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Energy and Water Development: FY2023 Appropriations

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SUMMARY

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Energy and Water Development: FY2023 Appropriations

The Energy and Water Development and Related Agencies appropriations bill funds civil works projects of the U.S. Army Corps of Engineers (USACE); the Department of the Interior's Bureau of Reclamation (Reclamation) and Central Utah Project (CUP); the Department of Energy (DOE); the Nuclear Regulatory Commission (NRC); the Appalachian Regional Commission (ARC); and several other independent agencies. DOE typically accounts for about 80% of the bill's funding.

Overall Funding Totals

President Biden submitted his FY2023 budget request on March 28, 2022. The Administration request included $57.548 billion for energy and water development agencies, an increase of $1.972 billion (4%) above the FY2022 enacted amount, excluding emergency appropriations and adjustments.

The House passed the FY2023 Energy and Water Development appropriations bill as part of the six-bill Consolidated Appropriations Act (H.R. 8294) on July 20, 2022, following House Appropriations Committee approval of a stand-alone measure on June 28, 2022 (H.R. 8255, H.Rept. 117-394). Senator Dianne Feinstein, chair of the Senate Appropriations Committee's Subcommittee on Energy and Water Development, introduced an FY2023 Energy and Water Development appropriations bill July 28, 2022 (S. 4660), and posted a draft explanatory statement on the Appropriations Committee website.

FY2023 Energy and Water Development funding was included in the Consolidated Appropriations Act, 2023, passed by Congress December 22, 2022, and signed into law December 29, 2022 (P.L. 118-328). Excluding emergency supplementals and rescissions, the Consolidated Appropriations Act provides a total of $59.204 billion, 7% above the FY2022 enacted level, as shown below:

Energy and Water Development Appropriations, FY2022 and FY2023
dollars in millions (and % change)

Agency	FY2022 Enacted (% Change from FY2021 Enacted)	FY2023 Request (% Change from FY2022 Enacted)	FY2023 House (% Change from FY2022 Enacted)	FY2023 S. 4660 (% Change from FY2022 Enacted)	FY2023 Enacted (% Change from FY2022 Enacted)
Corps of Engineers	8,343 (+7%)	6,601 (-21%)	8,889 (+7%)	8,758 (+5%)	8,310 (-%)
Bureau of Reclamation/CUP	1,924 (+14%)	1,434 (-25%)	1,914 (-1%)	1,950 (+1%)	1,954 (+2%)
Department of Energy	44,856 (+13%)	49,004 (+9%)	48,340 (+8%)	49,495 (+10%)	48,445(+8%)
Independent Agencies	454 (+10%)	508 (+12%)	521 (+15%)	482 (+6%)	494 (+9%)
Total	55,576 (+12%)	57,548 (+4%)	59,664 (+7%)	60,685 (+9%)	59,204 (+7%)

Sources: Explanatory statement for Consolidated Appropriations Act, 2023; S. 4660 and draft explanatory statement; H.Rept. 117-394; explanatory statement for H.R. 2371; CBO Estimate for H.R. 8294; FY2023 agency budget requests, S.Rept. 117-36, H.Rept. 117-98, H.R. 4502, explanatory statement of the Consolidated Appropriations Act, 2022.

Notes: Totals exclude rescissions and budget scorekeeping adjustments. CUP=Central Utah Project Completion Account. Enacted amounts do not include emergency supplemental appropriations.

Major Issues

Congressional debate on Energy and Water Development appropriations for FY2023 includes several major initiatives and issues. Some examples follow:

- *Western Drought*. The Administration proposed funding for several Reclamation drought response-related activities, which was increased by the enacted appropriations measure. The Inflation Reduction Act (IRA, P.L. 117-169) provided Reclamation with $4.588 billion to address drought mitigation and related issues.
- *Increased Funding for Energy Efficiency and Renewable Energy (EERE)*. The Administration requested an EERE increase of $819 million (26%) over the FY2022 enacted amount, to $4.019 billion, excluding several large EERE programs that are proposed to become separate offices. The enacted measure provided $3.460 billion for EERE, including funding for the proposed separate offices. These amounts would be in addition to $2.222 billion appropriated by the Infrastructure Investment and Jobs Act (IIJA, P.L. 117-58) for EERE for FY2023 and $10.000 billion by IRA for energy efficiency through FY2031.
- *Establishment of Office of Clean Energy Demonstrations.* The Administration requested $214 million in FY2023 to continue the startup of the DOE Office of Clean Energy Demonstrations (OCED). The enacted measure provided $89 million, although that amount is in addition to $4.426 billion appropriated by IIJA for the new office for FY2023 and $5.812 billion by IRA through FY2026.

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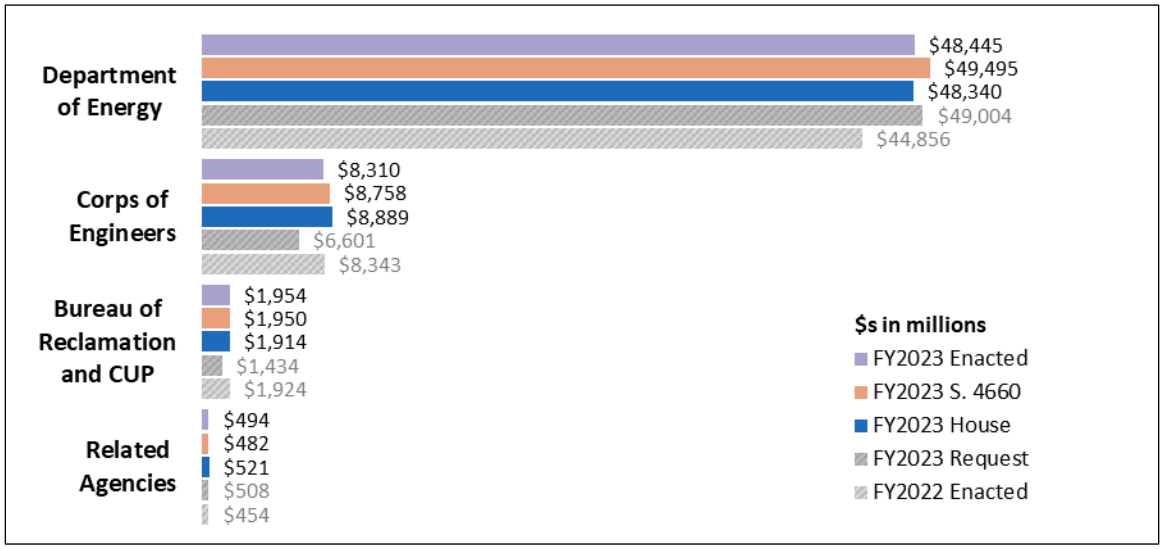
Introduction and Overview

The Energy and Water Development and Related Agencies appropriations bill includes funding for civil works projects of the U.S. Army Corps of Engineers (USACE), in Title I; the Department of the Interior's Bureau of Reclamation (Reclamation) and Central Utah Project (CUP), in Title II; the Department of Energy (DOE), in Title III; and a number of independent agencies, including the Nuclear Regulatory Commission (NRC) and the Appalachian Regional Commission (ARC), in Title IV. **Figure 1** compares the major components of the Energy and Water Development appropriations bill from FY2021 through FY2023.

Figure 1. Funding for Major Components of Energy and Water Development Appropriations Bill, FY2022 Through FY2023

(excluding supplementals)



Sources: Explanatory statement for Consolidated Appropriations Act, 2023; H.Rept. 117-394; S. 4660 and draft explanatory statement; explanatory statement for H.R. 2371; CBO Estimate for H.R. 8294; S.Rept. 117-36; H.R. 4502; H.Rept. 117-98; Administration budget request for FY2022. Includes some adjustments; see tables 4-7 for details.

Notes: Enacted amounts do not include supplemental appropriations or rescissions. CUP = Central Utah Project Completion Account.

President Biden submitted his FY2023 budget request on March 28, 2022. The Administration request included $57.548 billion for energy and water development agencies, an increase of $1.972 billion (4%) above the FY2022 enacted amount, excluding emergency appropriations and adjustments. DOE funding would have risen by $4.149 billion (9%) and independent agencies by $55 million (12%), while USACE was to be reduced by $1.742 million (-21%), and Reclamation and CUP by $490 million (-25%).

The House passed the FY2023 Energy and Water Development appropriations bill on July 20, 2022, as part of a "minibus" package of six FY2023 appropriations bills (H.R. 8294), by a 220-207 vote. The House Appropriations Committee had approved the stand-alone Energy and Water Development appropriations bill on June 28, 2022, by a vote of 32-26 (H.R. 8255, H.Rept. 117-394). The House-passed bill totaled $59.664 billion, excluding rescissions and scorekeeping adjustments, an increase of $4.088 billion (7%) over the enacted FY2022 amount and 4% above the Administration request. DOE funding in the bill totaled $48.340 billion, an increase of $3.485 billion (8%) over the FY022 enacted level and a decrease of 1% from the request. The bill would

have provided $8.889 billion for USACE, $546 million (7%) above FY2022 and 35% above the request. Reclamation and CUP would have received $1.914 billion, $10 million (-1%) below the FY2022 enacted amount but 33% above the request. The bill included $521 million for independent agencies, $68 million (15%) above the FY2022 enacted amount and 3% above the request.

Senator Dianne Feinstein, chair of the Senate Appropriations Committee's Subcommittee on Energy and Water Development, introduced an FY2023 Energy and Water Development appropriations bill July 28, 2022 (S. 4660), and posted a draft explanatory statement on the Appropriations Committee website.[1] The bill's total of $60.685 billion, excluding rescissions and adjustments, was 9% above the FY2022 enacted amount and 5% above the Administration request. Senator Richard Shelby, the Appropriations Committee's Republican vice chairman, referred to S. 4660 and other FY2023 appropriations bills introduced by Appropriations Committee Democratic leaders as "partisan appropriations bills that spend billions more than even the Administration's wasteful request."[2] Committee action on the FY2023 appropriations bills did not occur.

FY2023 Energy and Water Development funding was included in Division D of the Consolidated Appropriations Act, 2023, passed by Congress December 22, 2022, and signed into law December 29, 2022 (P.L. 118-328). Excluding emergency supplementals and rescissions, the Consolidated Appropriations Act provides a total of $59.204 billion, 7% above the FY2022 enacted level. Division M of the act included emergency additional FY2023 appropriations of $300 million for Nuclear Energy and $126 million for Defense Nuclear Nonproliferation. Division N also provided supplemental appropriations of $1.480 billion for USACE, $1.000 billion for DOE's Electricity account to improve Puerto Rico's electricity grid, and $520 million for the Western Area Power Administration.

The Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58), the Disaster Relief Supplemental Appropriations Act, 2022 (DRSAA; P.L. 117-43), and budget reconciliation measure commonly referred to as the Inflation Reduction Act of 2022 (IRA; P.L. 117-169) provided additional appropriations for energy and water development agencies, above the enacted amounts in the Consolidated Appropriations Act for FY2022 and FY2023. For FY2022, IIJA and DRSAA appropriated an additional $41.923 billion for energy and water agencies, with another $16.040 billion provided by IIJA for FY2023. IRA appropriated $4.588 billion for Reclamation and $35.067 billion for DOE for FY2022, to remain available for as long as through FY2031.

Administration Request

DOE's major program areas include energy, science, defense, and environmental management. The Administration's largest proposed increase in the energy programs area was for Energy Efficiency and Renewable Energy, which would have risen by $819 million (26%) over the FY2022 enacted amount, to $4.019 billion. This excluded several large Energy Efficiency and Renewable Energy (EERE) programs, such as the Federal Energy Management Program (FEMP) and low-income weatherization and state planning grants, which were proposed to become separate offices in FY2023. The Advanced Research Projects Agency—Energy would have been increased by $250 million (56%), to $700 million. Fossil Energy and Carbon Management would

[1] Senate Appropriations Committee, "Explanatory Statement for the Energy and Water Development Appropriations Bill, 2023," https://www.appropriations.senate.gov/imo/media/doc/EWFY23RPT.PDF.

[2] Senate Appropriations Committee, "Shelby: Democrats' Partisan Bills Threaten FY23 Appropriations Process," minority news release, July 28, 2022, https://www.appropriations.senate.gov/news/minority/shelby-democrats-partisan-bills-threaten-fy23-appropriations-process.

have received an increase of $68 million (8%), to $893 million, including an increase of $110 million (49%) for carbon capture, utilization, and storage (CCUS). Funding for DOE's Office of Science would have been increased by $324 million (4%), to $7.799 billion, under the Administration budget request, with Biological and Environmental Research rising by $89 million (11%). Funding for the National Nuclear Security Administration (NNSA), which is responsible for nuclear warheads, nuclear weapons nonproliferation, and naval reactor research and development (R&D), would have increased by $754 million (4%), to $21.410 billion. Environmental Management (waste management and cleanup) would have increased by $348 million (4%), to $8.252 billion.[3]

The water agencies in the Energy and Water Development appropriations bill would have received funding reductions under the FY2023 budget request. Discretionary appropriations in the Energy and Water bill for USACE would have declined from their FY2022 enacted level by $1.742 billion (-21%), to $6,601 billion. The FY2023 Administration request included no new construction starts and three new project studies. Reclamation (separately from CUP) would have been reduced by $487 million (-26%), to $1.414 billion.

