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Energy and Water Development: FY2024 Appropriations

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SUMMARY

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Energy and Water Development: FY2024 Appropriations

The Energy and Water Development and Related Agencies appropriations bill funds civil works activities of the U.S. Army Corps of Engineers (USACE) in the Department of Defense; 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 FY2024 budget request on March 9, 2023. The Administration request included $61.387 billion for energy and water development agencies, an increase of $4.909 billion (9%) above the FY2023 enacted amount, excluding emergency appropriations. 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).

Energy and Water Development Appropriations, FY2023 and FY2024
dollars in millions (and % change)

Agency	FY2023 Enacted	FY2024 Request (% Change from FY2023 Enacted)
Corps of Engineers	8,310	7,413 (-11%)
Bureau of Reclamation/CUP	1,954	1,469 (-25%)
Department of Energy	46,374	52,000 (+12%)
Independent Agencies	494	554 (+12%)
Adjustments	-655	-49
Total	56,478	61,387 (+9%)

Sources: Administration FY2024 Budget Request, explanatory statement for Consolidated Appropriations Act, 2023.
Notes: 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 FY2024 could include the following initiatives and issues:

- *Recent Supplemental Funding*. From FY2018 through FY2023, Congress provided supplemental appropriations for Energy and Water Development Act agencies. These additional appropriations are noted in the Administration FY2024 budget justifications and could be a factor in this year's congressional debate on the President's request.
- *Congressionally Directed Funding (Earmarks)*. For FY2024, the House Appropriations Committee is allowing earmark requests within the major USACE and Reclamation accounts, while the Senate Appropriations Committee is allowing earmark requests for major USACE, Reclamation, and DOE energy-related accounts. This may set up a conflict between the chambers that would need to be resolved before FY2024 appropriations can be enacted.
- *Energy Efficiency Standards for Gas Stoves.* A DOE-proposed rule on efficiency of natural gas cooking products (e.g., gas stoves) has raised congressional controversy over its potential effects on gas stove availability and cost. This issue has raised questions during FY2024 appropriations hearings. Several bills have been introduced in the 118th Congress (for example, H.R. 1640, S. 244, and H.R. 263) that would block or limit the effect of any such DOE efficiency standards on gas stoves.

Contents

Figures

Tables

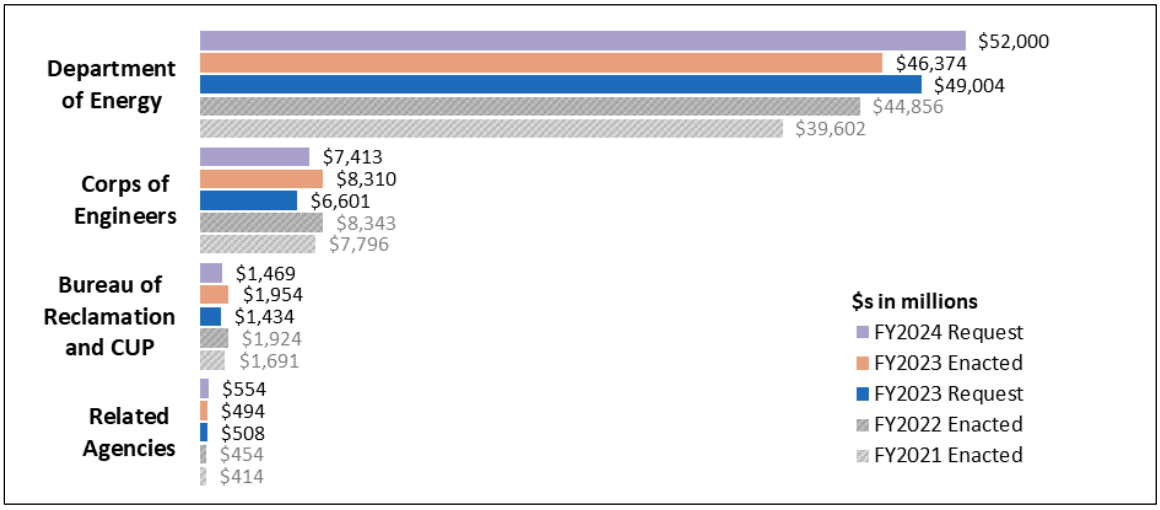
Contacts

Introduction and Overview

The Energy and Water Development and Related Agencies appropriations bill includes funding for civil works activities of the U.S. Army Corps of Engineers (USACE) in the Department of Defense, 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 the FY2024 request.

Figure 1. Funding for Major Components of Energy and Water Development Appropriations Bill, FY2021 Through FY2024 Request

(excluding supplementals)



Sources: FY2024 agency budget justifications; explanatory statement for Consolidated Appropriations Act, 2023. Includes some adjustments; see tables 4-7 for details.

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

President Biden submitted his FY2024 budget request on March 9, 2023. The Administration request included $61.387 billion for energy and water development agencies, an increase of $4.909 billion (9%) above the FY2023 enacted amount, excluding emergency appropriations. DOE funding would rise by $5.625 billion (12%), to $52.000 billion, and independent agencies by $59 million (12%), to $554 million. USACE would be reduced by $897 million (-11%), to $7.413 billion, and Reclamation and CUP would decline by $485 million (-25%), to $1.469 billion, excluding offsets.[1]

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 provided a total of $57.133 billion, 3% above the FY2022

[1] Unless otherwise noted, appropriations numbers in this report for FY2023 and FY2024 are taken from the FY2024 agency budget justifications. Some appropriations totals for FY2023 have changed from previously calculated amounts because of re-estimates of revenue offsets and other adjustments.

enacted level. Division M of the act included emergency additional FY2023 appropriations of $300 million for Nuclear Energy and $125 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) and the 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 FY2023 and the FY2024 request. IIJA appropriated an additional $16.040 billion for FY2023 and $13.688 billion for FY2024. 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 is for Energy Efficiency and Renewable Energy (EERE), which would rise by $1.332 billion (28%) over the equivalent FY2023 enacted amount, to $4.792 billion. This includes several large programs currently under the EERE appropriations account—the Federal Energy Management Program (FEMP), Office of Manufacturing and Energy Supply Chains, and low-income weatherization and state planning grants in the Office of State and Community Programs—for which the Administration is proposing to have separate accounts in FY2024.

Other energy programs with notably large proposed percentage increases are the Office of Technology Transitions, which facilitates the commercialization of new energy technologies, proposed to increase by 156% in FY2024 to $57 million, and the Office of Clean Energy Demonstrations, which would rise by 142% to $215 million. The Office of Indian Energy Policy and Programs would increase by 47% to $100 million, and the Advanced Research Projects Agency—Energy (ARPA-E) would increase by 38% to $650 million.

Funding for DOE's Office of Science would increase by $700 million (9%), to $8.800 billion, under the Administration budget request, with the largest percentage increases proposed for Isotope R&D and Production (58%), to $173 million, and Fusion Energy Sciences (32%), to $1.010 billion. 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 increase by $1.682 billion (8%), to $23.845 billion. Environmental Management (waste management and cleanup) would increase by $17 million (less than 1%), to $8.280 billion.

