferation and terrorism risks," according to the FY2016 justification. This program conducts reviews of nuclear export applications and technology transfer authorizations, implements treaty obligations, and analyzes nonproliferation policies and proposals.

Other programs under Defense Nuclear Nonproliferation include research and development and construction. The Nonproliferation Construction program consists of the Mixed Oxide (MOX) Fuel Fabrication Facility (described under "Funding Issues" above), which is being built in South Carolina to convert surplus weapons plutonium into nuclear reactor fuel.

DOE also proposed for FY2016 to transfer counterterrorism and counterproliferation programs from the Weapons Activities appropriations account to Defense Nuclear Nonproliferation. According to the budget justification, "These transfers align all NNSA funding to prevent, counter, and respond to nuclear proliferation and terrorism in one appropriation." The change was approved in the P.L. 114-113 explanatory statement.

Cleanup of Former Nuclear Sites

The development and production of nuclear weapons for national defense purposes during half a century since the beginning of the Manhattan Project resulted in a legacy of wastes and contamination that continues to present substantial challenges today. In 1989, DOE established the Office of Environmental Management primarily to consolidate its responsibilities for the cleanup of former nuclear weapons production sites that had been administered under multiple offices.[17]

[17] In 1989, DOE created the Office of Environmental Restoration and Waste Management, which later was renamed the Office of Environmental Management.

DOE's nuclear cleanup efforts are broad in scope and include the disposal of large quantities of radioactive and other hazardous wastes generated over decades; management and disposal of surplus nuclear materials; remediation of extensive contamination in soil and groundwater; decontamination and decommissioning of excess buildings and facilities; and safeguarding, securing, and maintaining facilities while cleanup is underway.[18] The Office of Environmental Management also is responsible for the cleanup of DOE sites that were involved in civilian nuclear energy research, which also generated wastes and contamination. These research sites add a non-defense component to the office's mission, albeit smaller in terms of the scope of their cleanup and associated funding.[19]

DOE has identified more than 100 "geographic" sites in over 30 states that historically were involved in the production of nuclear weapons and nuclear energy research for civilian purposes.[20] The geographic scope of these sites is substantial, collectively encompassing a land area of approximately 2 million acres. Cleanup remedies are in place and operational at the majority of these sites. The responsibility for the long-term stewardship of these sites has been transferred to the Office of Legacy Management and other offices within DOE for the operation and maintenance of cleanup remedies and monitoring.[21] Some of the smaller sites for which DOE initially was responsible were transferred to the Army Corps of Engineers in 1997 under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Once the Corps completes the cleanup of a FUSRAP site, it is transferred back to DOE for long-term stewardship under the Office of Legacy Management.

Much work remains to be done at the sites that are still administered by the Office of Environmental Management. DOE expects cleanup to continue for several years or even decades at some of these sites, and estimates additional cumulative funding needs ranging from $191.6 billion to $224.3 billion over the long-term to fulfill the cleanup liability of the United States.[22] The Office of Environmental Management has completed the cleanup of 91 sites in 30 states and the Commonwealth of Puerto Rico, and plans to continue the cleanup of 16 sites in 11 states in FY2016.[23]

Three appropriations accounts fund the Office of Environmental Management. The Defense Environmental Cleanup account is the largest in terms of funding, and it finances the cleanup of

[18] The term "cleanup" often is used in reference to the remediation of risks at a site. Cleanup may be accomplished through various means to prevent potentially harmful levels of exposure to wastes and contamination. Cleanup may not necessarily entail the removal of all hazards from a site, but in some instances may involve the permanent containment of wastes or contamination to address exposure risks. If residual wastes or contamination remains on-site after cleanup is complete, long-term stewardship may continue to monitor residual wastes or contamination and ensure that cleanup measures continue to operate effectively.

[19] For additional information on the history, mission, and scope of the Office of Environmental Management, see DOE's website: http://energy.gov/em/office-environmental-management.

[20] For an interactive map and listing of each site, see DOE's Office of Environmental Management website, http://energy.gov/em/cleanup-sites. There are links to separate maps for active and completed sites.

[21] The Office of Legacy Management administers the long-term stewardship of DOE sites that do not have a continuing mission once cleanup remedies are in place. Sites that have a continuing mission are transferred to the DOE offices that administer those missions, which are responsible for their long-term stewardship.

[22] Department of Energy, Office of Chief Financial Officer, *FY2016 Congressional Budget Request*, February 2015, Volume 5, Environmental Management, p. 89.