Among the independent agencies funded by the bill, the Nuclear Regulatory Commission (NRC) was to receive an increase in total appropriations from $888 million in FY2022 to $929 million in FY2023 (up $42 million, or 5%). NRC's budget is mostly offset by nuclear industry fees, which may vary from year to year; the Administration proposed an increase in the agency's net appropriation from $131 million in FY2022 to $137 million in FY2023 (up $6 million, or 5%). Funding for the Appalachian Regional Commission would have increased from $195 million in FY2022 to $235 million in FY2023 (up $40 million, or 21%). Requested funding for smaller regional authorities in the bill varied widely: Denali Commission, Delta Regional Authority, and Southwest Border Regional Commission were unchanged from FY2022 enacted, while the Northern Border Regional Commission was to increase by 3% and the Southeast Crescent Regional Commission by 40%.

House-Passed Bill

DOE would have received $48.340 billion under the House-passed FY2023 Energy and Water Development appropriations bill, excluding a rescission of $150 million. The bill would have provided nearly the amount requested for the EERE account, but it included funding for FEMP and low-income weatherization and state planning grants that the Administration had proposed under separate accounts. Science would have been increased by $201 million (3%) and Nuclear Energy by $105 million (6%) above the Administration request, while NNSA would have been reduced by $178 million (-1%) from the request.

The House bill would have increased funding for water agencies from the Administration request: USACE by $2.288 billion (35%) and Reclamation by $477 million (34%). The USACE amount was 7% above the FY2022 enacted level, while Reclamation would have been reduced by 1% from FY2022. The Appropriations Committee report supported USACE new project study starts recommended by the Administration and a limited number of additional new project studies. The bill's funding for independent agencies was nearly the same as the Administration request except for a $26 million (371%) increase for the Southeast Crescent Regional Commission. The bill

[3] Including a budget amendment that requested an additional $191 million for Defense Environmental Cleanup, submitted to Congress on June 7, 2022, https://www.whitehouse.gov/wp-content/uploads/2022/06/FY_2023_Budget_Amendments_Package_6-7-22.pdf.

included 145 community project funding (CPF) items (earmarks) for USACE, Reclamation, and DOE.[4]

S. 4660 and Draft Explanatory Statement

For DOE, EERE funding would have been reduced by $220 million (-5%) from the Administration request by S. 4660, which, as in the House-passed bill, would not have provided separate accounts for FEMP and low-income weatherization and state planning grants. Funding for the Office of Clean Energy Demonstrations would have been $39 million (-21%) lower than the House-passed amount, while Science would have been $100 million (1%) and NNSA $870 million (4%) higher than the House levels.

Funding in S. 4660 for USACE would have been $131 million (-1%) below the House-passed level, while funding for Reclamation would have been higher by $38 million (2%). Funding for independent agencies would have been nearly the same as the House-passed amounts, except that the Appalachian Regional Commission would have been lower by $20 million (-9%) and the increase for the Southeast Crescent Regional Commission would have been reduced to $2 million. The draft explanatory statement listed 232 congressionally directed spending (CDS) items for USACE, Reclamation, and DOE.

FY2023 Enacted Funding

DOE received $48.445 billion in the Consolidated Appropriations Act, 2023, excluding emergency supplementals and rescissions. This was $3.590 billion (8%) above the FY2022 enacted level, $559 billion (1%) below the Administration request, $105 million (0%) below the House-passed level, and $1.050 billion (2%) below the amount in S. 4660. Appropriations for EERE were $559 million (14%) below the Administration request and, as in the House and Senate measures, included the programs that the Administration had proposed under separate accounts. The Office of Science received $8.100 billion, an increase of $301 million (4%) above the request, while the Office of Clean Energy Demonstrations received $89 million, a $125 million (-58%) reduction from the request. However, the office had already been appropriated $21.456 billion for FY2022-FY2026 by IIJA.

The Advanced Research Projects Agency—Energy (ARPA-E) received $470 million, $230 million (33%) below the request, but $20 million (4%) above the FY2022 level. NNSA received $22.163 billion, an increase of $1.507 billion (7%) over the FY2022 enacted amount and $752 million (4%) above the request.

USACE received $8.310 billion, which was slightly below (less than 1%) the FY2022 enacted level, $1.709 billion (26%) above the request, $579 million (7%) below the House-passed bill, and $448 million (5%) below the amount in S. 4660. Reclamation received $1.931 billion, an increase of $30 million (2%) over the FY2022 enacted amount. The Appalachian Regional Commission and other regional development authorities received increases over their FY2022 enacted levels, with the largest being a $15 million (300%) increase for the Southeast Crescent Regional Commission.

In addition to the regular annual appropriations provided by the Consolidated Appropriations Act, 2023, many of the agencies funded by the act received emergency supplemental and additional appropriations for FY2023. IIJA was the primary source of the additional funding, along with P.L.

[4] For general information about congressional earmarks, see CRS Report RS22866, *Earmark Disclosure Rules in the House: Member and Committee Requirements*, by Megan S. Lynch.

117-328 Divisions M and N and P.L. 117-180. DOE received $15.078 billion in additional funding for FY2023, USACE received $2.580 billion, Reclamation and CUP received $1.660 billion, and the Appalachian Regional Commission received $200 million. Unspecified amounts of prior-year funding under IIJA and IRA also remained available for some agencies. Including offsets, total FY2023 funding for agencies in the Energy and Water Development appropriations bill was $70.095 billion, according to the Explanatory Statement.

FY2022 Enacted Funding

Energy and Water Development appropriations for FY2022 were enacted as part of the Consolidated Appropriations Act, 2022 (P.L. 117-103, Division D), passed by the House on March 9, 2022, and by the Senate March 10, 2022, and signed by President Biden March 15, 2022. The enacted energy and water development funding totaled $55.576 billion, excluding adjustments.

Energy Efficiency and Renewable Energy was appropriated $3.200 billion, $1.532 billion below the request (-32%) but $338 million (12%) above the FY2021 enacted amount. ARPA-E received $450 million, $50 million below the request (-10%), but $23 million (5%) above the FY2021 level, and the proposed Advanced Research Projects Agency—Climate (ARPA-C) was not funded. The new Office of Clean Energy Demonstrations was appropriated $20 million, $380 million below the request (-95%). NNSA was appropriated a total of $20.656 billion, $913 million (5%) above the request and about the same increase from the FY2021 enacted level.

Water agencies received increases over the FY2022 request. USACE received $8.343 billion, $1.551 billion (23%) above the request and $548 million (7%) above the FY2021 enacted amount. Reclamation was appropriated $1.901 billion, $368 million (24%) above the request and $231 million (14%) above the enacted FY2021 level. In addition, USACE received FY2022 supplemental appropriations of $5.711 billion in P.L. 117-43 and FY2022 emergency appropriations of $14.969 billion in P.L. 117-58. Reclamation received an additional $210 million in P.L. 117-43, $1.660 billion in P.L. 117-58, and $4.588 billion in P.L. 117-169. The explanatory statement included 236 earmarks for Energy and Water Development agencies and programs: 156 for USACE, 15 for Reclamation, 2 for CESER, 54 for EERE, 3 for the Office of Electricity, and 6 for FECM.[5]

For more details, see

- CRS Report R46857, *Energy and Water Development: FY2022 Appropriations*, by Mark Holt, Corrie E. Clark, and Anna E. Normand;
- CRS In Focus IF11846, *Army Corps of Engineers: FY2022 Appropriations*, by Anna E. Normand and Nicole T. Carter;
- CRS In Focus IF11855, *Bureau of Reclamation: FY2022 Appropriations*, by Charles V. Stern;
- CRS In Focus IF11945, *U.S. Army Corps of Engineers: Supplemental Appropriations*, by Nicole T. Carter and Anna E. Normand;

[5] For more details about the FY2022 Energy and Water Development earmarks, see Government Accountability Office (GAO), *Tracking the Funds: Specific Fiscal Year 2022 Provisions for U.S. Army Corps of Engineers*, GAO-22-105919, September 29, 2022, https://www.gao.gov/products/gao-22-105919; GAO, *Tracking the Funds: Specific Fiscal Year 2022 Provisions for Department of the Interior*, GAO-22-105904, September 12, 2022, https://www.gao.gov/products/gao-22-105904; and GAO, *Tracking the Funds: Specific Fiscal Year 2022 Provisions for Department of Energy*, GAO-22-105918, September 12, 2022, https://www.gao.gov/products/gao-22-105918.

- CRS Insight IN11723, *Infrastructure Investment and Jobs Act (IIJA) Funding for U.S. Army Corps of Engineers (USACE) Civil Works: Policy Primer*, by Nicole T. Carter and Anna E. Normand; and
- CRS Report R47032, *Bureau of Reclamation Provisions in the Infrastructure Investment and Jobs Act (P.L. 117-58)*, by Charles V. Stern and Anna E. Normand.

FY2023 Budgetary Limits

Congressional consideration of the annual Energy and Water Development appropriations bill was affected by certain procedural and statutory budget enforcement requirements. These consist primarily of procedural limits on discretionary spending (spending provided in annual appropriations acts) established in a budget resolution or through some other means, and allocations of this amount that apply to spending under the jurisdiction of each appropriations subcommittee.

The House passed a "deeming resolution" (H.Res. 1151) on June 8, 2022, to set an FY2023 discretionary appropriations total of $1,602.901 billion (approximately $1.6 trillion), which would accommodate the Administration's FY2023 request. The House Appropriations Committee issued a report on June 22, 2022, with suballocations of the FY2023 discretionary total, pursuant to Section 302(b) of the Congressional Budget Act of 1974, allocating $56.275 billion for the Energy and Water Development bill.[6] That was the amount included for Energy and Water Development in H.R. 8294, after budget scorekeeping and other offsets, as passed by the House, and $2.929 billion below the final FY2023 enacted amount (excluding adjustments).

Funding Issues and Initiatives

Several issues drew particular attention during congressional consideration of Energy and Water Development appropriations for FY2023. The issues described in this section—listed approximately in the order the affected agencies appear in the Energy and Water Development bill—were selected based on total funding involved, percentage of proposed increases or decreases, amount of congressional debate engendered, and potential impact on broader public policy considerations.

Congressionally Directed Funding

The 117th Congress included earmarks for site-specific projects and other activities in the FY2022 and FY2023 appropriations process. (These were referred to as "community project funding" (CPF) in the House and "congressionally directed spending" (CDS) in the Senate.) From the 112th through the 116th Congresses, moratorium policies largely prohibited earmarks for such projects. Funding for specific water projects constitutes the majority of the annual budget request for USACE and Reclamation; during the moratorium, Congress appropriated funding above the requested amounts for categories of work without identifying specific projects.

For FY2023, the House and Senate Appropriations committees invited Members of Congress to request CPF/CDS items, respectively. Both the House-passed FY2023 bill and the draft explanatory statement for S. 4660 included funding for site-specific studies and projects based on the Administration request and CPF/CDS requests, while providing additional water project funds

[6] House Appropriations Committee, *Report on the Suballocation of Budget Allocations for Fiscal Year 2023*, https://docs.house.gov/meetings/AP/AP00/20220622/114945/HMKP-117-AP00-20220622-SD007.pdf.

for agencies to allocate. The House Appropriations Committee report included 75 earmarks for USACE, 6 for Reclamation, and 64 for DOE. The draft explanatory statement for S. 4660 included 129 earmarks for USACE, 10 for Reclamation, and 93 for DOE. The Energy and Water Development earmarks totaled approximately $785 million in the House committee report and $810 million in the Senate draft explanatory statement.

The explanatory statement for the Consolidated Appropriations Act, 2023, included 339 energy and water development CPF/CDS projects totaling about $1.289 billion.[7] This included 175 for USACE, totaling about $1.020 billion, 12 for Reclamation, totaling about $47 million, and 152 for DOE, totaling about $222 million. DOE earmarks are provided under the Energy Projects appropriations account.

USACE Funding

The Administration's FY2023 budget request for USACE was $1.742 billion (-21%) lower than the enacted FY2022 regular appropriations. As with previous budget requests, a majority of the FY2023 request would have funded maintenance of existing infrastructure, as reflected by the share of funds requested for the Operation and Maintenance (O&M) account. The share of funding for construction in the FY2023 budget request was 19%, which was less than the 30% for this account in FY2022 annual appropriations.

The Administration requested funding for three new USACE studies and no new construction starts for FY2023. The enacted FY2022 annual appropriations funded 18 new studies and 4 construction projects, including those requested by the Administration, but did not provide the Administration with authority to initiate additional starts with FY2022 work plan appropriations beyond those provided for in the explanatory statement. Supplemental appropriations for FY2022 also funded 13 new studies and 38 new construction projects.[8]

Regular annual appropriations for USACE in Division D of the Consolidated Appropriations Act, 2023, totaled $8.310 billion, nearly the same as FY2022 regular appropriations. The proportion of USACE regular appropriations for construction in FY2023 was 22%, compared with 30% in FY2022, while regular appropriations for O&M were 61% in FY2023, compared with 55% in FY2022. However, Division N provided USACE with $1.480 billion in supplemental funds. While most of this funding ($1.130 billion) is limited to flood response and recovery for areas affected by natural disasters,[9] some is for construction and O&M of certain types of authorized projects regardless of disaster impacts. In addition, the IIJA appropriated $1.080 billion for use in FY2023, of which $1.000 billion is for navigation O&M activities,[10] and P.L. 117-180 designated $20 million in emergency funding for USACE environmental infrastructure assistance.

[7] Compiled from PDF copies of combined Community Project Funding and Congressionally Directed Spending provision data tables that appeared in the FY2023 Consolidated Appropriations Act Explanatory Statement reprinted in the December 20, 2022, Congressional Record. Amounts given are the totals above the Administration request for each earmark. Amounts over the presidential budget request level are considered Community Project Funding and Congressionally Directed Spending for purposes of House and Senate rules.