The water agencies in the Energy and Water Development appropriations bill are proposed for funding reductions under the FY2024 budget request. Discretionary appropriations in the Energy and Water bill for USACE would decline from their FY2023 enacted level by $897 million (-11%), to $7.413 billion. Reclamation (separately from CUP) would be reduced by $482 million (-25%), to $1.449 billion.

Among the independent agencies funded by the bill, the Nuclear Regulatory Commission (NRC) would receive an increase in total appropriations from $927 million in FY2023 to $979 million in FY2024 (up $52 million, or 6%). 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 $137 million in FY2023 to $156 million in FY2024 (up $19 million, or 14%). Funding for the Appalachian Regional Commission would increase from $200 million in FY2023

to $235 million in FY2024 (up $35 million, or 18%). The request includes $5 million in initial funding for the newly authorized Great Lakes Authority. Funding for the other regional authorities in the bill would be unchanged in FY2024.

FY2023 Enacted Funding

DOE received $46.374 billion in the Consolidated Appropriations Act, 2023, excluding emergency supplementals and rescissions. This was $1.519 billion (3%) above the FY2022 enacted level, $2.630 billion (5%) below the Administration request, $105 million (0%) below the House-passed level (H.R. 2617), and $3.121 billion (6%) below the amount in S. 4660 as introduced but not considered in the Senate. USACE received $8.310 billion, which was slightly below (less than 1%) the FY2022 enacted level, and Reclamation received $1.931 billion, an increase of $30 million (2%) over the FY2022 enacted amount.

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. 117-328 Divisions M and N and P.L. 117-180 (see **Table 1**).

For more details, see

- CRS Report R47293, *Energy and Water Development: FY2023 Appropriations*, by Mark Holt and Anna E. Normand.
- CRS In Focus IF12090, *U.S. Army Corps of Engineers: FY2023 Appropriations*, by Anna E. Normand and Nicole T. Carter.
- CRS In Focus IF12127, *Bureau of Reclamation: FY2023 Budget and Appropriations*, by Charles V. Stern.

FY2024 Budgetary Limits

Congressional consideration of the annual Energy and Water Development appropriations bill is 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.

For more information, see CRS Report R46468, *A Brief Overview of the Congressional Budget Process*, by James V. Saturno.

Funding Issues and Initiatives

Several issues may draw particular attention during congressional consideration of Energy and Water Development appropriations for FY2024. 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 118th Congress, largely continuing the policies of the 117th Congress, is allowing earmarks for site-specific projects and other activities in the FY2024 appropriations process. These are 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 FY2024, the House and Senate Appropriations committees invited Members of Congress to request CPF/CDS items, respectively. The House Appropriations Committee allowed CPF requests within the major USACE and Reclamation accounts, while the Senate Appropriations Committee allowed CDS requests for major USACE, Reclamation, and DOE energy-related accounts.[2] Those differences could lead to a conflict over which CPF/CDS items to include in the final appropriations act, including whether to fund those under DOE energy-related accounts.

The explanatory statement for the Consolidated Appropriations Act, 2023, included 339 energy and water development CPF/CDS projects totaling about $1.289 billion.[3] This included 175 projects for USACE, totaling about $1.020 billion, 12 projects for Reclamation, totaling about $47 million, and 152 projects for DOE, totaling about $222 million. DOE earmarks were provided under the Energy Projects appropriations account.

Recent Supplemental Funding

From FY2018 through FY2023, Congress provided supplemental appropriations for USACE and Reclamation for disaster response and mitigation (e.g., drought, flood); study, construction, maintenance, and repair of projects; new authorities that expand the agencies' activities; and COVID-19 precautions, among other purposes.[4] In the same time period, Congress provided supplemental appropriations to DOE for clean energy demonstration projects, science facilities and infrastructure, hydrogen production and distribution infrastructure, and renewable energy research and development, among other purposes. In addition, in some years, other agencies funded under Energy and Water Appropriations Acts received supplemental funding. **Table 1** details in nominal dollars supplemental appropriations based on the fiscal year when funds are first available (in some cases, FY2024-FY2026). All of these funds are available until expended

[2] For House CPF details, see "Fiscal Year 2024 Member Request Guidance," https://appropriations.house.gov/fiscal-year-2024-member-request-guidance; for the Senate, see "FY 2024 Appropriations Requests and Congressionally Directed Spending," https://www.appropriations.senate.gov/fy-2024-appropriations-requests-and-congressionally-directed-spending.

[3] 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.

[4] For CRS water resource products on these acts, see CRS In Focus IF11945, *U.S. Army Corps of Engineers: Supplemental Appropriations*, by Nicole T. Carter and Anna E. Normand; 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; 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; and CRS Report R47262, *Inflation Reduction Act of 2022 (IRA): Provisions Related to Climate Change*, coordinated by Jane A. Leggett and Jonathan L. Ramseur.

except for funds from the IRA, which are available through various years from FY2026 to FY2031.[5]

Table 1. Enacted Supplemental Appropriations for Agencies Funded by Energy and Water Development Acts

(FY2018-FY2026 dollars in millions)

FY Funds First Available	Act	Title I: U.S. Army Corps of Engineers	Title II: Bureau of Reclamation and CUP	Title III: Department of Energy	Title IV: Independent Agencies
FY2018	P.L. 115-123	17,398	—	22	—
FY2019	P.L. 116-20	3,258	16	—	—
FY2020	P.L. 116-136	70	21	128	3
FY2021	—	—	—	—	—
FY2022	P.L. 117-43	5,711	220	43	—
	P.L. 117-58	14,969	1,710	18,687	581
	P.L. 117-169	—	4,588	35,067	—
FY2023	P.L. 117-58	1,080	1,660	13,100	200
	P.L. 117-180	20	—	—	—
	P.L. 117-328	1,480	—	1,945	—
FY2024	P.L. 117-58	1,050	1,660	10,778	200
FY2025	P.L. 117-58	—	1,660	10,831	200
FY2026	P.L. 117-58	—	1,660	9,072	200

Source: CRS using public laws enacted in FY2018-FY2023.

Notes: Fiscal year shown is when funds are first available. All funds are available until expended except for funds from P.L. 117-169, which are available through various fiscal years from FY2026 to FY2031.

In addition to conducting oversight on these agencies' use of the appropriated supplemental funds, Congress may consider the sufficient amount of funding to provide Energy and Water Development Act agencies for FY2024 given the amount of supplemental funding provided to agencies in recent fiscal years and are to be made available in FY2024. For example, the Biden Administration did not request funding for inland waterway construction in FY2024. The Assistant Secretary of the Army for Civil Works stated that at the time of budget development USACE did not have the capability to execute more funding given recent appropriations, including $2.5 billion made available by the IIJA for inland waterway projects.[6] As another example, DOE cited IIJA funding for two advanced reactor demonstration projects as the reason that no funding for those projects is included in the FY2024 request. In contrast, the Administration has requested more funding for some agency functions due to the increase in supplemental funding. For example DOE's Office of the Inspector General stated it needed more

[5] §§50233 and 80004 of P.L. 117-169 appropriations are to remain available through FY2026. §§50231 and 50232 of P.L. 117-169 appropriations are to remain available through FY2031.