[23] Department of Energy, Office of Chief Financial Officer, *FY2016 Congressional Budget Request*, February 2015, Volume 5, Environmental Management, p. 5. See p. 90 for a list of the 16 sites where cleanup is planned to continue in FY2016. One of these 16 sites, the Waste Isolation Pilot Plant in New Mexico, is not a cleanup site itself, but is a permanent, geologic repository for "transuranic" wastes that are removed from other DOE sites for disposal.

former nuclear weapons production sites. The Non-Defense Environmental Cleanup account funds the cleanup of federal nuclear energy research sites. Title XI of the Energy Policy Act of 1992 (P.L. 102-486) established the Uranium Enrichment Decontamination and Decommissioning (D&D) Fund to pay for the cleanup of three federal facilities that enriched uranium for national defense and civilian purposes.[24] Title X of P.L. 102-486 also authorized the reimbursement of uranium and thorium licensees for their costs of cleaning up contamination at sites that processed nuclear materials for national defense purposes at these federal facilities.[25] The three federal uranium enrichment facilities are located near Paducah, KY; Piketon, OH (Portsmouth plant); and Oak Ridge, TN.

The adequacy of funding for the Office of Environmental Management to attain cleanup milestones across the entire site inventory has been a recurring issue. Cleanup milestones are enforceable measures incorporated into compliance agreements negotiated among DOE, EPA, and the states. These milestones establish time frames for the completion of specific actions to satisfy applicable requirements at individual sites.[26]

Power Marketing Administrations

DOE's four Power Marketing Administrations (PMAs)—Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA)—were established to sell the power generated by the dams operated by the Bureau of Reclamation and the Army Corps of Engineers.[27] The primary purpose of these projects in many cases was conservation and management of water resources—including irrigation, flood control, recreation, or other objectives. (For more information, see CRS Report RS22564, *Power Marketing Administrations: Background and Current Issues*, by Richard J. Campbell.)

Title IV: Independent Agencies

Independent agencies that receive funding from the Energy and Water Development bill include the Nuclear Regulatory Commission (NRC), the Appalachian Regional Commission (ARC), and the Denali Commission. Their recent appropriations history is shown in **Table 7**.

Nuclear Regulatory Commission

Congress for the first time included control points within the overall NRC appropriation in enacting P.L. 114-113 and also reduced the agency's total spending level by $12 million from FY2015. The Explanatory Statement for the omnibus measure provides $760.0 million for Nuclear Reactor Safety, $15.0 million for Integrated University Programs, $172.0 million for Nuclear Materials and Waste Safety, and $43.0 million for Decommissioning and Low-Level Waste. The largest three control points include specific limits on the amount that can be used for "corporate support." Sec. 402 of the omnibus measure establishes new reprogramming authority in conjunction with the control points. Also included in the Explanatory Statement is a

[24] 42 U.S.C. §2297g.

[25] 42 U.S.C. §2296a.

[26] Compliance agreements for individual sites are available on DOE's Office of Environmental Management website: http://energy.gov/em/compliance-documents.

[27] Net funding for the Western Area Power Administration includes the Colorado River Basins Power Marketing Fund.

requirement that NRC staff receive approval from the NRC commissioners before committing resources to new rulemaking activities.

Table 7. Independent Agencies Funded by Energy and Water Development Appropriations

(budget authority in millions of current dollars)

Program	FY2014 Approp.	FY2015 Approp.	FY2016 Request	FY2016 House	FY2016 S.Com.	FY2016 omnibus
Appalachian Regional Commission	80.3	90.0	95.0	95.0	105.0	146.0
Nuclear Regulatory Commission	*1,055.9*	*1,015.3*	*1,032.21*	*1,015.3*	*1,002.1*	*1,002.1*
(Revenues)	*-930.7*	*-895.5*	*-910.1*	*-872.4*	*-883.0*	*-882.9*
Net NRC (including Inspector General)	125.2	119.8	122.2	143.0	119.2	119.2
Defense Nuclear Facilities Safety Board	28.0	28.5	29.2	29.9	29.2	29.2
Nuclear Waste Technical Review Board	3.4	3.4	3.6	3.6	3.6	3.6
Denali Commission	10.0	10.0	10.0	10.0	11.0	11.0
Delta Regional Authority	12.0	12.0	14.9	12.0	25.0	25.0
Northern Border Regional Commission	5.0	5.0	5.0	3.0	7.5	7.5
Southeast Crescent Regional Commission	0.3	0.3	0	0.3	0	0.3
Federal Coordinator of Alaska Gas Projects	1.0	0	1.0	1.0	0	0
Total	**265.1**	**269.0**	**280.9**	**297.8**	**300.5**	**341.7**

Source: H.R. 83 Explanatory Statement, agency budget requests, H.Rept. 113-486, S.Rept. 114-54, CBO, H.R. 2029 explanatory statement.