[8] Information provided to CRS by USACE on July 12, 2022.

[9] USACE spend plans for flood response and recovery funds for natural disasters are available at USACE, "Disaster Relief Supplemental Appropriations Act of 2023," at https://www.usace.army.mil/Missions/Civil-Works/Supplemental-Work/DRSAA23/.

[10] USACE spend plans for IIJA are located at USACE, "Bipartisan Infrastructure Law," at https://www.usace.army.mil/Missions/Civil-Works/Supplemental-Work/BIL/.

Pursuant to direction in the explanatory statement accompanying P.L. 117-328, Congress funded a "limited number" of new starts with FY2023 regular appropriations; these included the Administration's request for three new studies and several requests from Members. In addition to providing funds for the Administration's requested studies and projects, Congress in the explanatory statement (1) funded $1.020 billion for CPF/CDS items and (2) provided $562 million in additional funding and directed USACE to develop a work plan to distribute funds to individual studies and projects. Division N also directed USACE to develop work plans for the $350 million provided for construction and O&M of certain types of authorized projects.[11]

For more information, see CRS In Focus IF12090, *U.S. Army Corps of Engineers: FY2023 Appropriations*, by Anna E. Normand and Nicole T. Carter.

Western Drought

In late December 2022, when the Consolidated Appropriations Act, 2023 was enacted, approximately 64% of the western United States was experiencing some level of drought.[12] The FY2023 budget request included funding for Reclamation programs addressing drought in specific areas, such as funding for the Colorado River Drought Contingency Plans ($18.7 million in the Lower Colorado River Basin and $3.7 million in the Upper Colorado River Basin) and wildlife refuge water supply purchases in California's Central Valley ($11.8 million), as well as general drought grant funding for the Drought Response Program ($24.0 million). The explanatory statement accompanying P.L. 117-328 included $50 million in additional funding for implementing the Drought Contingency Plan in the Lower Colorado River Basin, and $10 million in addition to the budget request for the Drought Response Program to go to activities in the Klamath Basin.

In addition to regular appropriations, Congress has recently provided Reclamation with supplemental appropriations to address drought. First, in September 2021, Congress included $210 million in supplemental funding for Reclamation in the Disaster Relief Supplemental Appropriations Act, 2022 (P.L. 117-43, Division B); these funds were provided to combat western drought and wildfire. Then, in P.L. 117-169, enacted in August 2022, Congress approved an additional $4.588 billion for Reclamation for western drought mitigation and related issues, with $4 billion of these funds prioritized for drought-related actions in the Colorado River Basin.[13]

The drought has also led some Members to argue for more funding for the construction of new water storage projects in the West pursuant to Reclamation's authorities under Section 4007 of the Water Infrastructure Improvements for the Nation Act (WIIN Act; P.L. 114-322).[14] The executive branch typically requests no such funding in the budget; Congress has added funding for this authority in every year since FY2017. For FY2023 appropriations, the explanatory statement recommended $134 million of additional funding amounts for these projects.

For more information, see CRS In Focus IF12127, *Bureau of Reclamation: FY2023 Budget and Appropriations*, by Charles V. Stern.

[11] USACE work plans for FY2023 are available at USACE, "Civil Works Budget and Performance," at https://www.usace.army.mil/Missions/Civil-Works/Budget/#Work-Plans.

[12] U.S. Drought Monitor, Western U.S. Percent Area in Drought as of December 27, 2022, https://droughtmonitor.unl.edu/Maps/MapArchive.aspxhttps://droughtmonitor.unl.edu/DmData/DataGraphs.aspx.

[13] §§50231-50233 and §80004 of P.L. 117-169.

[14] For more information on these projects, see CRS In Focus IF10626, *Reclamation Water Storage Projects: Section 4007 of the Water Infrastructure Improvements for the Nation Act*, by Charles V. Stern.

Energy Efficiency and Renewable Energy Funding Increases and Reorganization

The Biden Administration proposed a 26% increase in the EERE appropriations account—from $3.200 billion in FY2022 to $4.019 billion in FY2023 (an increase of $819 million). EERE programs with the largest requested increases were Wind Energy Technologies (up $231 million, or 203%), Geothermal Technologies (up $93 million, or 84%), Solar Energy Technologies (up $245 million, or 84%), Renewable Energy Grid Integration (up $18 million, or 44%), and Vehicle Technologies (up $183 million, or 44%).

Those increases did not include several major EERE programs that the Administration proposed moving to separate DOE offices. FEMP would have received $170 million in FY2023 under the request, and the Office of State and Community Energy Programs, which handles state energy planning grants and low-income home weatherization assistance, would have received $727 million. The proposed new Office of Manufacturing and Energy Supply Chains would have received $27 million in FY2023. Including those proposed separate offices in the EERE request brought the total request to $4.943 billion, 54% above the FY2022 EERE total.

The House-passed bill would have provided nearly the amount requested for the EERE account ($4.016 billion), but it included funding for FEMP and low-income weatherization and state planning grants that the Administration had proposed under separate accounts. S. 4660 also included all those accounts under EERE, as in the past, with a total of $3.799 billion. The Consolidated Appropriations Act, 2023, provided $3.460 billion for EERE, including the proposed separate accounts. This constituted an increase of $260 million (8%) over the FY2022 regular appropriations and $1.723 billion (-43%) below the Administration request, including the proposed separate accounts.

IIJA appropriated $16.264 billion in FY2022 through FY2026 in additional emergency spending for EERE programs, of which $8.207 billion was for FY2022 and $2.222 billion was for FY2023. EERE received $17.962 billion in additional funding in IRA, available from FY2022 through FY2026, FY2027, FY2029, or FY2031, depending upon the provision.

For more details, see CRS In Focus IF12236, *DOE Office of Energy Efficiency and Renewable Energy FY2023 Appropriations*, by Corrie E. Clark and Melissa N. Diaz.

Focus on Carbon Capture, Utilization, and Storage (CCUS) and Carbon Removal

The Administration requested $479 million for Carbon Management Technologies for FY2023, much of which was for CCUS and carbon removal R&D activities. The request included an increase of $110 million (49%) for CCUS technologies in the Office of Fossil Energy and Carbon Management (FECM) above the FY2022 enacted appropriation. The $335 million CCUS budget request included a 72% increase in the Carbon Utilization program and a boost of 65% for Carbon Capture. Other FECM budget priorities included methane mitigation, carbon dioxide removal, domestic critical minerals production, and hydrogen production coupled with CCUS (sometimes called blue hydrogen).[15] The requested funds were in addition to IIJA FY2023 appropriations of $1.445 billion for FECM and $2.097 billion to capitalize the Carbon Dioxide Transportation Infrastructure Finance and Innovation (CIFIA) program.

[15] DOE, *FY 2023 Congressional Budget Request*, vol. 4, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-4-fecm.pdf.

The FY2023 Administration request included $3 million to support the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization, which was established pursuant to Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad."[16] The requested funds were to "support targeted investments across the Federal government to help affected communities impacted by the climate crisis and shift to a clean energy economy."[17]

The House-passed bill included $479 million for Carbon Management Technologies, including CCUS and carbon removal.[18] For CCUS, the committee called for particular focus on carbon capture at natural gas power plants, including not less than $20 million for research and optimization of such technologies, and up to $60 million "to support front-end engineering and design studies, including for the development of a first-of-its-kind carbon capture project at an existing natural gas combined cycle plant." On September 23, 2022, DOE announced $2.54 billion in IIJA funding available for front-end engineering and design studies for carbon capture facilities, including facilities designed to capture carbon dioxide from natural gas power plants.[19] For carbon removal, the House appropriations bill would have provided not less than $175 million overall—$65 million from FECM, $26 million from EERE, and $84 million from Science.

The draft explanatory statement for S. 4660 included $466 million for Carbon Management Technologies. Up to $90 million was to be provided "to support front-end engineering and design studies, large pilot projects, and demonstration projects" for carbon capture and at least $40 million for the CarbonSAFE transport and storage program. For carbon removal, S. 4660 would have provided not less than $180 million overall—not less than $75 million from FECM, $26 million from EERE, and $90 million from Science.

The Consolidated Appropriations Act, 2023, provided $460 million for Carbon Management Technologies, a decrease of $19 million (-4%) from the Administration request. The largest decrease from the request was for Carbon Capture (down by $28 million, or -17%), and the largest increase from the request was for Hydrogen with Carbon Management (up by $21 million, or 28%).

Increases for DOE Loan Programs

The Administration's FY2023 budget request included $150 million to pay for credit subsidy costs for qualifying projects under DOE's Title 17 Innovative Technology Loan Guarantee Program. The same amount for subsidy costs was requested in FY2022 but not approved. The FY2023 budget justification called for the annual appropriation for Title 17 subsidy costs to continue and gradually increase to $164 million in FY2027.[20]

[16] Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," Section 218, January 27, 2021, https://downloads.regulations.gov/EPA-HQ-OPPT-2021-0202-0012/content.pdf. Additional information about the working group is available at https://energycommunities.gov/.

[17] DOE, *FY 2023 Congressional Budget Justification*, vol. 4, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-4-fecm.pdf.

[18] For background information on carbon capture, utilization, and storage (CCUS), see CRS Report R44902, *Carbon Capture and Sequestration (CCS) in the United States*, by Angela C. Jones and Ashley J. Lawson.

[19] DOE, "Funding Notice: Bipartisan Infrastructure Law: Carbon Capture Demonstration Projects Program," https://www.energy.gov/fecm/funding-notice-bipartisan-infrastructure-law-carbon-capture-demonstration-projects-program.

[20] DOE, *FY 2023 Congressional Budget Justification*, vol. 3, https://www.energy.gov/sites/default/files/2022-04/doe-

Subsidy cost payments, which reflect the budgetary effects of federal credit programs, are required up-front by the Federal Credit Reform Act of 1990 (FCRA; Section 13201 of P.L. 101-58). For Title 17 loan guarantees, subsidy costs can be paid through appropriations, by the borrower, or a combination thereof. The Office of Management and Budget provides guidance for calculating subsidy costs, which are unique to each qualifying project.[21] From an overall project portfolio perspective, Title 17 subsidy costs range from 10% to 15% of loan guarantee commitments.

Title 17 (XVII) of the Energy Policy Act of 2005 (EPACT05; P.L. 109-58, as amended at 42 U.S.C. §§16511 et seq.) authorizes DOE to guarantee loans for projects that meet the following criteria:

1. Avoid, reduce, utilize, or sequester air pollutants or greenhouse gas emissions, and
2. Employ new or significantly improved technologies, including projects that employ elements of commercial technologies in combination with new or significantly improved technologies.

To date, the original and ongoing Title 17 authority—referred to as Section 1703—has provided financial support for two projects. The most recent Section 1703 loan guarantee, issued in June 2022, was for $504.4 million to finance a hydrogen energy storage facility in Utah.[22] Most Title 17 loan guarantee commitments were provided under a temporary authority—referred to as Section 1705—that expired in September 2011.[23]

Approximately $61.9 billion of loan guarantee authority is currently available for Section 1703 projects, after a $40 billion increase by IRA. One factor that has resulted in low utilization of Section 1703 authority is the requirement for most borrowers to pay for all or a portion of a project's credit subsidy cost. Congress appropriated $170 million in 2011 for Section 1703 renewable energy and efficient energy projects, subsequently reduced to $161 million after a rescission and transfer. IRA appropriated an additional $3.6 billion for Section 1703 subsidy costs. IRA also established a time-limited (available through FY2026), $250 billion Title 17 loan guarantee commitment authority—Section 1706—for "Energy Infrastructure Reinvestment Financing." IRA appropriated $5 billion to carry out the Section 1706 program.

The additional $150 million credit subsidy appropriation requested by the Administration for FY2023 would have supported up to $5 billion in loan guarantees. The Administration proposed provisions to allow these loan guarantees to be used for projects authorized by IIJA but currently prohibited from using existing Title 17 authority. These projects could have state support and would not be required to employ significantly improved technology.

For DOE's Advanced Technology Vehicle Manufacturing (ATVM) loan program, the Administration proposed expanding eligible projects to additional types of vehicle technology, including "advanced medium- and heavy-duty vehicles, locomotives, maritime vessels, aircraft,

fy2023-budget-volume-3-lpo-v3.pdf.

[21] See OMB Circular A-11, Part 5, Section 185, "Federal Credit," available at https://www.whitehouse.gov/wp-content/uploads/2018/06/s185.pdf.

[22] DOE Loan Programs Office, "Advanced Clean Energy Storage," https://www.energy.gov/lpo/advanced-clean-energy-storage.

[23] For additional information, see CRS Insight IN11432, *Department of Energy Loan Programs: Title XVII Innovative Technology Loan Guarantees*, by Phillip Brown et al.

and hyperloop technology."[24] The Consolidated Appropriations Act, 2023—as did the House-passed bill and S. 4660—included funding only for administrative expenses for the Title 17 loan guarantee program and ATVM loan program, excluding the proposed Administration initiatives.

For DOE's Tribal Energy Loan Guarantee Program (TELGP), the Administration expressed support for continuing authority provided in the FY2022 appropriations act that allows applicants to apply for direct loans. Both the House-passed bill and S. 4660 would have increased appropriations for this program from the Administration's request of $1.9 million to $10 million, while the enacted measure provided $4 million. IRA had previously increased TELGP's loan guarantee authority to $20 billion and appropriated $75 million for the program.

For more information, see CRS Insight IN11984, *Inflation Reduction Act of 2022 (IRA): Department of Energy Loan Guarantee Programs*, by Phillip Brown.