[6] U.S. Congress, House Committee on Appropriations, Subcommittee on Energy and Water Development and Related Agencies, *Fiscal Year 2024 Request for the Army Corps of Engineers and Bureau of Reclamation*, 118th Cong., 1st sess., March 29, 2023.

funding to perform oversight functions of recent supplemental funding.[7] Further, Congress may consider the status of unobligated funding from recent supplemental appropriations. For example, the House passed the Limit, Save, Grow Act of 2023 (H.R. 2811) which would rescind any unobligated funding provided by P.L. 116-136 and certain unobligated IRA funding provided to DOE.[8]

For more details on selected supplemental funding, see

- CRS In Focus IF11945, *U.S. Army Corps of Engineers: Supplemental Appropriations*, by Nicole T. Carter and Anna E. Normand.
- 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.
- 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.
- CRS Report R47034, *Energy and Minerals Provisions in the Infrastructure Investment and Jobs Act (P.L. 117-58)*, coordinated by Brent D. Yacobucci.
- CRS Report R47262, *Inflation Reduction Act of 2022 (IRA): Provisions Related to Climate Change*, coordinated by Jane A. Leggett and Jonathan L. Ramseur.

Water Resources Agency Funding

The Administration's FY2024 budget requests for USACE and Reclamation are lower than the enacted FY2023 regular appropriations ($897 million or 11% lower for USACE and $482 million or 25% lower for Reclamation). Although USACE and Reclamation are proposed to receive less regular appropriations under the FY2024 request, the Administration notes in its request that the IIJA provided advance appropriations for these agencies, including funding that is first made available in FY2024.[9] The IRA also provided $4.588 billion in FY2022 for certain Reclamation activities; this funding remains available through FY2026 or FY2031.[10]

As with previous budget requests, a majority of President Biden's FY2024 USACE request would fund maintenance of existing infrastructure, as reflected by the share of funds requested for the Operation and Maintenance account (58%). After funding at least 48 new studies and 50 new construction projects in FY2022 and FY2023, the Administration is requesting funding in FY2024 for five new studies and one new construction start—Cape Cod Canal Bridges, MA.[11] In

[7] DOE, Office of the Inspector General, *FY2024 Congressional Justification*, at https://www.energy.gov/sites/default/files/2023-03/doe-fy-2024-budget-vol-2-ig-v2.pdf.

[8] Section 201 of H.R. 2811 would rescind unobligated funding from P.L. 116-136 and section 202 would rescind unobligated funding from Sections 50131 and 50144 of the IRA.

[9] The IIJA provided $1.050 billion in advance appropriations to USACE for FY2024—$1.000 billion for O&M activities and $50 million for coastal flood damage reduction construction. The Administration allocated these supplemental funds toward eligible USACE activities in FY2024 IIJA spend plans available at https://www.usace.army.mil/Missions/Civil-Works/Supplemental-Work/BIL/. The IIJA provided $1.660 billion in advance appropriations to Reclamation for FY2024. Reclamation describes allocation of these funds in its FY2024 IIJA spend plan available at https://www.usbr.gov/bil/2022-spendplan.html.

[10] For more information, see section "Bureau of Reclamation" below.

[11] CRS correspondence with USACE on July 12, 2022, October 25, 2022, and March 29, 2023.

addition, the Administration for the first time is requesting funding for environmental infrastructure (EI) assistance at $5 million.[12]

Consistent with prior years, President Biden's FY2024 request for Reclamation is less than the previous year's enacted amount. Reclamation's largest account, the Water and Related Resources Account, would receive $1.301 billion in the Administration request, or $486 million (27%) less than the FY2023 enacted amount. Reclamation's WaterSMART program (which funds several different water conservation activities) would be reduced by 68% in the request, and accounts for $129 million of the reduction. For the first time in decades, the FY2024 budget request for Reclamation includes no discretionary funding for construction of Indian water rights settlements, and notes that funding needs for these settlements could be met by existing mandatory funds available for these settlements. In addition to the existing funds, President Biden proposed two new mandatory funds for these settlements in the FY2024 budget request.

For more information, see

- CRS In Focus IF12370, *U.S. Army Corps of Engineers: FY2024 Appropriations*, by Anna E. Normand and Nicole T. Carter.
- CRS In Focus IF12369, *Bureau of Reclamation: FY2024 Budget and Appropriations*, by Charles V. Stern.
- CRS Report R44148, *Indian Water Rights Settlements*, by Charles V. Stern.

Proposed Increases for Energy Efficiency and Renewables and New Appropriations Accounts

The Administration's FY2024 request would increase EERE funding by $1.332 billion (28%) over the FY2023 enacted amount, to $4.792 billion. This includes separate appropriations accounts that the request would establish for several large programs currently under the EERE appropriations account—the Federal Energy Management Program (FEMP), Office of Manufacturing and Energy Supply Chains, and low-income weatherization and state planning grants in the Office of State and Community Programs. The Administration proposed the same new appropriations accounts in FY2023 but they were not approved.

EERE programs with the largest requested increases were Wind Energy Technologies (up $253 million, or 192%), Geothermal Technologies (up $98 million, or 83%), Industrial Efficiency and Decarbonization (up $128 million, or 48%),[13] Renewable Energy Grid Integration (up $14 million, or 31%), and Vehicle Technologies (up $72 million, or 16%).

These increases do not include those efficiency programs that the Administration proposes moving to separate DOE appropriations accounts. For example, FEMP would receive $82 million in FY2024 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 receive $705 million.

[12] FY2023 annual and supplemental appropriations for environmental infrastructure assistance totaled $169 million. For more information, seeCRS Report R47162, *Overview of U.S. Army Corps of Engineers Environmental Infrastructure (EI) Assistance*, by Anna E. Normand.

[13] Industrial Efficiency and Decarbonization has been part of Advanced Manufacturing. In the FY2024 request, DOE proposes dividing Advanced Manufacturing into two programs: (1) Advanced Materials and Manufacturing Technologies and (2) Industrial Efficiency and Decarbonization.

IIJA appropriated $16.264 billion in FY2022 through FY2026 in additional emergency spending for programs in the EERE account, of which $1.560 billion was for FY2024.[14] EERE programs received $12.000 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 IF12376, *DOE Office of Energy Efficiency and Renewable Energy FY2024 Appropriations*, by Martin C. Offutt and Corrie E. Clark.

Controversy over Energy Efficiency Standards for Gas Stoves

A DOE-proposed rule on efficiency of natural gas cooking products (e.g., gas stoves) has raised congressional controversy over its potential effects on gas stove availability and cost.[15] Energy Secretary Jennifer Granholm was questioned about the issue during the House Appropriations Committee's hearing on the FY2024 DOE budget request.[16] Several bills have been introduced in the 118th Congress (for example, H.R. 1640, S. 244, and H.R. 263) that would block or limit the effect of any such DOE efficiency standards on gas stoves. For more information, see CRS Insight IN12115, *Proposed Regulation of Gas Stoves*, by Martin C. Offutt.

