

# Federal Research and Development (R&D) Funding: FY2025

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# Federal Research and Development (R&D) Funding: FY2025

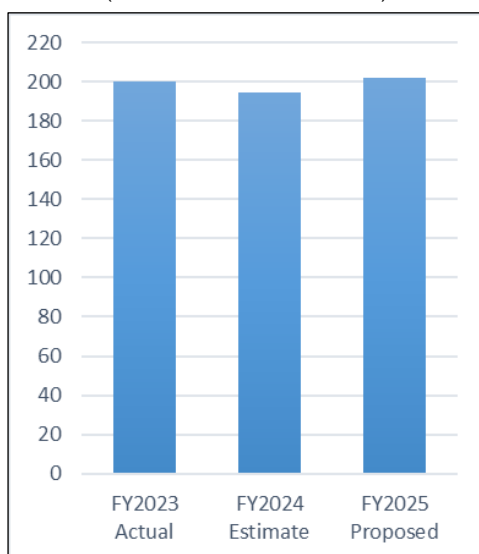
The U.S. government supports a broad range of scientific and engineering research and development (R&D). The purposes of this R&D include addressing national defense, health, safety, the environment, and energy security; advancing knowledge generally; developing the U.S. scientific and engineering workforce; strengthening the capacity of U.S. institutions and firms to conduct cutting-edge research and to develop innovative technologies; and enhancing the competitiveness of the United States in the global economy. Most of the R&D funded by the federal government is performed in support of the unique missions of individual funding agencies. Congress provides annual R&D appropriations through 9 of the 12 regular appropriations bills.

President Biden's budget proposal for FY2025 includes approximately \$201.9 billion for R&D, \$7.4 billion (4%) above the FY2024 estimated level of \$194.6 billion (see figure). Adjusted for inflation to FY2023 dollars, the President's FY2025 R&D proposal represents a constant-dollar increase of 1.5% above the FY2024 estimated level.

Amounts discussed below have not been adjusted for inflation. Federal-government-wide R&D funding amounts are included in the "Research and Development" chapter of the *Analytical Perspectives* portion of the President's FY2025 budget. This chapter notes that the FY2024 amounts are estimated using annualized appropriations provided by the Continuing Appropriations Act, 2024 (Division A of P.L. 118-15), since final FY2024 appropriations were not enacted at the time the FY2025 budget was prepared. FY2023 amounts reflect actual R&D funding from enacted appropriations.

Funding for R&D is concentrated in a few federal departments and agencies. In FY2025, six agencies would receive nearly 95% of total federal R&D funding—the Department of Defense (DOD), the Department of Health and Human Services (HHS), the Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), and the U.S. Department of Agriculture (USDA)—with DOD (46%) and HHS (25%) combined accounting for more than 70% of all proposed federal R&D funding.

**Federal Research and Development  
Funding, FY2023-FY2025**  
(In billions of current dollars)



**Source:** CRS analysis of data from Executive Office of the President, Office of Management and Budget, "Research and Development," in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025*, March 2024.

Under the President's FY2025 budget proposal, R&D funding would increase (in current dollars), relative to FY2024 estimates, for four of the six agencies receiving the most R&D funding. The largest increases in R&D funding (without accounting for inflation) would be for HHS (up \$3.8 billion, 8%, to \$51.3 billion), DOD (up \$2.1 billion, 2%, to \$92.8 billion), DOE (up \$1.2 billion, 5%, to \$23.4 billion), and NSF (up \$322 million, 4%, to \$8.1 billion). The exceptions in FY2025 are NASA, which would decrease by \$82 million (-1%) to \$11.7 billion, and USDA, which would decrease by \$96 million (-3%) to \$3.3 billion. Other agencies would see decreases in their R&D funding: the Department of Commerce (down \$4.0 million, -1%, to \$3.9 billion), the Department of Veterans Affairs (down \$90 million, -5%, to \$1.7 billion), the Department of Homeland Security (down \$90 million, -14%, to \$544 million), and the Department of Education (down \$5.0 million, -1%, to \$441 million). Other agencies that would see increases in R&D funding are the Department of Transportation (up \$51 million, 3%, to \$1.5 billion), the Department of the Interior (up \$72 million, 6%, to \$1.3 billion), the Environmental Protection Agency (up \$46 million, 8%, to \$614 million), and the Smithsonian Institution (up \$43 million, 12%, to \$390 million).