Startup of the Office of Clean Energy Demonstrations

The Administration requested $214 million in FY2023 to continue the startup of the DOE Office of Clean Energy Demonstrations (OCED), which was authorized and initially funded by IIJA (see **Table 1**). The House-passed bill included $189 million for OCED, S. 4660 would have provided $150 million, and the enacted measure appropriated $89 million.

OCED funds clean energy and industrial decarbonization demonstration projects for potential commercialization. For FY2023, OCED is planning to solicit proposals to demonstrate technologies "that integrate renewable and distributed energy systems with broader energy networks" in addition to IIJA-funded programs.[25] OCED is also taking over DOE support for two advanced nuclear reactor demonstration projects previously overseen by the DOE Office of Nuclear Energy.

DOE requested $25 million in FY2023 for 90 full-time equivalent (FTE) staff for OCED program direction. For FY2022, OCED received $20 million, in addition to $21.456 billion appropriated to OCED for FY2022-FY2026 by IIJA (see **Table 1**). IRA appropriated $5.812 billion for an OCED program on Advanced Industrial Facilities Deployment for FY2022-FY2026.

Table 1. Additional Appropriations for Clean Energy Demonstrations in Infrastructure Investment and Jobs Act (P.L. 117-58)

(budget authority in millions of current dollars)

Program	FY2022	FY2023	FY2024	FY2025	FY2026	Total
Energy Storage Demonstration Pilot Grants Program	88.8	88.8	88.8	88.8	—	355.0
Long-Duration Demonstration Initiative and Joint Program	37.5	37.5	37.5	37.5	—	150.0
Advanced Reactor Demonstration Program	677.0	600.0	600.0	600.0	—	2,477.0
Carbon Capture Large-scale Pilot Projects	387.0	200.0	200.0	150.0	—	937.0

[24] DOE, *FY 2023 Congressional Budget Justification*, vol. 3, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-3-lpo-v3.pdf.

[25] DOE, *FY 2023 Congressional Budget Justification*, vol. 4, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-3-oced-1.pdf.

Program	FY2022	FY2023	FY2024	FY2025	FY2026	Total
Carbon Capture Demonstration Projects	937.0	500.0	500.0	600.0	—	2,537.0
Industrial Emission Demonstration Projects	100.0	100.0	150.0	150.0	—	500.0
Clean Energy Demonstration Program on Current and Former Mine Land	100.0	100.0	100.0	100.0	100.0	500.0
Regional Clean Hydrogen Hubs	1,600.0	1,600.0	1,600.0	1,600.0	1,600.0	8,000.0
Program Upgrading Our Electric Grid and Ensuring Reliability and Resiliency	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	5,000.0
Energy improvement in rural and remote areas	200.0	200.0	200.0	200.0	200.0	1,000.0
Total	**5,127.3**	**4,426.3**	**4,476.3**	**4,526.3**	**2,900.0**	**21,456.0**
3% set-aside for program administration	153.8	132.8	134.3	135.8	87.0	643.7

Source: P.L. 117-58, Division J.

Note: Appropriations would be in addition to other amounts made available for these purposes.

Increases in Crosscutting Hydrogen Funding

The DOE hydrogen program includes several offices with responsibility for supporting hydrogen work based on different primary sources of energy (e.g., renewable, fossil, nuclear) and types of end-use (e.g., vehicles, portable power, thermal comfort). DOE's FY2023 request for hydrogen appropriations totaled $406 million, an increase of $76 million (23%) over the FY2022 level. Most of the hydrogen funding comes from EERE and FECM, with smaller amounts from Nuclear Energy and Science. DOE launched a "Hydrogen Shot" initiative in June 2021—one of its "Energy Earthshots" dedicated to the scale-up of emerging clean energy technologies—with a goal of making hydrogen, produced through electrolysis, commercially available at a cost of $1 for 1 kilogram in 1 decade, not including delivery and dispensing.

The House-passed bill and S. 4660 draft explanatory statement did not provide totals for the crosscutting hydrogen program. The House Appropriations Committee report directed DOE "to continue to emphasize hydrogen production and the development of hydrogen refueling infrastructure nationwide to accelerate the adoption of zero-emission fuel cell transportation." The Senate draft explanatory statement supported DOE's "continued coordination on hydrogen energy and fuel cell technologies in order to maximize the effectiveness of investments in hydrogen-related activities."

The FY2023 explanatory statement directed DOE to spend at least $316 million for the hydrogen crosscut: $163 million from EERE, $113 million from FECM, $23 million from NE, and $17 million from the Office of Science. Those hydrogen activities are to be coordinated with the Office of Electricity, the Office of Clean Energy Demonstrations, and ARPA-E, according to the explanatory statement.

In addition to funding in the Energy and Water Development appropriations bill, IIJA appropriated $9.500 billion for three hydrogen- and fuel cell-related DOE programs from FY2022 to FY2026 ($1.900 billion in FY2023). The largest of these, the Regional Clean Hydrogen Hubs in the Office of Clean Energy Demonstrations, was appropriated $8.000 billion to support demonstration projects involving networks of clean hydrogen producers and consumers and the connecting infrastructure. DOE plans to select 6 to 10 hubs with combined total funding of an

estimated $6-$7 billion, with a "preferred maximum" of $1.250 billion per hub. The balance of the $8 billion appropriated for the hubs in the IIJA may be reserved for additional hubs or other supporting activities.

(For more information, see CRS In Focus IF12163, *Department of Energy Funding for Hydrogen and Fuel Cell Technology Programs*, by Martin C. Offutt.)

Overall Level Funding for Weapons Activities

The FY2023 budget request for DOE Weapons Activities was 4% higher than the FY2022 enacted level ($16.486 billion vs. $15.920 billion). Weapons Activities programs are carried out by the National Nuclear Security Administration (NNSA), a semiautonomous agency within DOE. The House-passed bill included $16.333 billion for Weapons Activities (-1% below the request), while S. 4660 would provide $16.986 billion (3% above the request). The enacted amount was $17.116 billion, an increase of $1.196 billion (8%) over the FY2022 enacted level.

Under Weapons Activities, the FY2023 budget request included funding for several major nuclear warhead life-extension programs (LEPs):

- NNSA requested $672 million for the B61-12 LEP in FY2023, a decrease of $100 million (-13%) from the FY2022 enacted amount. The B61-12 LEP is to combine four existing variants of the B61 gravity bomb. Both the House-passed bill and S. 4660 included the requested amount, as did the enacted measure.
- NNSA proposed $162 million for the W88 Alteration in FY2023, a reduction of $45 million (-22%) from the FY2022 amount. The program is to upgrade the arming-fuzing-firing system on the warhead and refresh the warhead's conventional high explosives. This warhead is carried on a portion of the D-5 (Trident) submarine-launched ballistic missiles (SLBMs). Both the House-passed bill and S. 4660 included the requested amount, as did the enacted measure.
- NNSA requested $1.122 billion for the W80-4 in FY2023, an increase of $42 million (4%) over the FY2021 level. This is the warhead for a new long-range cruise missile. The LEP would seek to use common components from other LEPs and to improve warhead safety and security. Both the House-passed bill and S. 4660 included the requested amount, which was also provided by the enacted measure.
- NNSA requested $680 million for the W87-1 warhead modification program for FY2023, a decrease of $11 million (-2%) from FY2021. The Air Force plans to deploy the W87-1 on the new U.S. land-based intercontinental ballistic missile (ICBM), the Ground-Based Strategic Deterrent (GBSD). This would provide the Air Force with an alternative warhead if the W87-1 FPU is delayed. Both the House-passed bill and S. 4660 included the requested amount, as did the enacted measure.
- NNSA requested $241 million for the W93 warhead, which is a new design intended for deployment on ballistic missile submarines by 2040.[26] The full amount was approved by the enacted measure.

Both the House Appropriations Committee report and the S. 4660 draft Explanatory Statement expressed concerns about NNSA's schedule for developing production capacity for plutonium

[26] Center for Arms Control and Non-Proliferation, "Fact Sheet: The W93 Warhead," January 28, 2021, https://armscontrolcenter.org/the-w93-warhead.

pits, a central component of nuclear warheads. The House Committee report said, "The slip in schedule for achieving a production rate of 50 plutonium pits per year at the Savannah River Site is symptomatic of the lack of a fully mature, risk-informed integrated master schedule (IMS)." The explanatory statement, echoing language in the draft report on S. 4660, directs NNSA to issue a two-site plan "covering the entirety of the work required to produce 80 pits per year." NNSA announced the two-site strategy on February 9, 2023.[27] Pit production is included under Primary Capability Modernization, which received an enacted appropriation of $3.144 billion, an increase of $476 million above the request.

Appropriations for NNSA nuclear weapons activities and other defense programs typically closely track the levels authorized in annual National Defense Authorization Acts (NDAAs). The House passed the NDAA for FY2023 on July 14, 2022 (H.R. 7900) and the Senate Armed Services Committee reported its version on July 18, 2022 (S. 4543, S.Rept. 117-130). It was signed into law December 23, 2022 (P.L. 117-263).

Cleanup of Former Nuclear Sites: Adequacy of Proposed Funding

DOE's Office of Environmental Management (EM) is responsible for environmental cleanup and waste management at the department's nuclear facilities. The $8.252 billion request for EM activities for FY2023 was $754 million (4%) above the FY2022 enacted level of $7.904 billion. The House-passed bill included $7.880 billion for EM (nearly the same as FY2022), while S. 4660 would have provided $8.307 billion (up 5% from FY2022). The Consolidated Appropriations Act, 2023, provided a total of $8.263 billion for EM programs, about the same as the request and up 5% from the FY2022 enacted amount.

The primary budgetary component of the EM program is the Defense Environmental Cleanup account, which finances the cleanup of former nuclear weapons production sites. For FY2023, the Administration requested $7.106 billion, 6% above the FY2022 enacted amount. The House-passed bill and S. 4660 would have provided $6.723 billion and $7.064 billion, respectively, for that account, while the enacted measure provided $7.025 billion (5% above FY2022). For the Non-Defense Environmental Cleanup account, which funds the cleanup of federal nuclear energy research sites, the request was $323 million, while the House-passed bill included $334 million and S. 4660 $374 million. The enacted measure provided $359 million, 7% above the FY2022 amount. The third component of the EM budget is the Uranium Enrichment Decontamination and Decommissioning Fund, for which the FY2023 request was $822 million, while the House-passed bill would have provided $823 million and S. 4660 $869 million. The enacted measure provides $879 million, a 2% increase from FY2022. This fund was established by Title XI of the Energy Policy Act of 1992 (P.L. 102-486) to pay for the cleanup of three federal facilities that enriched uranium for national defense and civilian purposes, 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, the Environmental Protection Agency, and the states. These milestones establish time frames for the completion of specific actions to satisfy applicable requirements at individual sites.

[27] NNSA, "NNSA Approves Start of Construction for Plutonium Pit Production Subproject at Los Alamos National Laboratory," February 9, 2023, https://www.energy.gov/nnsa/articles/nnsa-approves-start-construction-plutonium-pit-production-subproject-los-alamos.

The House Appropriations Committee report criticized the Administration's request for increasing Defense Environmental Cleanup funding for some sites at the expense of others, such as Hanford (WA) and Savannah River (SC). According to the committee report, "The recommendation continues to fund a balanced approach that sustains the momentum of ongoing cleanup activities more consistently across all Department cleanup sites."

Bill Status and Recent Funding History

Table 2 indicates the steps taken during consideration of FY2023 Energy and Water Development appropriations. (For more details, see the CRS Appropriations Status Table at http://www.crs.gov/AppropriationsStatusTable/Index.)

Table 2. Status of Energy and Water Development Appropriations, FY2023

Subcommittee Markup							Final Approval		
House	Senate	House Comm.	House Passed	Senate Comm.	Senate Passed	Conf. Report	House	Senate	Public Law
6/21/22	None	6/28/22	7/20/22	None	None	None	12/23/22	12/22/22	12/29/22

Source: CRS Appropriations Status Table.

Notes: The House Energy and Water Development appropriations bill was combined with five others for initial House passage (H.R. 8294). Instead of a conference report, an explanatory statement was published in the Congressional Record on December 20, 2022.

Table 3 includes budget totals for regular (excluding supplementals) energy and water development appropriations enacted for FY2017 through FY2023.

Table 3. Energy and Water Development Appropriations, FY2017-FY2023

(budget authority in billions of current dollars)

FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp
38.9[a]	43.3[b]	44.7[c]	48.4[d]	49.5	55.6[e]	57.5	59.7	60.7	59.2

Source: Compiled by CRS from totals provided by congressional budget documents.

Notes: Figures exclude permanent budget authorities, scorekeeping adjustments, rescissions, and emergency funding.

a. Amount does not include $1.0 billion in emergency funding for the USACE (P.L. 114-254).

b. Amount does not include $17.4 billion in emergency funding for USACE and DOE (P.L. 115-123).

c. Amount does not include supplemental funding provided by P.L. 116-20 ($3.3 billion for USACE and $16 million for Reclamation).

d. Amount does not include supplemental funding provided by P.L. 116-136.

e. Does not include appropriations from P.L. 117-58, P.L. 117-43, P.L. 117-169. Does not include budget scorekeeping adjustments.

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 (Bureau of Reclamation and Central Utah Project); Title III—Department of Energy; and Title IV—Independent Agencies, as shown in **Table 4**. Major programs in the bill are described in this section in the approximate order they

appear in the bill. Previous appropriations and the amounts recommended and approved during the major stages of the FY2023 appropriations process are shown in the accompanying tables, and additional details about many of these programs are provided in separate CRS reports as indicated. For a discussion of current funding issues related to these programs, see "Funding Issues and Initiatives," above. Congressional clients may obtain more detailed information by contacting CRS analysts listed in CRS Report R42638, *Appropriations: CRS Experts*, by James M. Specht and Justin Murray.