Full Funding of Gasoline Reserve; No Request for Crude Oil Purchases

The FY2024 DOE budget request includes $16 million to fully fund the operation of the Northeast Gasoline Supply Reserve (NGSR). Established in 2014 as a subprogram of the Strategic Petroleum Reserve (SPR), the NGSR holds 1 million barrels of gasoline and related fuel in storage facilities in Maine, Massachusetts, and New Jersey to address regional supply disruptions, such as from major storms.

No funds are requested in FY2024 for the SPR Petroleum Account, which is used to fund oil acquisition, transportation, and movement of crude oil into and out of the SPR. The SPR Petroleum Account has a current balance of more than $4.5 billion from emergency oil sales in FY2022 and early FY2023, so additional funds may not be necessary at this time.

Proposed Increase for the Office of Clean Energy Demonstrations

The Administration is requesting $215 million in FY2024 for the DOE Office of Clean Energy Demonstrations (OCED). This would be a 142% increase from OCED's FY2023 regular annual appropriation, but the program's regular appropriations are overshadowed by $21.456 billion appropriated for OCED through FY2026 by IIJA (see **Table 2**). In addition, IRA appropriated $5.812 billion for an OCED program on Advanced Industrial Facilities Deployment for FY2022-FY2026. At congressional hearings on the FY2024 DOE budget request, some Members have

[14] DOE, *FY 2024 Congressional Justification*, Energy Efficiency and Renewable Energy, March 2023, p. 8, https://www.energy.gov/sites/default/files/2023-03/doe-fy-2024-budget-vol-4-eere-v2.pdf.

[15] DOE, "Energy Conservation Standards for Consumer Conventional Cooking Products," Proposed Rule, *Federal Register*, February 1, 2023, https://www.federalregister.gov/documents/2023/02/01/2023-00610/energy-conservation-program-energy-conservation-standards-for-consumer-conventional-cooking-products.

[16] House Appropriations Committee, Subcommittee on Energy and Water Development, "Budget Hearing – Fiscal Year 2024 Request for the Department of Energy," March 23, 2023, https://appropriations.house.gov/legislation/hearings/budget-hearing-fiscal-year-2024-request-department-energy.

questioned the need for increased annual appropriations for OCED given the program's available funding from previous years.[17]

OCED funds clean energy and industrial decarbonization demonstration projects for potential commercialization. OCED took over DOE support for two advanced nuclear reactor demonstration projects previously overseen by the DOE Office of Nuclear Energy, but no funding is requested for those projects in FY2024, because "funding is not required at this time," according to the DOE budget justification. The justification added that the advanced reactor demonstration program has "a gap of approximately $400 million."[18]

Table 2. 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
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.

[17] See, for example, comments by Sen. Bill Cassidy at Senate Energy and Natural Resources Committee Hearing to Examine the President's Budget Request for the U.S. Department of Energy for Fiscal Year 2024, April 20, 2023, https://www.energy.senate.gov/hearings/2023/4/full-committee-hearing-to-examine-the-president-s-budget-request-for-the-u-s-department-of-energy-for-fiscal-year-2024.

[18] DOE, *FY 2024 Congressional Justification*, Office of Clean Energy Demonstrations, March 2023, p. 3, https://www.energy.gov/sites/default/files/2023-03/doe-fy-2024-budget-vol-3-oced.pdf.

Proposed Reduction 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 FY2024 request for crosscutting hydrogen appropriations totals $382 million, a decrease of $36 million (-9%) from the FY2023 enacted level.[19] 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.

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 FY2024). 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.

For more information, see CRS In Focus IF12163, *Department of Energy Funding for Hydrogen and Fuel Cell Technology Programs FY2022*, by Martin C. Offutt.

Proposed Increase for Weapons Activities, Decrease for Naval Reactors

The FY2024 budget request for DOE Weapons Activities is $18.833 billion—$1.717 billion (10%) higher than the FY2023 enacted level. However, funding for Naval Reactors would be $1.964 billion in FY2024—$117 million (-6%) below the FY2023 amount. Both programs are carried out by the National Nuclear Security Administration (NNSA), a semiautonomous agency within DOE.

Under Weapons Activities, concern was raised during congressional hearings on the FY2024 budget request about delays in the W80-4 warhead modernization for the planned Long Range Standoff cruise missile. After problems with several components, the first production unit of the warhead is now expected to be delivered in FY2027 after a two-year delay, according to NNSA. The FY2024 request for the program is $1.010 billion, a decrease of $113 million from the FY2023 amount, which NNSA says is "due to completion of some development activities."[20]

Several other warhead modernization programs are also funded in Weapons Activities budget request:

- NNSA is requesting $450 million for the B61-12 Life Extension Program (LEP) for FY2024, a decrease of $222 million (-33%) from the FY2023 enacted amount. The B61-12 LEP is to combine four existing variants of the B61 gravity bomb and be completed in FY2026.

[19] DOE, *FY 2024 Congressional Justification*, Crosscutting Activities, Hydrogen, March 2023, https://www.energy.gov/sites/default/files/2023-03/doe-fy2024-budget-volume-2-crosscutting-v3.pdf.

[20] DOE, *FY 2024 Congressional Justification*, vol. 1, March 2023, p. 124, https://www.energy.gov/sites/default/files/2023-04/doe-fy-2024-budget-vol-1-nnsa-v4.pdf. Descriptions of other warhead modernization programs begin on p. 131.

- NNSA proposes $179 million for the W88 Alteration in FY2024, an increase of $17 million (10%) from the FY2023 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).
- NNSA is requesting $1.069 billion for the W87-1 warhead modification program for FY2024, an increase of $389 million (57%) from FY2023. 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. According to NNSA, the additional funding is needed for increased component testing and environmental flight tests.
- NNSA is requesting $390 million for the W93 warhead, which is a new design intended for deployment on ballistic missile submarines by 2040.[21] The proposed increase of $149 million (62%) from the FY2023 enacted amount represents the program's planned acceleration to include prototype construction and testing of non-nuclear hardware.

Congressional concern has also been raised about NNSA's schedule for developing production capacity for plutonium pits, a central component of nuclear warheads. NNSA plans to develop pit production capacity at Los Alamos National Laboratory in New Mexico and the Savannah River Site in South Carolina.[22] Pit production is included under Primary Capability Modernization, for which NNSA is requesting $2.964 billion for FY2024, a decrease of $180 million (-6%) from the FY2023 enacted level.

Appropriations for NNSA nuclear weapons activities and other defense programs typically closely track the levels authorized in annual National Defense Authorization Acts (NDAAs).