Note: Figures may not add due to rounding.

Congressional Hearings

The following hearings were held by the Energy and Water Development subcommittees of the House and Senate Appropriations Committees on the FY2016 budget request. Testimony and opening statements are posted on most of the web pages cited for each hearing, along with webcasts in many cases.

House

- *Army Corps of Engineers, Civil Works*, February 11, 2015, http://appropriations.house.gov/calendararchive/eventsingle.aspx?EventID=393968.
- *Bureau of Reclamation*, February 12, 2015, http://appropriations.house.gov/calendararchive/eventsingle.aspx?EventID=393969.
- *Department of Energy*, February 26, 2015, http://appropriations.house.gov/calendararchive/eventsingle.aspx?EventID=393992.
- *Department of Energy, National Nuclear Security Administration, Weapons Activities*, March 4, 2015, http://appropriations.house.gov/calendararchive/eventsingle.aspx?EventID=394016.

- *Department of Energy, Applied Energy Programs*, March 17, 2015, http://appropriations.house.gov/calendararchive/eventsingle.aspx?EventID=394035.
- *Department of Energy, Office of Science*, March 17, 2015, http://appropriations.house.gov/calendararchive/eventsingle.aspx?EventID=394041.
- *Department of Energy, Environmental Management*, March 18, 2015, http://appropriations.house.gov/calendararchive/eventsingle.aspx?EventID=394044.
- *Nuclear Regulatory Commission*, March 24, 2015, http://appropriations.house.gov/calendar/eventsingle.aspx?EventID=394071.
- *National Nuclear Security Administration, Nuclear Nonproliferation and Naval Reactors*, March 25, 2015, http://appropriations.house.gov/calendar/eventsingle.aspx?EventID=394081.

Senate

- *Army Corps of Engineers and Bureau of Reclamation*, February 11, 2015, http://www.appropriations.senate.gov/hearings-and-testimony/energy-water-development-subcommittee-fy16-army-corps-engineers-bureau.
- *Nuclear Regulatory Commission*, March 4, 2015, http://www.appropriations.senate.gov/hearings-and-testimony/energy-water-development-subcommittee-fy16-nuclear-regulatory-commission.
- *National Nuclear Security Administration*, March 11, 2015, http://www.appropriations.senate.gov/hearings-and-testimony/energy-water-development-subcommittee-fy16-national-nuclear-security.

Department of Energy, March 25, 2015, http://www.appropriations.senate.gov/event/energy-water-development-subcommittee-hearing-fy16-us-department-energy-budget.

Author Information

Mark Holt
Specialist in Energy Policy

Key Policy Staff

Area of Expertise	Name
General	Mark Holt
Corps of Engineers	Charles V. Stern Nicole Carter
Bureau of Reclamation	Charles V. Stern Betsy Cody
Solar and Renewable Energy	Fred Sissine
Nuclear Energy	Mark Holt
Science Programs	Daniel Morgan
Nuclear Weapons Stewardship	Amy Woolf
Nonproliferation	Mary Beth Nikitin
DOE Environmental Management	David Bearden
Power Marketing Administrations	Charles V. Stern
Bonneville Power Administration	Charles V. Stern
Fossil Energy Research	Peter Folger
Strategic Petroleum Reserve	Robert Pirog
Energy Conservation	Fred Sissine

Disclaimer

This document was prepared by the Congressional Research Service (CRS). CRS serves as nonpartisan shared staff to congressional committees and Members of Congress. It operates solely at the behest of and under the direction of Congress. Information in a CRS Report should not be relied upon for purposes other than public understanding of information that has been provided by CRS to Members of Congress in connection with CRS's institutional role. CRS Reports, as a work of the United States Government, are not subject to copyright protection in the United States. Any CRS Report may be reproduced and distributed in its entirety without permission from CRS. However, as a CRS Report may include copyrighted images or material from a third party, you may need to obtain the permission of the copyright holder if you wish to copy or otherwise use copyrighted material.