Table 4. Energy and Water Development Appropriations Summary

(budget authority in millions of current dollars)

Title	FY2019 Approp	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp
Title I: Corps of Engineers	6,999	7,650	7,795	8,343	6,601	8,889	8,758	8,310
Title II: CUP and Reclamation	1,565	1,680	1,691	1,924	1,434	1,914	1,950	1,954
Title III: Department of Energy	35,709	38,657	39,625	44,856	49,004	48,340	49,495	48,445
Title IV: Independent Agencies	390	407	414	454	508	521	482	494
General provisions	21	—	—	—	—	—	—	—
Subtotal	**44,684**	**48,395**	**49,525**	**55,576**	**57,548**	**59,664**	**60,685**	**59,204**
Rescissions and Scorekeeping Adjustments[a]	-24	-71	-73	-2,704	-2,018	-3,389	-3,140	10,891
E&W Total	**44,660**	**48,324**	**49,452**	**52,872**	**55,530**	**56,275**	**57,540**	**70,095**

Sources: P.L. 117-328 and explanatory statement; S. 4660 and draft explanatory statement; H.Rept. 117-394; explanatory statement for H.R. 2371; CBO Estimate for H.R. 8294; S.Rept. 117-36; H.Rept. 117-98; H.R. 4502; FY2022 agency budget justifications; explanatory statement for H.R. 133, 116th Congress; FY2021 Senate Appropriations Committee majority draft; H.R. 7617; H.Rept. 116-449; President's Budget FY2021; explanatory statement for Division C of H.R. 1865, 116th Congress; S.Rept. 116-102; S. 2470; H.R. 2740; CBO Current Status Report; H.Rept. 116-83; H.Rept. 115-929; and S.Rept. 115-258. Excludes emergency appropriations. Subtotals may include other adjustments. Columns may not sum to totals because of rounding and adjustments.

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

Agency Budget Justifications

FY2023 budget justifications for the largest agencies funded by the annual Energy and Water Development appropriations bill can be found through the links below. The justifications provide detailed descriptions and funding breakouts for programs, projects, and activities under the agencies' jurisdiction.

- Title I, U.S. Army Corps of Engineers, Civil Works, http://www.usace.army.mil/Missions/CivilWorks/Budget (see **Table 5**)

- Title II (see **Table 7**)
  - Bureau of Reclamation, https://www.usbr.gov/budget/
  - Central Utah Project, https://www.doi.gov/sites/doi.gov/files/fy2022-cupca-budget-justification.pdf
- Title III, Department of Energy, https://www.energy.gov/cfo/articles/fy-2023-budget-justification (see **Table 8**)
- Title IV, Independent Agencies (see **Table 12**)
  - Appalachian Regional Commission, https://www.arc.gov/budget-performance-and-policy
  - Nuclear Regulatory Commission, https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1100/
  - Defense Nuclear Facilities Safety Board, https://www.dnfsb.gov/about/congressional-budget-requests
  - Nuclear Waste Technical Review Board, http://www.nwtrb.gov/about-us/plans

Army Corps of Engineers

USACE 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 Development appropriations bill, USACE plans, builds, operates, and in some cases maintains water resource facilities for coastal and inland navigation, riverine and coastal flood risk reduction, and aquatic ecosystem restoration.[28]

In recent decades, Congress has generally authorized USACE studies, construction projects, and other activities in omnibus water authorization bills, typically titled as Water Resources Development Acts (WRDA), prior to funding them through appropriations legislation. Recent Congresses enacted omnibus water resources authorization acts in 2014, 2016, 2018, 2020, and 2022. (The latest WRDA was Title LXXXI of Division H of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, P.L. 117-263.) These acts consisted largely of authorizations for new USACE projects, and they altered numerous USACE policies and procedures.[29]

Unlike for highways and in municipal water infrastructure programs, federal funds for USACE are not distributed to states or projects based on formulas or delivered via competitive grants. Instead, USACE generally is directly involved in planning, designing, and managing the construction of projects that are cost-shared with nonfederal project sponsors.

Policies in the 112th through the 116th Congresses limited congressionally directed funding of site-specific projects (i.e., *earmarks*). Prior to the 112th Congress, Congress would direct funds to specific projects not in the budget request or increase funds for certain projects. For FY2011-FY2021, Congress appropriated additional funding for categories of USACE work without

[28] Military responsibilities are funded through the Military Construction, Veterans Affairs, and Related Agencies appropriations bill.

[29] For more information on USACE authorization legislation, see CRS In Focus IF11322, *Water Resources Development Acts: Primer*, by Nicole T. Carter and Anna E. Normand, and CRS Report R45185, *Army Corps of Engineers: Water Resource Authorization and Project Delivery Processes*, by Nicole T. Carter and Anna E. Normand.

identifying specific projects. During that period, after congressional enactment of the appropriations legislation and accompanying report language on priorities and other guidance for use of the additional funding, the Administration developed a work plan that reported on (1) the studies and construction projects selected to receive funding for the first time (new starts) and (2) the specific studies and projects receiving additional funds. For FY2022 and FY2023, Congress approved earmarks in specified categories, in addition to providing additional funding for specific categories for USACE to allocate in work plans.[30] For more information, see CRS Report R46320, *U.S. Army Corps of Engineers: Annual Appropriations Process*, by Anna E. Normand and Nicole T. Carter.

Table 5 shows USACE appropriations accounts from FY2019 through FY2023.

Table 5. Army Corps of Engineers

(budget authority in millions of current dollars)

Program	FY2019 Approp	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp
Investigations	125.0	151.0	153.0	143.0	105.9	160.0	165.7	172.5
Construction	2,183.0	2,681.0	2,692.6	2,492.8	1,221.3	2,475.2	2,159.6	1,808.8
Mississippi River and Tributaries (MR&T)	368.0	375.0	380.0	370.0	225.0	350.0	373.1	370.0
Operation and Maintenance (O&M)	3,739.5	3,790.0	3,849.7	4,570.0	2,599.1	5,153.0	5,131.6	5,078.5
Regulatory	200.0	210.0	210.0	212.0	210.0	213.0	213.0	218.0
General Expenses	193.0	203.0	206.0	208.0	200.0	212.0	215.0	215.0
FUSRAP	150.0	200.0	250.0	300.0	250.0	278.3	450.0	400.0
Flood Control and Coastal Emergencies (FCCE)	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
Office of the Asst. Secretary of the Army	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
WIFIA Program[b]	—	—	14.2	7.2	10.0	7.2	10.0	7.2
Harbor Maintenance Trust Fund	—	—	—	—	1,726.0[a]	—	—	—

[30] USACE work plans are available at USACE, "Civil Works Budget and Performance", at https://www.usace.army.mil/Missions/Civil-Works/Budget/#Work-Plans.

Program	FY2019 Approp	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp
Inland Waterways Trust Fund	—	—	—	—	13.8[a]	—	—	—
Rescissions	—	—	-0.5	—	—	—	—	—
Total Title I	**6,998.5**	**7,650.0**	**7,795.0**	**8,343.0**	**6,601.0**	**8,888.7**	8,758.0	**8,310**

Sources: P.L. 117-328 and explanatory statement; S. 4660 and draft explanatory statement; explanatory statement for H.R. 2371; CBO Estimate for H.R. 8294; S.Rept. 117-36; H.Rept. 117-98; H.R. 4502; USACE Civil Works FY2022 Budget; explanatory statement for H.R. 133, 116th Congress; FY2021 Senate Appropriations Committee majority draft; H.R. 7617, H.Rept. 116-449; President's Budget, FY2021; explanatory statement for Division C of H.R. 1865, 116th Congress; S.Rept. 116-102; S. 2470; H.R. 2740; CBO Current Status Report; H.Rept. 116-83; FY2020 Budget Justification; H.Rept. 115-929; S.Rept. 115-258; S.Rept. 115-132; H.Rept. 115-230; and P.L. 115-31 and explanatory statement. FY2020 and FY2021 request numbers can be found at https://www.usace.army.mil/Missions/Civil-Works/Budget/.

Notes: Columns may not sum to totals because of rounding.

a. In the Administration's request, some activities that would have previously been funded in these accounts were proposed to be funded directly from the Harbor Maintenance Trust Fund (HMTF) and Inland Waterway Trust Fund (IWTF) accounts. That is, the Administration proposed funding eligible USACE activities directly from the trust funds. This would have replaced the current practice of having USACE's O&M, Construction, and MR&T accounts incur expenses for HMTF-eligible and IWTF-eligible activities, and for these expenses to be reimbursed from the HMTF and IWTF accounts. For example, HMTF-eligible maintenance dredging would no longer have been funded by the O&M account and reimbursed by the HMTF; instead the dredging would have been funded directly from the HMTF account. The proposal was not included in the enacted measure, and similar proposals also were not enacted in FY2019, FY2020, and FY2021.

b. The Consolidated Appropriations Act, 2021, created a new USACE account to support direct loans and for the cost of guaranteed loans, as authorized by the Water Infrastructure Finance and Innovation Act of 2014 (WIFIA, Title V, Subtitle C of P.L. 113-121).

In addition to the regular appropriations for FY2023, USACE received the following FY2023 supplemental appropriations:

- $1.480 billion in Division N of P.L. 117-328, as shown in **Table 6**;
- $1.080 billion in IIJA (P.L. 117-58), as shown in **Table 6;** and
- $20 million in the FY2023 continuing resolution (P.L. 117-180).

Table 6. Additional FY2023 Appropriations for USACE

(budget authority in millions of current dollars)

Account	IIJA FY2023 Approp	Division N FY2023 Approp
Investigations	30.0	5.0
Construction	50.0	558.5[a]
Mississippi River and Tributaries	—	15.5
Operation and Maintenance	1,000.0	376.8[b]
Flood Control and Coastal Emergencies	—	519.2
General Expenses	—	5.0
Totals	**1,080.0**	**1,480.0**

Source: Infrastructure Investment and Jobs Act (P.L. 117-58) and Division N of P.L. 117-328.

Notes: USACE spending information for IIJA and other supplemental appropriations are available at "USACE Supplemental Program," at https://www.usace.army.mil/Missions/Civil-Works/Supplemental-Work/. The majority of USACE appropriations provided by Division N of P.L. 117-328 were limited to flood response and recovery for areas affected by natural disasters; exceptions are footnoted.

a. $297.2 million under Construction is for certain types of authorized projects regardless of disaster impacts. USACE allocated this funding in the FY2023 Construction work plan at USACE, "Civil Works Budget and Performance," at https://www.usace.army.mil/Missions/Civil-Works/Budget/#Work-Plans.

b. $52.8 million under Operation and Maintenance is for certain types of authorized projects regardless of disaster impacts. USACE allocated this funding in the FY2023 Operation and Maintenance work plan at USACE, "Civil Works Budget and Performance," at https://www.usace.army.mil/Missions/Civil-Works/Budget/#Work-Plans.

Bureau of Reclamation and Central Utah Project

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 USACE built hundreds of flood control and navigation projects, Reclamation's original mission was to develop water supplies, primarily for irrigation to reclaim arid lands in the West for farming and ranching. Reclamation has evolved into an agency that assists in meeting the water demands in the West while working to protect the environment and the public's investment in Reclamation infrastructure. The agency's municipal and industrial water deliveries have more than doubled since 1970.

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 31 million people. 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 other benefits. Reclamation facility operations are often controversial, particularly for their effect on fish and wildlife species and because of conflicts among competing water users during drought conditions.

As with USACE, the Reclamation budget is made up largely of individual project funding lines, rather than general programs that would not be covered by congressional earmark requirements. Therefore, as with USACE, these Reclamation projects have often been subject to earmark disclosure rules. The moratorium on earmarks through FY2021 restricted congressional steering of money directly toward specific Reclamation projects. For FY2022 and FY2023, the rules again allowed congressionally directed funding for specific Reclamation projects.

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.[31] Reclamation also typically requests funds in a number of smaller accounts, and has proposed additional accounts in recent years.

Implementation and oversight of the Central Utah Project, also funded by Title II, is conducted by a separate office within the Department of the Interior.[32]

[31] 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.

[32] The Central Utah Project moves water from the Colorado River basin in eastern Utah to the western slopes of the Wasatch Mountain range. It was authorized in 1956 under the Colorado River Storage Project Act (P.L. 84-485). For more information, see the CUP website at https://www.usbr.gov/projects/index.php?id=498.

For more information, see CRS In Focus IF12127, *Bureau of Reclamation: FY2023 Budget and Appropriations*, by Charles V. Stern. Previous appropriations and the amounts recommended and approved during the major stages of the FY2023 appropriations process are shown in **Table 7**.