Startup of Surplus Plutonium Disposition

The FY2024 budget request provides for plutonium disposition related activities in the Material Management and Minimization (Material Disposition subprogram) and the Nonproliferation Construction accounts. The budget request says the SPD project "will add glovebox capacity at the Savannah River Site to accelerate plutonium dilution and aid in the removal of plutonium from the state of South Carolina." In the coming years, NNSA plans to expand capability to disassemble and convert plutonium cores or "pits" for disposal. The FY2024 request says NNSA is completing the final design review to request approval and start full construction on the SPD project in FY2024, which represents a delay and cost increase. The request says the NNSA is "increasing the total project cost by $155 million resulting in a corresponding increase to the high-end of the cost range which is $775 million"; and extending the completion date to the fourth quarter of FY2030. The budget request says that these changes are necessary due to design, safety, and construction challenges "of integrating the new mission into the existing facility and operations." It also cites a lack of skilled professional and craft labor, which is also an issue for other NNSA construction projects.

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

[22] 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.

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 $8.280 billion request for EM activities for FY2024 is $17 million (less than 1%) above the FY2023 enacted level of $8.263 billion, including offsets.

The primary appropriations component of the EM program is the Defense Environmental Cleanup account, which finances the cleanup of former nuclear weapons production sites. For FY2024, the Administration is requesting $7.074 billion, 1% above the FY2023 enacted amount. For the Non-Defense Environmental Cleanup account, which funds the cleanup of federal nuclear energy research sites, the request was $349 million, 3% below the FY2023 enacted level. The third component of the EM budget is the Uranium Enrichment Decontamination and Decommissioning Fund, for which the FY2024 request was $857 million, a decrease of 2% from the FY2023 enacted amount. 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 largest requested EM increase in FY2024 is for the Office of River Protection at the Hanford (WA) Site, which would increase by $245 million (14%) from the FY2023 enacted level. According to the DOE request, the increase reflects startup of direct-feed low-activity waste treatment and design and construction of other waste treatment facilities at the site.

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.

Proposed Initial Funding for Newly Authorized Great Lakes Authority

The President's FY2024 budget includes $5 million in initial funding for the Great Lakes Authority (GLA), a new federal regional authority authorized by the Consolidated Appropriations Act, 2023 (P.L. 117-328, Division O, Title IV, §401). The GLA service region is defined as areas in the watershed of the Great Lakes and the Great Lakes System in Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.[23]

The authorizing legislation requires that before the GLA may convene, the President must nominate and the Senate must confirm a federal co-chairperson. As of May 2023, President Biden had not nominated a federal co-chairperson for the GLA.

For more information, see CRS Insight IN12089, *Federal Regional Commissions: Great Lakes Authority Established and Other Updates*, by Julie M. Lawhorn, and CRS Report R45997,

[23] The Consolidated Appropriations Act, 2023 (P.L. 117-328, Division O, Title IV, §401) amended 40 U.S.C. §15301(a) to establish the Great Lakes Authority (GLA). The structure and functions of the GLA are based on the model of the Northern Border Regional Commission, the Southeast Crescent Regional Commission, and the Southwest Border Regional Commission, which were established in the Food, Conservation, and Energy Act of 2008 (i.e., 2008 farm bill). The watershed of the Great Lakes and the Great Lakes System is defined in Section 118(a)(3) of the Federal Water Pollution Control Act (33 U.S.C. 1268(a)(3)).

Federal Regional Commissions and Authorities: Structural Features and Function, by Julie M. Lawhorn.

Bill Status and Recent Funding History

Table 3 indicates the steps taken during consideration of FY2024 Energy and Water Development appropriations. Dates will be filled in as action is completed. (For more details, see the CRS Appropriations Status Table at http://www.crs.gov/AppropriationsStatusTable/Index.)

Table 3. Status of Energy and Water Development Appropriations, FY2024

Subcommittee Markup							Final Approval		
House	Senate	House Comm.	House Passed	Senate Comm.	Senate Passed	Conf. Report	House	Senate	Public Law

Source: CRS Appropriations Status Table.

Table 4 includes budget totals for regular (excluding supplementals) energy and water development appropriations enacted for FY2018 through actions in FY2024.

Table 4. Energy and Water Development Appropriations, FY2018-FY2024

(budget authority in billions of current dollars)

FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024 Request
43.3	44.7	48.4	49.5	55.6	57.1	61.4

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

Notes: Figures exclude permanent budget authorities, scorekeeping adjustments, rescissions, and emergency funding. See **Table 1Table 1** for emergency funding for these fiscal years.

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 5**. 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 FY2024 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 5. Energy and Water Development Appropriations Summary

(budget authority in millions of current dollars)

Title	FY2019 Approp	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Approp	FY2024 Request
Title I: USACE	6,999	7,650	7,795	8,343	8,310	7,413
Title II: CUP and Reclamation	1,565	1,680	1,691	1,924	1,954	1,469
Title III: Department of Energy	35,709	38,657	39,625	44,856	46,374	52,000
Title IV: Independent Agencies	390	407	414	454	494	554
General provisions	21	—	—	—	—	—
Subtotal	**44,684**	**48,395**	**49,525**	**55,576**	**57,133**	**61,435**
Rescissions and Scorekeeping Adjustments[a]	-24	-71	-73	-2,704	-655	-49
E&W Total	**44,660**	**48,324**	**49,452**	**52,872**	**56,478**	**61,387**

Sources: FY2024 agency budget justifications; P.L. 117-328 and explanatory statement; FY2022 agency budget justifications; explanatory statement for H.R. 133, 116th Congress; FY2021 agency budget justifications; explanatory statement for Division C of H.R. 1865, 116th Congress. 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

FY2024 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, https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll6/id/2317 (see **Table 6**)
- Title II (see **Table 7**)
  - Bureau of Reclamation, https://www.usbr.gov/budget
  - Central Utah Project, https://www.doi.gov/sites/doi.gov/files/fy2024-cupca-greenbook.pdf-508.pdf
- Title III, Department of Energy, https://www.energy.gov/cfo/articles/fy-2024-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.[24]

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 studies and projects, and they altered numerous USACE policies and procedures.[25]

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 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.[26] A similar process is being followed for FY2024. For more information, see CRS Report R46320, *U.S. Army Corps of Engineers: Annual Appropriations Process*, by Anna E. Normand and Nicole T. Carter.

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

[25] 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.

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

Table 6 shows USACE appropriations accounts from FY2019 through FY2023 and the requested amounts for FY2024.