The President's FY2025 budget proposal would increase funding, in current dollars, relative to FY2024 estimates for basic research by \$1.6 billion (3%), applied research by \$3.3 billion (7%), development by \$2.0 billion (2%), and R&D facilities and equipment by \$487 million (9%).

Several multiagency R&D initiatives continue under the President's FY2025 budget proposal. Some activities supporting these initiatives are discussed in agency budget justifications. However, comprehensive aggregate budget information on these initiatives will likely not be available until budget supplements for each are released later in the year.

Given that the request represents the President's R&D priorities, Congress may opt to agree with none, part, or all of the request, and it may express different priorities through the appropriations process.

In recent years, Congress has completed the annual appropriations process after the start of the fiscal year. Doing so, as well as using continuing resolutions, can affect agencies' executions of their R&D budgets, which among other things may result in delays or cancellations of planned R&D activities and acquisitions of R&D-related equipment.

# Contents

Introduction .....	1
The President’s FY2025 Budget Proposal.....	3
Federal R&D Funding Perspectives .....	4
Federal R&D by Agency .....	4
Federal R&D by Character of Work, Facilities, and Equipment.....	5
Federal Role in U.S. R&D by Character of Work.....	6
Federal R&D by Agency and Character of Work Combined .....	7
Multiagency R&D Initiatives .....	8
Networking and Information Technology Research and Development (NITRD) Program .....	9
Climate-Change-Related R&D.....	10
U.S. Global Change Research Program (USGCRP).....	10
National Nanotechnology Initiative (NNI) .....	11
FY2025 Appropriations Status .....	12
Department of Defense (DOD) .....	14
Department of Health and Human Services (HHS).....	17
National Institutes of Health (NIH).....	18
Department of Energy (DOE) .....	23
National Aeronautics and Space Administration (NASA) .....	25
National Science Foundation (NSF).....	27
Overall.....	28
Research .....	29
Education .....	29
Construction .....	29
Other Initiatives.....	30
U.S. Department of Agriculture (USDA) .....	32
Agricultural Research Service (ARS) .....	33
National Institute of Food and Agriculture (NIFA).....	34
Research and Education.....	34
Extension .....	34
Integrated Activities .....	35
National Agricultural Statistics Service (NASS) .....	35
Economic Research Service (ERS).....	35
Office of the Under Secretary for Research, Education, and Economics (REE) and Office of the Chief Scientist (OCS) .....	35
Department of Commerce (DOC) .....	37
National Institute of Standards and Technology (NIST).....	37
FY2025 Funding Provided by the CHIPS Act of 2022.....	39
National Oceanic and Atmospheric Administration (NOAA).....	40
Department of Veterans Affairs (VA) .....	43
Department of Transportation (DOT).....	46
Federal Highway Administration (FHWA) .....	47
Federal Aviation Administration (FAA) .....	47
Office of the Secretary (OST) .....	48

National Highway Traffic Safety Administration (NHTSA).....	48
Federal Railroad Administration (FRA).....	48
Federal Transit Administration (FTA).....	48
Federal Motor Carrier Safety Administration (FMCSA) .....	49
Pipeline and Hazardous Materials Safety Administration (PHMSA) .....	49
Department of the Interior (DOI) .....	51
U.S. Geological Survey (USGS).....	52
Other DOI Components .....	52
Environmental Protection Agency (EPA).....	53
Department of Homeland Security (DHS) .....	56

## Figures

Figure 1. Composition of U.S. Basic Research, Applied Research, and Development by Funding Sector, 2022 .....	7
---	---