Table 7. Bureau of Reclamation and CUP

(budget authority in millions of current dollars)

Program	FY2019 Approp	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp
Water and Related Resources	1,392.0	1,512.2	1,521.1	1,747.1	1,270.4	1,749.1	1,784.9	1,787.2
Policy and Administration	61.0	60.0	60.0	64.4	65.1	63.1	65.1	65.1
CVP Restoration Fund (CVPRF)	62.0	54.8	55.9	56.5	45.8	45.8	45.8	45.8
Calif. Bay-Delta (CALFED)	35.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
Gross Current Reclamation Authority	**1,550.0**	**1,660.0**	**1,670.0**	**1,901.0**	**1,414.2**	**1,891.0**	**1,928.8**	**1,931.0**
Central Utah Project (CUP) Completion	15.0	20.0	21.0	23.0	20.0	23.0	21.0	23.0
Total, Reclamation and CUP	**1,565.0**	**1,680.0**	**1,691.0**	**1,924.0**	**1,434.2**	**1,914.0**	**1,949.8**	**1,954.0**

Sources: P.L. 117-328 and explanatory statement; S. 4660 and draft explanatory statement; explanatory statement for H.R. 2371; CBO Estimate for H.R. 8294; S.Rept. 117-36; H.Rept. 117-98; H.R. 4502; Reclamation and CUP FY2022 congressional budget justifications, explanatory statement for H.R. 133, 116th Congress; FY2021 Senate Appropriations Committee majority draft; H.R. 7617, H.Rept. 116-449; President's Budget, FY2021; explanatory statement for Division C of H.R. 1865, 116th Congress; S.Rept. 116-102; H.R. 2740; CBO Current Status Report; H.Rept. 116-83; FY2020 Budget Justifications; H.Rept. 115-929; S.Rept. 115-258; S.Rept. 115-132; H.Rept. 115-230; and P.L. 115-31 and explanatory statement. Excludes offsets and permanent appropriations.

Note: Columns may not sum to totals because of rounding. CVP = Central Valley Project.

Additional Funding

For FY2023, the IIJA provides $1.660 billion for Reclamation's Water and Related Resources account. (For more information, see CRS Report R47032, *Bureau of Reclamation Provisions in the Infrastructure Investment and Jobs Act (P.L. 117-58)*, by Charles V. Stern and Anna E. Normand.) IRA also appropriated additional funds in FY2022 for Reclamation: $4.000 billion for drought mitigation, available through FY2026; $550 million for disadvantaged communities, available through FY2031; $25 million for projects to cover water conveyance facilities with solar panels, available through FY2031; and $13 million for drought relief actions to mitigate drought impacts for tribes affected by the operation of a Reclamation water project, available through FY2031.

Department of Energy

The Energy and Water Development appropriations bill has funded all DOE programs since FY2005. Major DOE activities are authorized under multiple energy statutes and include (1) R&D on renewable energy, energy efficiency, nuclear power, fossil energy, and electricity; (2) the Strategic Petroleum Reserve; (3) energy statistics, projections, and analysis; (4) general science; (5) loan programs; (6) environmental cleanup; and (7) nuclear weapons and nonproliferation programs. **Table 8** provides the recent funding history for DOE programs, which are briefly described further below.

Table 8. Department of Energy

(budget authority in millions of current dollars)

	FY2020 Approp.	FY2021 Approp.	FY2022 Approp.	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp.
Energy Programs							
Energy Efficiency and Renewable Energy	2,790.0	2,861.8	3,200.0	4,018.9	4,016.0	3,799.0	3,460.0
Electricity Delivery[a]	190.0	211.7	277.0	297.4	350.0	362.0	350.0
Cybersecurity, Energy Security, and Emergency Response[a]	156.0	156.0	185.8	202.1	205.0	202.1	200.0
Nuclear Energy[b]	1,493.4	1,507.6	1,654.8	1,675.1	1,779.8	1,765.6	1,473.0
Fossil Energy and Carbon Management	750.0	750.0	825.0	893.2	875.0	880.0	890.0
Energy Projects					117.3	109.8	222.0
Naval Petroleum and Oil Shale Reserves	14.0	13.0	13.7	13.0	13.0	13.0	13.0
Strategic Petroleum Reserve[c]	205.0	189.0	226.4	222.2	222.2	60.5	-1,844.7
Northeast Home Heating Oil Reserve	10.0	6.5	6.5	7.0	7.0	7.0	7.0
Energy Information Administration	126.8	126.8	129.1	144.5	144.5	144.0	135.0
Non-Defense Environmental Cleanup	319.2	319.2	333.9	323.3	333.9	373.6	358.6
Uranium Enrichment Decontamination and Decommissioning Fund	881.0	841.0	860.0	822.4	823.3	869.0	879.1
Science	7,000.0	7,026.0	7,475.0	7,799.2	8,000.5	8,100.0	8,100.0
Office of Technology Transitions			19.5	21.6	23.1	21.6	22.1
Office of Clean Energy Demonstrations			20.0	214.1	189.0	150.0	89.0

	FY2020 Approp.	FY2021 Approp.	FY2022 Approp.	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp.
Defense Production Act Domestic Clean Energy Accelerator					105.0	500.0	0
Federal Energy Management Program				169.7			
Grid Deployment Office				240.2			
Office of Manufacturing and Energy Supply Chains				27.4			
Office of State and Community Programs				726.9			
Advanced Research Projects Agency—Energy (ARPA-E)	425.0	427.0	450.0	700.2	550.0	570.4	470.0
Nuclear Waste Disposal		27.5	27.5	10.2	10.2	10.2	10.2
Departmental Admin. (net)	161.0	166.0	240.0	397.2	290.6	257.3	283.0
Office of Inspector General	54.2	57.7	78.0	106.8	92.0	92.0	86.0
Office of Indian Energy	22.0	22.0	58.0	150.0	75.0	110.0	75.0
Advanced Technology Vehicles Manufacturing (ATVM) Loans	5.0	5.0	5.0	9.8	9.8	9.8	9.8
ATVM Rescission of Emergency Funding		-1,903.0					
Title 17 Loan Guarantee	29.0	29.0	29.0	206.2	31.2	31.2	31.2
Title 17 Rescission of Emergency Funding		-363.0					
Tribal Energy Loan Guarantee	2.0	2.0	2.0	1.9	10.0	10.0	4.0
Total, Energy Programs	**14,633.6**	**12,444.8**	**16,116.0**	**19,400.3**	**18,273.4**	**18,448.0**	**15,323.2**
Weapons Activities	12,457.1	15,345.0	15,920.0	16,486.3	16,333.1	16,986.3	17,116.1
Nuclear Nonproliferation	2,164.4	2,260.0	2,354.0	2,346.3	2,424.0	2,538.0	2,490.0
Naval Reactors	1,648.4	1,684.0	1,918.0	2,081.5	2,000.0	2,081.5	2,081.5
Office of Admin./ Salaries and Expenses	434.7	443.2	464.0	496.4	475.0	496.4	475.0
Total, NNSA	**16,704.6**	**19,732.2**	**20,656.0**	**21,410.4**	**21,232.1**	**22,102.1**	**22,162.6**
Defense Environmental Cleanup	6,255.0	6,426.0	6,710.0	7,105.9	6,722.5	7,064.1	7,025.0

	FY2020 Approp.	FY2021 Approp.	FY2022 Approp.	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp.
Defense Uranium Enrichment D&D			573.3		823.3	579.0	586.0
Other Defense Activities	906.0	920.0	985.0	978.4	1,027.6	1,040.2	1,035.0
Total, Defense Activities	**23,865.6**	**27,078.2**	**28,924.3**	**29,494.6**	**29,805.5**	**30,785.5**	**30,808.6**
Southwestern	10.4	10.4	10.4	10.6	10.6	10.6	10.6
Western	89.2	89.4	90.8	98.7	98.7	98.7	98.7
Falcon and Amistad O&M	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total, PMAs	**99.8**	**100.0**	**101.4**	**109.6**	**109.6**	**109.6**	**109.6**
General provisions	-12.7	-2.0	-286.1		2.0	2.0	2.0
DOE Total Appropriations	**38,657.2**	**39,625.0**	**44,855.6**	**49,004.4**	**48,340.4**	**49,495.1**	**48,445.4**
Offsets and adjustments	-70.9				-150.0	-150.0	-2,200.0
Total, DOE	**38,586.3**	**39,625.0**	**44,855.6**	**49,004.4**	**48,190.4**	**49,345.0**	**46,243.4**

Sources: P.L. 117-328 and explanatory statement; S. 4660 and draft explanatory statement; explanatory statement for H.R. 2371; CBO Estimate for H.R. 8294; S.Rept. 117-36; H.Rept. 117-98; H.R. 4502; DOE FY2022 congressional budget justification, explanatory statement for H.R. 133, 116th Congress; FY2021 Senate Appropriations Committee majority draft; H.R. 7617; H.Rept. 116-449; President's Budget, FY2021; explanatory statement for Division C of H.R. 1865, 116th Congress; S.Rept. 116-102; H.R. 2740; CBO Current Status Report; H.Rept. 116-83; H.Rept. 115-929; S.Rept. 115-258; S.Rept. 115-132; H.Rept. 115-230; and P.L. 115-31 and explanatory statement.

Notes: Columns may not sum to totals because of rounding. AI = Artificial Intelligence.

a. The Office of Electricity Delivery and the Office of Cybersecurity, Energy Security, and Emergency Response were created from the former Office of Electric Delivery and Energy Reliability in FY2019.

b. Includes appropriations under defense budget function.

c. Includes Strategic Petroleum Reserve Petroleum Account and rescissions.

As well as the regular appropriations enacted for FY2023, DOE received additional FY2023 appropriations from IIJA as shown in **Table 9**. Additional appropriations are also available to DOE from IRA, beginning in FY2022 as shown in **Table 10**. Additional amounts for FY2023 were appropriated by Division M and N of P.L. 117-328, as shown in Table 11.

Table 9. Additional FY2023 DOE Funding Under IIJA

(budget authority in millions of current dollars)

Program	IIJA FY2023
Energy Efficiency and Renewable Energy	2,221.8
Cybersecurity, Energy Security, and Emergency Response	100.0
Electricity	1,610.0
Nuclear Energy	1,200.0
Fossil Energy and Carbon Management	1,444.5

Program	IIJA FY2023
Carbon Dioxide Transportation Infrastructure Finance and Innovation Program Account	2,097.0
Office of Clean Energy Demonstrations	4,426.3
Total	**13,099.6**

Source: H.Rept. 117-394.

Table 10. Additional FY2023 DOE Funding Under IRA

(budget authority in millions of current dollars)

Program	IRA section	Approp.	Fiscal years
Home Energy Efficiency Rebates	50121	4,300	FY2022-FY2031
Home Electric Efficiency Rebates, States	50122	4,275	FY2022-FY2031
Home Electric Efficiency Rebates, Tribes	50122	225	FY2022-FY2031
Home Efficiency Contractor Training Grants	50123	200	FY2022-FY2031
Building Energy Code Adoption	50131(b)	330	FY2022-FY2029
Building Energy Code Adoption	50131(c)	670	FY2022-FY2029
Title 17 Loan Guarantees	50141	3,600	FY2022-FY2026
ATVM Loans	50142	3,000	FY2022-FY2028
Domestic Manufacturing Conversion Grants	50143	2,000	FY2022-FY2031
Energy Infrastructure Reinvestment	50144	5,000	FY2022-FY2026
Tribal Energy Loan Guarantees	50145	75	FY2022-FY2028
Electric Transmission Facility Financing	50151	2,000	FY2022-FY2030
Transmission Line Siting Grants	50152	760	FY2022-FY2029
Offshore Wind Planning	50153	100	FY2022-FY2031
Advanced Industrial Facilities Deployment	50161	5,812	FY2022-FY2026
Inspector General	50171	20	FY2022-FY2031
National Laboratory Infrastructure	50172		FY2022-FY2027
Office of Science	50172(a)		
Science Laboratory Infrastructure Projects		133.2	
High Energy Physics Construction and Equipment		303.7	
Fusion Energy Construction and Equipment		280.0	
Nuclear Physics Construction and Equipment		217.0	
Advanced Scientific Computing Facilities		163.8	
Basic Energy Sciences Projects		294.5	
Isotope Research and Development Facilities		157.8	
Office of Fossil Energy and Carbon Management	50172(b)	150	
Office of Nuclear Energy	50172(c)	150	
Office of Energy Efficiency and Renewable Energy	50172(d)	150	

Program	IRA section	Approp.	Fiscal years
Availability of High-Assay Low-Enriched Uranium	50173	700	FY2022-FY2026
DOE Total		**35,067**	

Source: P.L. 117-169.

Table 11. Additional FY2023 Funding for DOE in Divisions M and N of P.L. 117-328

(budget authority in millions of current dollars)

Program	Division M	Division N	Total
Nuclear Energy			
Advanced Nuclear Fuel Availability	100.0		
Advanced Reactor Demonstration Program	60.0		
National Reactor Innovation Center	20.0		
Risk Reduction for Future Demonstrations	120.0		
Defense Nuclear Nonproliferation (Ukraine-related activities)	125.3		
Electricity (Puerto Rico electricity grid resilience)		1,000.0	
Western Area Power Administration		520.0	
Total	**425.3**	**1,520.0**	**1,945.3**

Source: P.L. 117-328, Divisions M and N.

Energy Efficiency and Renewable Energy

DOE's Office of Energy Efficiency and Renewable Energy (EERE) conducts research and development on transportation energy technology, energy efficiency in buildings and manufacturing processes, and the production of solar, wind, geothermal, and other renewable energy. EERE also administers formula grants to states.

The Sustainable Transportation program area includes electric vehicles, vehicle efficiency, hydrogen and fuel cells, and alternative fuels. DOE's electric vehicle program includes several goals for 2030, including "decreasing vehicle battery cell cost to achieve cost parity with internal combustion engines" and "eliminating dependence on critical materials such as cobalt, nickel, and graphite." The program also supports demonstrations of electrified medium and heavy trucks, according to the FY2023 DOE budget justification.[33]

Renewable power programs focus on electricity generation from solar, wind, water, and geothermal sources. They are also developing concentrated solar technologies to produce high-temperature heat that could replace fossil fuels in steel manufacturing and other industrial processes. In the energy efficiency program area, the advanced manufacturing program focuses on improving the energy efficiency of manufacturing processes and on the manufacturing of energy-related products. The building technologies program includes R&D on lighting, space conditioning, windows, and control technologies to reduce building energy-use intensity. The energy efficiency program provides two types of formula grants to states: weatherization grants

[33] DOE, *FY2023 Congressional Budget Justification*, March 2022, vol. 4 EERE, p. 5, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-4-eere-v2.pdf.

for improving the energy efficiency of low-income housing units and state energy planning grants.