Table 6. Army Corps of Engineers

(budget authority in millions of current dollars)

Program	FY2019 Approp	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Approp	FY2024 Request
Investigations	125.0	151.0	153.0	143.0	172.5	129.8
Construction	2,183.0	2,681.0	2,692.6	2,492.8	1,808.8	2,014.6
Mississippi River and Tributaries (MR&T)	368.0	375.0	380.0	370.0	370.0	226.5
Operation and Maintenance (O&M)	3,739.5	3,790.0	3,849.7	4,570.0	5,078.5	2,629.9
Regulatory	200.0	210.0	210.0	212.0	218.0	221.0
General Expenses	193.0	203.0	206.0	208.0	215.0	212.0
FUSRAP	150.0	200.0	250.0	300.0	400.0	200.0
Flood Control and Coastal Emergencies (FCCE)	35.0	35.0	35.0	35.0	35.0	40.0
Office of the Asst. Secretary of the Army	5.0	5.0	5.0	5.0	5.0	6.0
WIFIA Program[a]	—	—	14.2	7.2	7.2	7.2
Harbor Maintenance Trust Fund[b]	—	—	—	—	—	1,726.0
Inland Waterways Trust Fund[b]	—	—	—	—	—	0.0
Rescissions	—	—	-0.5	—	—	—
Total Title I	**6,998.5**	**7,650.0**	**7,795.0**	**8,343.0**	**8,310.0**	**7,413.0**

Sources: USACE Civil Works FY2024 Budget and USACE Civil Works FY2022 Budget at https://www.usace.army.mil/Missions/Civil-Works/Budget/; FY2024 Budget Appendix for Corps of Engineers—Civil Works at https://www.whitehouse.gov/wp-content/uploads/2023/03/coe_fy2024.pdf; Division D of P.L. 117-328; Division D of P.L. 117-103; Division D of P.L. 116-260; Division C of P.L. 116-94; Division A of P.L. 115-244.

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

a. 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).

b. In the Administration's FY2024 request, as with previous requests, some activities that are funded in the O&M, Construction, and MR&T accounts are proposed to be funded directly from the Harbor Maintenance Trust Fund (HMTF) and Inland Waterway Trust Fund (IWTF) accounts. That is, the Administration

proposes funding eligible USACE activities directly from the trust funds. This would replace 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 be funded by the O&M account and reimbursed by the HMTF; instead the dredging would have been funded directly from the HMTF account. Similar proposals were not enacted in FY2019, FY2020, FY2021, FY2022, and FY2023.

Additional Funding

In addition to the regular appropriations for FY2022 and FY2023, USACE received the following supplemental appropriations:

- $5.711 billion in Division B of P.L. 117-43;
- $14.969 billion for FY2022 and $1.080 billion for FY2023 in IIJA (P.L. 117-58);
- $1.480 billion in Division N of P.L. 117-328;[27] and
- $20 million in the FY2023 continuing resolution (P.L. 117-180).

The IIJA also provided $1.050 billion in advance appropriations for FY2024. For more information on USACE supplemental funding, see CRS In Focus IF11945, *U.S. Army Corps of Engineers: Supplemental Appropriations*, by Anna E. Normand and Nicole T. Carter.

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 through FY2024, 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

[27] Of the $1.480 billion in emergency supplemental funds provided by the Disaster Relief Supplemental Appropriations Act, 2023 (Division N of P.L. 117-328), $350 million was made available for USACE to allocate in a work plan for construction and O&M of certain categories of projects (i.e., similar to additional funding provided through annual appropriations in FY2014-FY2022). USACE allocated the $350 million from Division N along with additional funding provided by Division D in its FY2023 work plans.

safety, and ecosystem restoration, among others.[28] 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.[29]

For more information, see CRS In Focus IF12127, *Bureau of Reclamation: FY2023 Budget and Appropriations*, by Charles V. Stern. **Table 7** shows Reclamation and CUP appropriations accounts from FY2019 through FY2023 and the FY2024 requested amounts.

Table 7. Bureau of Reclamation and CUP

(budget authority in millions of current dollars)

Program	FY2019 Approp	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Approp	FY2024 Request
Water and Related Resources	1,392.0	1,512.2	1,521.1	1,747.1	1,787.2	1,301.0
Policy and Administration	61.0	60.0	60.0	64.4	65.1	66.8
CVP Restoration Fund (CVPRF)	62.0	54.8	55.9	56.5	45.8	48.5
Calif. Bay-Delta (CALFED)	35.0	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**	**1,931.0**	**1,449.3**
Central Utah Project (CUP) Completion	15.0	20.0	21.0	23.0	23.0	19.6
Reclamation and CUP	**1,565.0**	**1,680.0**	**1,691.0**	**1,924.0**	**1,954.0**	**1,468.9**
Rescissions and adustments					-45.8	-48.5
Total	**1,565.0**	**1,680.0**	**1,691.0**	**1,924.0**	**1,908.2**	**1,420.4**

Sources: Reclamation and CUP FY2024 congressional budget justifications; Division D of P.L. 117-328; Division D of P.L. 117-103; Division D of P.L. 116-260; Division C of P.L. 116-94; Division A of P.L. 115-244.

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

[28] 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.

[29] 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.

Additional Funding

For each of FY2022 through FY2026, IIJA provided $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 and the FY2024 budget request for DOE programs, most of 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 Approp	FY2024 Request
Energy Programs					
Energy Efficiency and Renewable Energy	2,848.0	2,861.8	3,200.0	3,460.0	3,826.1
Electricity Delivery	190.0	211.7	277.0	350.0	297.5
Cybersecurity, Energy Security, and Emergency Response	156.0	156.0	185.8	200.0	245.5
Nuclear Energy[a]	1,493.4	1,507.6	1,654.8	1,773.0	1,562.6
Fossil Energy and Carbon Management	750.0	750.0	825.0	890.0	905.5
Energy Projects				222.0	
Naval Petroleum and Oil Shale Reserves	14.0	13.0	13.7	13.0	13.0
Strategic Petroleum Reserve[b]	205.0	189.0	226.4	-1,844.7	281.0
Northeast Home Heating Oil Reserve	10.0	6.5	6.5	7.0	7.2
Energy Information Administration	126.8	126.8	129.1	135.0	156.6
Non-Defense Environmental Cleanup	319.2	319.2	333.9	358.6	348.7

	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Approp	FY2024 Request
Uranium Enrichment Decontamination and Decommissioning Fund	881.0	841.0	860.0	879.1	857.5
Science	7,000.0	7,026.0	7,475.0	8,100.0	8,800.4
Office of Technology Transitions			19.5	22.1	56.6
Office of Clean Energy Demonstrations			20.0	89.0	215.3
Federal Energy Management Program					82.2
Grid Deployment Office					106.6
Office of Manufacturing and Energy Supply Chains					179.5
Office of State and Community Programs					705.0
Advanced Research Projects Agency—Energy (ARPA-E)	425.0	427.0	450.0	470.0	650.2
Nuclear Waste Disposal		27.5	27.5	10.2	12.0
Departmental Admin. (net)	161.0	166.0	240.0	283.0	433.5
Office of Inspector General	54.2	57.7	78.0	86.0	165.2
Office of Indian Energy	22.0	22.0	58.0	75.0	110.1
Advanced Technology Vehicles Manufacturing (ATVM) Loans	5.0	5.0	5.0	9.8	13.0
ATVM Rescission of Emergency Funding		-1,908.0			
Title 17 Loan Guarantee	29.0	29.0	29.0	-135.8	-126.6
Title 17 Rescission of Emergency Funding		-392.0			
Tribal Energy Loan Guarantee	2.0	2.0	2.0	4.0	6.3
NNSA					
Weapons Activities	12,457.1	15,345.0	15,920.0	17,116.1	18,832.9
Nuclear Nonproliferation	2,164.4	2,260.0	2,354.0	2,490.0	2,509.0
Naval Reactors	1,648.4	1,684.0	1,918.0	2,081.5	1,964.1