For more details on energy efficiency grants, see CRS Report R46418, *The Weatherization Assistance Program Formula*, by Corrie E. Clark and Lynn J. Cunningham.

Electricity Delivery, Cybersecurity, Energy Security, and Energy Reliability

The Office of Cybersecurity, Energy Security, and Emergency Response (CESER) 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. The office conducts R&D on energy infrastructure security technology; provides energy sector security guidelines, training, and technical assistance; and enhances energy sector emergency preparedness and response.

The Office of Electricity (OE) "leads the Department's efforts in developing new technologies to strengthen, transform, and improve electricity delivery infrastructure so consumers have access to resilient, secure, and clean sources of electricity."[34] OE uses a model of North American energy vulnerabilities for analyzing transmission and other energy infrastructure needs. Other activities include pursuing megawatt-scale electricity storage, integrating electric power system sensing technology, and analyzing electricity-related policy issues.

Nuclear Energy

DOE's Office of Nuclear Energy (NE) supports R&D on technologies to improve the efficiency and economic viability of existing U.S. nuclear power plants, development and demonstration of advanced reactor technologies, and R&D on nuclear fuel cycle technologies. The FY2023 DOE budget justification called NE "a key element of the President's plan to put the United States (U.S.) on a path to net-zero emissions by 2050."[35]

The Reactor Concepts program area comprises 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.

The Fuel Cycle Research and Development program includes generic research on nuclear waste management and disposal. One of the program's primary activities is the development of technologies to separate the radioactive constituents of spent fuel for reuse or solidifying into stable waste forms. 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, and development of improved technologies to prevent diversion of nuclear materials for weapons. The program is also developing sources of high-assay low enriched uranium (HALEU), in which uranium is enriched to between 5% and 20% in the fissile isotope U-235, for potential use in advanced reactors. HALEU would be required for several designs currently receiving cost-shared support by DOE's Advanced Reactor Demonstration Program. For more information, see

[34] DOE, *FY2023 Congressional Budget Justification*, March 2022, vol. 4 OE, p. 2, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-4-oe-v2.pdf.

[35] DOE, *FY2023 Congressional Budget Justification*, March 2022, vol. 4 Nuclear Energy, p. 1, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-4-ne.pdf.

CRS Report R45706, *Advanced Nuclear Reactors: Technology Overview and Current Issues*, by Danielle A. Arostegui and Mark Holt.

Fossil Energy and Carbon Management

The Fossil Energy and Carbon Management Research, Development, Demonstration, and Deployment program (FECM) was formerly known as the Fossil Energy Research and Development program. It has historically supported research related to coal, natural gas, and petroleum,[36] including a major focus area on the development of carbon capture and storage technologies for use on coal-fired power plants. The program also supports operations at the National Energy Technology Laboratory.

Under the Biden Administration, FECM has shifted its focus to what it calls carbon management technologies: carbon capture, carbon utilization, geologic storage of carbon dioxide, and carbon removal. FECM's current carbon capture research focuses on natural gas-fired power plants and applications outside the power sector, in line with congressional direction provided in the Energy Act of 2020 (Division Z of P.L. 116-260) and other recent laws. FECM also focuses on research into producing hydrogen from fossil fuels and using hydrogen in the power sector.

For more information, see CRS In Focus IF11861, *DOE's Carbon Capture and Storage (CCS) and Carbon Removal Programs*, by Ashley J. Lawson, CRS In Focus IF12163, *Department of Energy Funding for Hydrogen and Fuel Cell Technology Programs*, by Martin C. Offutt, and CRS Report R44902, *Carbon Capture and Sequestration (CCS) in the United States*, by Angela C. Jones and Ashley J. Lawson.

Strategic Petroleum Reserve (SPR)

Authorized in 1975 by the Energy Policy and Conservation Act (P.L. 94-163, as amended; 42 U.S.C. §§6201 et seq.), the SPR fulfills two statutory policy objectives: (1) reduce the economic impact of oil supply disruptions, and (2) carry out U.S. obligations under the Agreement on an International Energy Program (IEP)—a multilateral, voluntary agreement subject to international law. Currently, the SPR consists of a government-owned crude oil reserve in Texas and Louisiana and a smaller gasoline reserve in several northeastern states leased from commercial storage operators.

Since the SPR was established, various administrations directed crude oil drawdowns on four occasions in response to emergency oil supply disruptions. During FY2022, emergency SPR authorities aimed to address anticipated oil supply disruptions following Russia's military invasion of Ukraine. The Biden Administration released 180 million barrels during FY2022, the largest ever emergency SPR release.[37] More frequently, DOE uses SPR authorities to exchange crude oil with refiners following natural disasters (i.e., hurricanes) and other regional supply disruption events.[38] The Northeast Gasoline Supply Reserve—established in 2014—has never been utilized.

[36] The Biden Administration renamed the Office of Fossil Energy as the Office of Fossil Energy and Carbon Management in 2021. This name change was also adopted by appropriators throughout the FY2022 appropriations process. See DOE, "Our New Name Is Also a New Vision," July 8, 2021, https://www.energy.gov/fe/articles/our-new-name-also-new-vision.

[37] CRS Insight IN11916, *Strategic Petroleum Reserve Oil Releases: October 2021 Through October 2022*, by Phillip Brown; DOE, "SPR Quick Facts," https://www.energy.gov/ceser/spr-quick-facts.

[38] For additional information about SPR releases, see U.S. Department of Energy, *History of SPR Releases*, at https://www.energy.gov/fe/services/petroleum-reserves/strategic-petroleum-reserve/releasing-oil-spr, accessed

Because of limited utilization in response to emergency oil supply disruptions prior to the 2022 Ukraine war, growing U.S. crude oil production, and rapidly declining net petroleum imports—one key metric used to determine IEP emergency oil stock obligations—Congress began requiring DOE to draw down and sell SPR crude oil to pay for other legislative priorities. Between 2015 and 2021, Congress enacted eight laws mandating the sale of 358.6 million barrels of crude oil. Congress cancelled 140 million barrels of these mandated sales in the Consolidated Appropriations Act, 2023. Additionally, Congress required DOE to sell approximately $1.5 billion of SPR crude oil to pay for an SPR modernization program.[39]

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. According to DOE's FY2023 budget justification, the Office of Science "is the Nation's largest Federal sponsor of basic research in the physical sciences and the lead Federal agency supporting fundamental scientific research for our Nation's energy future."[40]

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, with the first exascale system starting operation at Oak Ridge National Laboratory in May 2022.[41]

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 levels. 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, 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 Energy 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 four Bioenergy Research Centers and the Environmental Molecular Science Laboratory at Pacific Northwest National Laboratory.

February 27, 2023.

[39] For additional information about congressionally required SPR oil sales, see *Strategic Petroleum Reserve: Mandated and Modernization Sales*, by Phillip Brown, a congressional distribution memo available to congressional clients by request from the author.

[40] DOE, *FY2023 Congressional Budget Justification*, March 2022, vol. 5, p. 7, https://www.energy.gov/sites/default/files/2022-05/doe-fy2023-budget-volume-5-science-v2.pdf.

[41] Oak Ridge National Laboratory, "Frontier Supercomputer Debuts as World's Fastest, Breaking Exascale Barrier," May 30, 2022, https://www.ornl.gov/news/frontier-supercomputer-debuts-worlds-fastest-breaking-exascale-barrier. An exascale computer can perform one quintillion floating point operations per second. See Tim Greene, "World's First Exascale Supercomputer Is the World's Fastest," *Network World*, May 31, 2022, https://www.networkworld.com/article/3662040/worlds-first-exascale-supercomputer-is-the-worlds-fastest.html.

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 multinational effort to design and build an experimental fusion reactor.

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. 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.

Two significant research efforts in the Office of Science cut across multiple program areas: quantum information science, which aims to use quantum physics to process information, and artificial intelligence and machine learning, which use computerized systems that work and react in ways commonly thought to require intelligence.

For more details, see CRS Report R47161, *Federal Research and Development (R&D) Funding: FY2023*, coordinated by Laurie A. Harris.

Advanced Research Projects Agency–Energy

ARPA-E is a separate DOE office 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. According to DOE, since 2009 ARPA-E has provided $3.06 billion in R&D funding to 1,326 projects, and 190 project teams have raised more than $10.3 billion in private sector follow-on funding.[42]

Loan Guarantees and Direct Loans

DOE's Loan Programs Office provides loan guarantees and direct loans under several authorities: Title 17 (XVII), Tribal, and ATVM for projects that deploy innovative energy technologies, as authorized by Title XVII of EPACT05, as amended at 43 U.S.C. §§16511 et seq., direct loans for advanced vehicle manufacturing technologies, and loan guarantees for tribal energy projects. Section 1703 of EPACT05 authorized loan guarantees for advanced energy technologies that reduce greenhouse gas emissions, and Section 1705 authorized a temporary program through FY2011 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. In general, successful applicants must pay an up-front fee, or "subsidy cost," to cover potential losses under the loan guarantee program. IRA appropriated $3.6 billion for Section 1703 subsidy costs. IRA also established a time-limited (available through FY2026), $250 billion Title 17 loan guarantee commitment authority—Section 1706—for "Energy Infrastructure Reinvestment Financing." IRA appropriated $5 billion to carry out the Section 1706 program.

Under the loan guarantee agreements, the federal government would repay all covered loans if the borrower defaulted. Such guarantees would reduce the risk to lenders and allow them to provide financing at below-market interest rates. DOE currently has more than $60 billion in authority available to make direct loans and loan guarantees.

[42] ARPA-E, "Our Impact," web page viewed October 3, 2022, https://arpa-e.energy.gov/about/our-impact.

To date, the only loan guarantees under Section 1703 have been to the consortium building two new nuclear reactors at the Vogtle plant in Georgia, totaling about $12 billion, and for a Utah hydrogen storage project, with a guarantee of $500 million.[43] As of January 2023, applications for 126 additional loan guarantees totaling $119.9 billion were under consideration by the DOE Loan Programs Office.[44]

Energy Information Administration

The U.S. Energy Information Administration (EIA) was established within DOE as the lead federal agency for collecting, analyzing, and disseminating data on U.S. and world energy supply and consumption. EIA data collection spans the energy system from supply and transport to consumption. All energy sources are included in EIA's data and analysis products, though some (e.g., petroleum) are more detailed than others (e.g., renewables). Recent areas of congressional interest include improvements to EIA's computer models used to project U.S. energy supply and demand over time, and improvements to EIA's data collection related to energy consumption in residential and commercial buildings. For more details, see CRS Report R46524, *The U.S. Energy Information Administration*, coordinated by Ashley J. Lawson.

Nuclear Weapons Activities

In the absence of explosive testing of nuclear weapons, the United States has adopted a science-based program to maintain and sustain confidence in the reliability of the U.S. nuclear stockpile. Congress established the Stockpile Stewardship Program in the National Defense Authorization Act for Fiscal Year 1994 (P.L. 103-160). The goal of the program, as amended by the National Defense Authorization Act for Fiscal Year 2010 (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 NNSA, a semiautonomous agency within DOE established by the National Defense Authorization Act for Fiscal Year 2000 (P.L. 106-65, Title XXXII). NNSA implements the Stockpile Stewardship Program through the activities funded by the Weapons Activities account in the NNSA budget.

Most of NNSA's weapons activities take place at the nuclear weapons 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 the Nevada Test Site). NNSA manages and sets policy for the weapons complex; contractors to NNSA operate the eight sites. Radiological activities at these sites are subject to oversight and recommendations by the independent Defense Nuclear Facilities Safety Board, funded by Title IV of the annual Energy and Water Development appropriations bill.

NNSA's budget has four major Weapons Activities program areas, each with funding of over $2 billion for FY2023:

[43] DOE, "Secretary Perry Announces Financial Close on Additional Loan Guarantees During Trip to Vogtle Advanced Nuclear Energy Project," news release, March 22, 2019, https://www.energy.gov/articles/secretary-perry-announces-financial-close-additional-loan-guarantees-during-trip-vogtle; and DOE, "DOE Announces First Loan Guarantee for a Clean Energy Project in Nearly a Decade," June 8, 2022, https://www.energy.gov/articles/doe-announces-first-loan-guarantee-clean-energy-project-nearly-decade.

[44] DOE Loan Programs Office, "Monthly Application Activity Report," February 6, 2023, https://www.energy.gov/lpo/articles/january-2023-monthly-application-activity-report. More information about DOE loans and loan guarantees is at the Loan Programs Office website, https://www.energy.gov/lpo/loan-programs-office.

- *Stockpile Management* supports work directly on nuclear weapons. These include life extension programs, warhead surveillance, maintenance, and other activities.
- *Production Modernization* programs focus on maintaining and expanding the production capabilities for the components of nuclear weapons that are critical to weapons performance. According to NNSA, these include primaries, canned subassemblies, radiation cases, and non-nuclear components.
- *Stockpile Research, Technology, and Engineering* provides the scientific and technical foundation for science-based stockpile decisions.
- *Infrastructure and Operations* maintains, operates, and modernizes the NNSA infrastructure. It supports construction of new facilities and funds deferred maintenance in older facilities.

Nuclear 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;
- *Defense Nuclear Security,* providing operations, maintenance, and construction funds for protective forces, physical security systems, personnel security, and related activities; and
- *Information Technology and Cybersecurity,* whose elements include cybersecurity, secure enterprise computing, and Federal Unclassified Information Technology.