	FY2020 Approp	FY2021 Approp	FY2022 Approp	FY2023 Approp	FY2024 Request
Office of Admin./Salaries and Expenses	434.7	443.2	464.0	475.0	539.0
Total, NNSA	**16,704.6**	**19,732.2**	**20,656.0**	**22,162.6**	**23,845.0**
Defense Environmental Cleanup	6,255.0	6,426.0	6,710.0	7,025.0	7,073.6
Defense Uranium Enrichment D&D			573.3	586.0	427.0
Other Defense Activities	906.0	920.0	985.0	1,035.0	1,075.2
Power Marketing Administrations					
Southwestern	10.4	10.4	10.4	10.6	11.4
Western	89.2	89.4	90.8	98.7	99.9
Falcon and Amistad O&M	0.2	0.2	0.2	0.2	0.2
Total, PMAs	**99.8**	**100.0**	**101.4**	**109.6**	**111.5**
General provisions		-2.0	-286.1		
DOE Total Appropriations	**38,657.2**	**39,625.0**	**44,855.6**	**46,374.4**	**52,442.6**
Offsets and adjustments	-70.9			-609.0	-443.0
Total, DOE	**38,586.3**	**39,625.0**	**44,855.6**	**45,765.3**	**51,999.6**

Sources: DOE FY2024 budget justification; P.L. 117-328 and explanatory statement; H.Rept. 117-98; DOE FY2022 congressional budget justification, explanatory statement for H.R. 133, 116th Congress; H.Rept. 116-449; explanatory statement for Division C of H.R. 1865, 116th Congress.

Notes: Columns may not sum to totals because of rounding. Table includes some category adjustments for comparability.

a. Includes $178 million from defense budget function.

b. Includes Strategic Petroleum Reserve Petroleum Account and rescissions.

As well as the regular annual appropriations shown in **Table 8**, DOE received additional appropriations from IIJA; the additional amounts for FY2023 and FY2024 are 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 and FY2024 DOE Funding Under IIJA

(budget authority in millions of current dollars)

Program	IIJA FY2023	IIJA FY2024
Energy Efficiency and Renewable Energy	2,221.8	1,945
Cybersecurity, Energy Security, and Emergency Response	100.0	100.0
Electricity	1,610.0	1,610.0

Program	IIJA FY2023	IIJA FY2024
Nuclear Energy	1,200.0	1,200.0
Fossil Energy and Carbon Management	1,444.5	1,447.0
Carbon Dioxide Transportation Infrastructure Finance and Innovation Program Account	2,097.0	0
Office of Clean Energy Demonstrations	4,426.3	4,476.3
Total	**13,099.6**	**10,778.3**

Source: H.Rept. 117-394, DOE FY2024 congressional budget justification.

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	

Program	IRA section	Approp.	Fiscal years
Office of Energy Efficiency and Renewable Energy	50172(d)	150	
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		100.0
Advanced Reactor Demonstration Program	60.0		60.0
National Reactor Innovation Center	20.0		20.0
Risk Reduction for Future Demonstrations	120.0		120.0
Defense Nuclear Nonproliferation (Ukraine-related activities)	125.3		125.3
Electricity (Puerto Rico electricity grid resilience)		1,000.0	1,000.0
Western Area Power Administration		520.0	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.

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.[30]

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, advanced materials and manufacturing technologies focuses on next-generation materials and processes, secure and sustainable materials, and energy technology manufacturing and its workforce.[31] Industrial efficiency and decarbonization focuses

[30] DOE, *FY2024 Congressional Budget Justification*, March 2023, EERE, https://www.energy.gov/sites/default/files/2023-03/doe-fy-2024-budget-vol-4-eere-v2.pdf.

[31] Ibid., p. 141.

on sector-specific technology innovation, cross-sector decarbonization technologies, and technical assistance and workforce development.[32] The building technologies program includes R&D on lighting, space conditioning, windows, and control technologies to reduce building energy-use intensity.

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 Biden Administration has split several EERE programs into separate offices:

- *State and Community Energy Programs*, which provides two types of formula grants to states: weatherization grants 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.
- *Manufacturing and Energy Supply Chains*, which provides support for increasing U.S. manufacturing capacity for critical energy technologies and for increasing industrial energy efficiency.
- *Federal Energy Management Program*, which provides guidance and expertise to federal agencies to meet federal goals on energy use and emissions.

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 new generation and loads can be fully integrated into the energy ecosystem and consumers have access to resilient, secure, and clean sources of electricity.[33]

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. The Administration has established a separate Grid Deployment Office to support modernization of the nation's electricity transmission system and critical generating facilities through planning and financial assistance.

[32] Ibid., p. 155.

[33] DOE, *FY2024 Congressional Budget Justification*, March 2023, Electricity, https://www.energy.gov/sites/default/files/2023-03/doe-fy-2024-budget-vol-4-oe-v3.pdf.

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 FY2024 DOE budget justification says that nuclear energy "helps mitigate the worst impacts of the climate crisis by providing half of the nation's carbon-free electricity with firm power that complements renewables."[34]

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 CRS Report R45706, *Advanced Nuclear Reactors: Technology Overview and Current Issues*, by 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,[35] 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. This includes a focus on development of carbon capture, utilization, and storage (CCUS) technologies, hydrogen technologies, and options to reduce methane emissions from fossil fuel infrastructure. FECM also leads DOE's activities related to critical minerals and rare earth elements. Additionally, FECM is involved in a number of programs funded by IIJA, either managing the programs directly or consulting with other DOE offices that have the lead management role. These programs include Regional Direct Air Capture Hubs, Carbon Storage Validation and Testing, Critical Mineral Innovation Efficiency, and Alternatives, and the Carbon Dioxide Transportation Infrastructure Finance and Innovation (CIFIA). Total IIJA appropriations

[34] DOE, *FY2024 Congressional Budget Justification*, March 2024, Nuclear Energy, https://www.energy.gov/sites/default/files/2023-03/doe-fy-2024-budget-vol-4-ne-v3.pdf.

[35] 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.

for all programs in which FECM is involved is $1.447 billion for FY2024. Additionally, CIFIA in FY2023 was appropriated $2.097 billion, which remains available to support CO_2 transportation projects. 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 FY2022*, by Martin C. Offutt, CRS Report R44902, *Carbon Capture and Sequestration (CCS) in the United States*, by Angela C. Jones and Ashley J. Lawson, and CRS Report R46618, *An Overview of Rare Earth Elements and Related Issues for Congress*, by Brandon S. Tracy.

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.[36] More frequently, DOE uses SPR authorities to exchange crude oil with refiners following natural disasters (i.e., hurricanes) and other regional supply disruption events.[37] The Northeast Gasoline Supply Reserve—established in 2014—has never been utilized.