For more information, see CRS Report R45306, *The U.S. Nuclear Weapons Complex: Overview of Department of Energy Sites*, by Amy F. Woolf and James D. Werner.

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 programs are administered by NNSA's Office of Defense Nuclear Nonproliferation (DNN).

The Materials Management and Minimization program 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.

Global Materials Security has three major program elements. International Nuclear Security focuses on increasing the security of vulnerable stockpiles of nuclear material in other countries. Radiological Security promotes the worldwide reduction and security of radioactive sources (typically used in medical and industrial devices), including the removal of surplus sources and substitution of technologies that do not use radioactive materials. Nuclear Smuggling Detection and Deterrence works to improve the capability of other countries to halt illicit trafficking of nuclear materials.

Nonproliferation and Arms Control works to "strengthen nonproliferation and arms control regimes through innovative policy development and implementation to prevent proliferation, ensure peaceful nuclear uses, and enable verifiable nuclear reductions," according to the FY2023

DOE justification.[45] This program conducts reviews of nuclear export applications and technology transfer authorizations, implements treaty obligations, and analyzes nonproliferation policies and proposals.

For more information, see CRS Report R44413, *Energy and Water Development Appropriations for Defense Nuclear Nonproliferation: In Brief*, by Mary Beth D. Nikitin.

Cleanup of Former Nuclear Weapons Production and Research Sites

The development and production of nuclear weapons since the beginning of the Manhattan Project[46] during World War II resulted in a waste and contamination legacy managed by DOE that continues to present substantial challenges. DOE also manages legacy environmental contamination at sites used for nondefense nuclear research. 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.[47]

DOE has identified more than 100 separate sites in over 30 states that historically were involved in the production of nuclear weapons and nuclear energy research for civilian purposes.[48] Responsibility for long-term stewardship at sites where remediation is complete or remedies are in place is transferred from EM to the separate DOE Office of Legacy Management (LM) and other offices within DOE.[49] 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 USACE completes the cleanup of a FUSRAP site, it is transferred back to LM, which has its own DOE funding subaccount within Other Defense Activities.

Power Marketing Administrations

DOE's four Power Marketing Administrations (PMAs) were established to sell the power generated by various federal dams. The PMAs operate in 34 states; their assets consist primarily of transmission infrastructure in the form of more than 33,000 miles of high voltage transmission lines and 587 substations. PMA customers are responsible for repaying all power program expenses, plus the interest on capital projects. Since FY2011, power revenues associated with the PMAs have been classified as discretionary offsetting receipts (i.e., receipts that are available for spending by the PMAs), thus the agencies are sometimes noted as having a "net-zero" spending authority. Only the capital expenses of the Western Area Power Administration (WAPA) and Southwestern Power Administration (SWPA) are supported by appropriations from Congress.

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[45] DOE, *FY2023 Congressional Budget Justification*, March 2022, vol. 1, p. 9, https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-1-nnsa.pdf.

[46] As described by the Manhattan Project National Historical Park, "The Manhattan Project was a massive, top secret national mobilization of scientists, engineers, technicians, and military personnel charged with producing a deployable atomic weapon during World War II. Coordinated by the US Army, Manhattan Project activities were located in numerous locations across the United States." The nuclear weapons activities begun by the Manhattan Project are now the responsibility of DOE. See National Park Service, Manhattan Project National Historical Park website, https://www.nps.gov/mapr/learn/historyculture/index.htm.

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

[48] For a list of active and completed sites, see the EM "Cleanup Sites" web page and interactive map at http://energy.gov/em/cleanup-sites.

[49] 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.

For more information, see CRS Report R45548, *The Power Marketing Administrations: Background and Current Issues*, by Richard J. Campbell.

Independent Agencies

Independent agencies that receive funding in Title IV of the Energy and Water Development bill include the Nuclear Regulatory Commission (NRC), the Appalachian Regional Commission (ARC), and the Defense Nuclear Facilities Safety Board. NRC is by far the largest of these independent agencies, with a total budget of nearly $900 million. However, as noted in the description of NRC below, about 85% of NRC's budget is offset by fees, so that the agency's net appropriation is less than half of the total funding in Title IV. NRC and ARC are discussed in more detail below. The recent appropriations history for all the Title IV agencies is shown in **Table 12**. Additional FY2023 appropriations were provided by IIJA for ARC and other regional commissions and authorities as shown in **Table 12**.

Table 12. Independent Agencies Funded by Energy and Water Development Appropriations

(budget authority in millions of current dollars)

Program	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp
Appalachian Regional Commission	175.0	180.0	195.0	235.0	220.0	200.0	200.0
Nuclear Regulatory Commission	*855.6*	*844.4*	*887.7*	*929.2*	*929.2*	*927.2*	*927.2*
(Revenues)	*-728.1*	*-721.4*	*-756.7*	*-792.2*	*-792.2*	*-790.2*	*-790.2*
Net NRC (including Inspector General)	127.5	123.0	131.0	137.0	137.0	137.0	137.0
Defense Nuclear Facilities Safety Board	31.0	31.0	36.0	41.4	41.4	41.9	41.4
Nuclear Waste Technical Review Board	3.6	3.6	3.8	4.0	4.0	4.0	3.9
Denali Commission	15.0	15.0	15.1	15.1	15.1	17.0	17.0
Delta Regional Authority	30.0	30.0	30.1	30.1	30.1	30.1	30.1
Northern Border Regional Commission	25.0	30.0	35.0	36.0	38.0	40.0	40.0
Southeast Crescent Regional Commission	0.3	1.0	5.0	7.0	33.0	7.0	20.0
Southwest Border Regional Commission		0.3	2.5	2.5	2.5	5.0	5.0
Total	**407.3**	**413.9**	**453.5**	**508.1**	**521.1**	**482.0**	**494.4**

Sources: P.L. 117-328 and explanatory statement; S. 4660 and draft explanatory statement; explanatory statement for H.R. 2371; CBO Estimate for H.R. 8294; S.Rept. 117-36; H.Rept. 117-98; H.R. 4502; FY2022 agency budget justifications; explanatory statement for H.R. 133, 116th Congress; FY2021 Senate Appropriations Committee majority draft; H.R. 7617; H.Rept. 116-449; FY2021 President's Budget; explanatory statement for Division C of H.R. 1865, 116th Congress; S.Rept. 116-102; S. 2470; H.R. 2740; CBO Current Status Report; H.Rept. 116-83; H.Rept. 115-929; S.Rept. 115-258; S.Rept. 115-132; H.Rept. 115-230; P.L. 115-31 and explanatory statement.

Note: Columns may not sum to totals because of rounding.

Table 13. Additional Appropriations in IIJA for Regional Commissions and Authorities

(budget authority in millions of current dollars)

Regional Commission or Authority	IIJA FY2022 Approp	IIJA FY2023 Approp	IIJA FY2024-FY2026 Approp
Appalachian Regional Commission	200.0	200.0	600.0
Delta Regional Authority (DRA)	150.0		
Denali Commission	75.0		
Northern Border Regional Commission (NBRC)	150.0		
Southeast Crescent Regional Commission (SCRC)	5.0		
Southwest Border Regional Commission (SBRC)	1.3		

Source: H.Rept. 117-394.

Notes: Funding for the federal regional commissions and authorities in the IIJA has varying periods of availability. Appropriations for ARC are available through FY2026, with $200 million to be allocated each fiscal year starting in FY2022 through FY2026. Appropriations for the DRA, Denali Commission, NBRC, SCRC, and SBRC are available until expended.

Appalachian Regional Commission

Established in 1965,[50] the Appalachian Regional Commission (ARC) is a regional economic development agency. It awards grants and contracts to state and local governments and nonprofit organizations to foster economic opportunities, improve workforce skills, build critical infrastructure, strengthen natural and cultural assets, and improve leadership skills and capacity in the region. ARC's authorizing statute defines the Appalachian Region as including all of West Virginia and parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia. More than 25 million people currently live in the region as defined.

ARC provides funding to several hundred projects each year, with particular focus on the region's most economically distressed counties. Major areas of infrastructure support include broadband communication systems, transportation, and water and wastewater systems. ARC has supported development of the Appalachian Development Highway System (ADHS), a planned 3,000-mile system of highways that connect with the U.S. Interstate Highway System. According to ARC, 91.1% of ADHS is "under construction or open to traffic."[51]

Since FY2016, Congress has appropriated approximately $50 million per year as a set-aside for ARC's POWER Initiative (Partnerships for Opportunity and Workforce and Economic Revitalization), which assists communities impacted by the decline of the coal industry. In FY2023, Congress directed ARC to allocate $65 million to the POWER Initiative. The POWER Initiative funds a variety of economic, workforce, and community development projects to stabilize and stimulate economic activity in affected communities.

For more background on ARC and other regional commissions and authorities, see CRS Report R45997, *Federal Regional Commissions and Authorities: Structural Features and Function*, by Julie M. Lawhorn, and CRS In Focus IF11140, *Federal Regional Commissions and Authorities:*

[50] Appalachian Regional Development Act of 1965, P.L. 89-4.

[51] For more information, see ARC home page at https://www.arc.gov.

Overview of Structure and Activities, by Julie M. Lawhorn. For more background on the POWER Initiative, see CRS Report R46015, *The POWER Initiative: Energy Transition as Economic Development*, by Julie M. Lawhorn.

Nuclear Regulatory Commission

NRC is an independent agency that establishes and enforces safety and security standards for nuclear power plants and users of nuclear materials. Major appropriations categories for NRC are shown in **Table 14**. Nuclear Reactor Safety is NRC's largest program and is responsible for licensing and regulating the U.S. fleet of 93 power reactors, plus two under construction. NRC is also responsible for licensing and regulating nuclear waste facilities, such as the proposed underground nuclear waste repository at Yucca Mountain, NV (which has received no new appropriations since FY2010).

NRC is required by law to offset its total annual appropriation, excluding specified items, through fees charged to nuclear reactor owners and other holders of NRC licenses. NRC does not retain the fee revenue, but instead sends it to the U.S. Treasury. Budget items excluded from fee recovery include prior-year balances, development of advanced reactor regulations, international activities, and nonsite-specific homeland security. As a result, NRC's net appropriation is about 15% of the agency's total budget.

Table 14. Nuclear Regulatory Commission Funding Categories

(budget authority in millions of current dollars)

Funding Category	FY2020 Approp.	FY2021 Approp.	FY2022 Approp.	FY2023 Request	FY2023 House	FY2023 S. 4660	FY2023 Approp.
Nuclear Reactor Safety	433.4	452.8	477.4	490.7	490.7	490.7	490.7
Nuclear Materials and Waste Safety	103.2	102.9	107.3	111.6	111.6	111.6	111.6
Decommissioning and Low-Level Waste	21.4	22.8	22.9	23.9	23.9	23.9	23.9
Corporate Support	289.1	271.4	266.3	285.3	285.3	285.3	285.3
Integrated University Program	2.5	16.0	16.0		16.0	16.0	16.0
Prior-Year Balances	-38.4	-35.0	-16.0		-16.0	-16.0	-16.0
Inspector General	12.1	13.5	13.8	17.8	17.8	15.8	15.8
Total	**823.1**	**844.4**	**887.7**	**929.2**	**929.2**	**927.2**	**927.2**

Sources: P.L. 117-328 and explanatory statement; S. 4660 and draft explanatory statement; CBO Estimate for H.R. 8294; explanatory statement for H.R. 2371; S.Rept. 117-36; H.Rept. 117-98; H.R. 4502; NRC FY2022 congressional budget justification; explanatory statement for H.R. 133, 116th Congress; FY2021 Senate Appropriations Committee majority draft; H.R. 7617; H.Rept. 116-449; NRC FY2021 Budget Justification; explanatory statement for Division C of H.R. 1865, 116th Congress; S.Rept. 116-102; H.R. 2740; H.Rept. 116-83; H.Rept. 115-929, NRC FY2020 Budget Justification; H.Rept. 115-697; S.Rept. 115-258.

Note: Fee offsets and some adjustments are excluded.

Congressional Hearings

The following hearings were held by the Energy and Water Development subcommittees of the House and Senate Appropriations Committees on the FY2023 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

- *Corps of Engineers and Bureau of Reclamation*, April 27, 2022, https://appropriations.house.gov/legislation/hearings/fy-2023-budget-request-us-army-corps-engineers-and-bureau-reclamation
- *Department of Energy*, April 28, 2022, https://appropriations.house.gov/legislation/hearings/fy-2023-budget-request-department-energy
- *National Nuclear Security Administration and Environmental Management*, May 11, 2022, https://appropriations.house.gov/legislation/hearings/fy23-budget-national-nuclear-security-administration-and-environmental
- *Department of Energy Science and Energy Programs*, May 12, 2022, https://appropriations.house.gov/legislation/hearings/fy-2023-budget-request-department-energy-science-and-energy-programs

Senate

- *Corps of Engineers and Bureau of Reclamation*, April 6, 2022, https://www.appropriations.senate.gov/hearings/a-review-of-the-fiscal-year-2023-budget-submission-for-the-us-army-corps-of-engineers-and-the-bureau-of-reclamation
- *Department of Energy*, May 4, 2022, https://www.appropriations.senate.gov/hearings/a-review-of-the-fiscal-year-2023-budget-submission-for-the-us-department-of-energy
- *National Nuclear Security Administration*, May 18, 2022, https://www.appropriations.senate.gov/hearings/a-review-of-the-fiscal-year-2023-budget-submission-for-national-nuclear-security-administration

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