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.[38]

[36] 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.

[37] 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 February 27, 2023.

[38] 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.

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 FY2024 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."[39]

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.[40]

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.

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.

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[39] DOE, *FY2024 Congressional Budget Justification*, March 2023, vol. 5, p. 7, https://www.energy.gov/sites/default/files/2023-03/doe-fy-2024-budget-vol-5-science-v3.pdf.

[40] 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.

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 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 $3.43 billion in R&D funding to 1,503 projects, and 204 project teams have raised more than $11.4 billion in private sector follow-on funding.[41]

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. Loans and guarantees for tribal energy projects are authorized under section 503 of EPACT05.

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 $3.600 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 $5.000 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 approximately $60 billion in authority available to make direct loans and loan guarantees.

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.[42] As of April 2023, applications for 141 additional loan guarantees totaling approximately $121.1 billion were under consideration by the DOE Loan Programs Office.[43]

[41] ARPA-E, "Our Impact," web page viewed May 4, 2023, https://arpa-e.energy.gov/about/our-impact.

[42] 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.

[43] DOE Loan Programs Office, "Monthly Application Activity Report," April 2023, https://www.energy.gov/lpo/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.

For more information on tribal loans and guarantees, see CRS In Focus IF11793, *Indian Energy Programs at the Department of Energy*, by Corrie E. Clark, Mark Holt, and Lexie Ryan.

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 EIA's data collection related to energy consumption in residential and commercial buildings and by cryptocurrency miners. 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:

- *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, such as conversion of reactors that use highly enriched uranium (useable for weapons) to low-enriched uranium.
- Global Materials Security works to increase the security of vulnerable stockpiles of nuclear material in other countries, promotes the worldwide removal, reduction, and security of radioactive sources (typically used in medical and industrial devices), and improves the capability of other countries to halt illicit trafficking of nuclear materials.
- The Nonproliferation and Arms Control program conducts reviews of nuclear export applications and technology transfer authorizations, implements treaty obligations, and analyzes nonproliferation policies and proposals.
- The Bioassurance Program, established in FY2023, aims to expand DOE's role in biodefense and develop national laboratory capabilities "to anticipate, detect, assess, and mitigate emerging biothreats."
- Defense Nuclear Nonproliferation Research and Development (DNN R&D) advances U.S. capabilities to detect and characterize threats such as foreign nuclear material and weapons production, diversion of special nuclear material, and nuclear detonations.
- The Nonproliferation Construction program disposes of excess U.S. weapons plutonium through a "dilute and dispose" strategy.

This account also includes the Nuclear Counterterrorism and Incident Response Program (NCTIR), which evaluates nuclear and radiological threats and develops emergency preparedness plans, including organizing scientific teams to provide rapid response to nuclear or radiological incidents or accidents worldwide.

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[44] 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.[45]

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.[46] 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.[47] 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.

For background, 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

[44] 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.

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

[46] 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.

[47] 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.

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 and FY2024 budget request for all the Title IV agencies, including proposed initial funding for the newly authorized Great Lakes Authority, is shown in **Table 12**. (For more about the GLA, see the "Funding Issues and Initiatives" section.) Additional FY2024 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 Approp	FY2024 Request
Appalachian Regional Commission	175.0	180.0	195.0	200.0	235.0
Nuclear Regulatory Commission	*855.6*	*844.4*	*887.7*	*927.2*	*979.2*
(Revenues)	*-728.1*	*-721.4*	*-756.7*	*-790.2*	*-823.2*
Net NRC (including Inspector General)	127.5	123.0	131.0	137.0	156.0
Defense Nuclear Facilities Safety Board	31.0	31.0	36.0	41.4	41.4
Nuclear Waste Technical Review Board	3.6	3.6	3.8	3.9	4.1
Denali Commission	15.0	15.0	15.1	17.0	17.0
Delta Regional Authority	30.0	30.0	30.1	30.1	30.1
Great Lakes Authority					5.0
Northern Border Regional Commission	25.0	30.0	35.0	40.0	40.0
Southeast Crescent Regional Commission	0.3	1.0	5.0	20.0	20.0
Southwest Border Regional Commission		0.3	2.5	5.0	5.0
Total	**407.3**	**413.9**	**453.5**	**494.4**	**553.6**

Sources: President's FY2024 budget; P.L. 117-328 and explanatory statement; President's FY2022 budget; explanatory statement for H.R. 133, 116th Congress; President's FY2021budget; explanatory statement for Division C of H.R. 1865, 116th Congress.

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 Approp	IIJA FY2025-FY2026 Approp
Appalachian Regional Commission	200.0	200.0	200.0	400.0
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 and continuing through FY2026. Appropriations for the DRA, Denali Commission, NBRC, SCRC, and SBRC are available until expended.

Appalachian Regional Commission

Established in 1965,[48] the Appalachian Regional Commission 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."[49]

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

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

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

Julie M. Lawhorn, and CRS In Focus IF11140, *Federal Regional Commissions and Authorities: 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

The Nuclear Regulatory Commission is an independent agency that establishes and enforces safety and security standards for nuclear power plants and users of nuclear materials. Major appropriations and budget request 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 Approp	FY2024 Request
Nuclear Reactor Safety	433.4	452.8	477.4	490.7	530.8
Nuclear Materials and Waste Safety	103.2	102.9	107.3	111.6	125.9
Decommissioning and Low-Level Waste	21.4	22.8	22.9	23.9	27.0
Corporate Support	289.1	271.4	266.3	285.3	304.0
Integrated University Program	2.5	16.0	16.0	16.0	
Prior-Year Balances	-38.4	-35.0	-16.0	-16.0	
Inspector General	12.1	13.5	13.8	15.8	18.6
Total	**823.1**	**844.4**	**887.7**	**927.2**	**1,006.4**
Carryover					-27.1
Net					**979.2**

Sources: NRC FY2024 congressional budget justification; P.L. 117-328 and explanatory statement; NRC FY2022 congressional budget justification; explanatory statement for H.R. 133, 116th Congress; NRC FY2021 Budget Justification; explanatory statement for Division C of H.R. 1865, 116th Congress.

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 FY2024 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*, March 29, 2023, https://appropriations.house.gov/legislation/business-meetings/budget-hearing-fiscal-year-2024-request-army-corps-engineers-and
- *Department of Energy*, March 23, 2023, https://appropriations.house.gov/legislation/hearings/budget-hearing-fiscal-year-2024-request-department-energy

Senate

- *Corps of Engineers and Bureau of Reclamation*, April 26, 2023, https://www.appropriations.senate.gov/hearings/a-review-of-the-fiscal-year-2024-budget-request-for-the-us-army-corps-of-engineers-and-the-bureau-of-reclamation
- *Department of Energy*, May 3, 2023, https://www.appropriations.senate.gov/hearings/a-review-of-the-fiscal-year-2024-budget-request-for-the-us-department-of-energy-including-the-national-nuclear-security-administration

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