## Tables

Table 1. Federal Research and Development (R&D) Funding by Agency, FY2023-FY2025.....	5
Table 2. Federal R&D Funding by Character of Work, Facilities, and Equipment, FY2023-FY2025 .....	6
Table 3. Selected R&D Funding Agencies by Character of Work, Facilities, and Equipment: FY2023-FY2025.....	8
Table 4. Networking and Information Technology Research and Development (NITRD) Program Funding, FY2022-FY2025 .....	10
Table 5. U.S. Global Change Research Program (USGCRP) Funding, FY2022-FY2025.....	11
Table 6. National Nanotechnology Initiative (NNI) Funding, FY2022-FY2025 .....	12
Table 7. Alignment of Agency R&D Funding and Regular Appropriations Bills .....	13
Table 8. Department of Defense (DOD) Research, Development, Test, and Evaluation (RDT&E).....	16
Table 9. National Institutes of Health (NIH) Funding .....	21
Table 10. Department of Energy R&D and Related Activities.....	24
Table 11. National Aeronautics and Space Administration (NASA) R&D .....	26
Table 12. National Science Foundation (NSF) Funding.....	31
Table 13. U.S. Department of Agriculture (USDA) R&D.....	36
Table 14. National Institute of Standards and Technology (NIST) Funding .....	39
Table 15. National Oceanic and Atmospheric Administration (NOAA) Annual R&D Enacted and Requested Direct Obligations .....	42
Table 16. Department of Veterans Affairs (VA) R&D.....	45
Table 17. Department of Veterans Affairs (VA) R&D by Designated Research Area .....	46
Table 18. Department of Transportation (DOT) R&D Activities and Facilities.....	49
Table 19. Department of the Interior (DOI) R&D.....	53
Table 20. U.S. Environmental Protection Agency (EPA) Science and Technology Account .....	55

Table 21. Department of Homeland Security (DHS) R&D Accounts .....	57
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## **Appendixes**

Appendix. CRS Contacts for Agency Research and Development (R&D).....	58
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## **Contacts**

Author Information.....	59
-------------------------	----

## Introduction

The 118<sup>th</sup> Congress is engaged in a range of legislative activities focused on the U.S. research and development (R&D) enterprise, in particular federal R&D programs and policies, including authorizations, appropriations, and oversight. The federal government has played an important role in supporting R&D efforts that have led to scientific breakthroughs and new technologies, from the internet to communications satellites and defenses against disease. Beyond agency mission objectives and policies to promote the competitiveness of the United States in the global economy, executive and legislative branch decisions about the prioritization of R&D recently have been driven generally by federal budget caps, both in the context of the entire federal budget<sup>1</sup> as well as among competing needs within the federal R&D portfolio.

The U.S. government supports a broad range of scientific and engineering R&D. Its purposes include addressing national defense, health, safety, the environment, and energy security; advancing knowledge generally; developing the U.S. scientific and engineering workforce; strengthening the capacity of U.S. institutions and firms to conduct cutting-edge scientific research and to develop innovative technologies; and enhancing the global competitiveness of U.S. institutions and firms. Most of the R&D funded by the federal government is performed in support of the unique missions of individual funding agencies.

The federal R&D budget is an aggregation of the R&D activities of these agencies. There is no single, centralized source of R&D funds. Generally, each agency develops its R&D budget internally as part of its overall budget development process (and in coordination with other agencies for multi-agency initiatives and programs). R&D funding may be included either in appropriations accounts that are entirely devoted to R&D or in accounts that also include funding for non-R&D activities. Agency budgets are reviewed, revised, and approved by the Office of Management and Budget (OMB) and become part of the President's annual budget submission to Congress. The federal R&D budget is then calculated by aggregating the R&D activities of all federal agencies.

Congress plays a central role in defining the nation's R&D priorities as it makes decisions about the level and allocation of R&D funding—overall, within agencies, and for specific programs. As Congress acts on the FY2025 appropriations process, it faces two overarching issues: the amount of the federal budget to be spent on federal R&D and the prioritization and allocation of the available funding.

This report begins with a high-level discussion of the overall funding level of R&D in President Biden's FY2025 budget request, followed by analyses of requested R&D funding across selected agency and department budgets and for selected multiagency initiatives; these include analyses of R&D funding by agency, by character of R&D work, and by a combination of the two perspectives. The remainder of the report discusses and analyzes in more depth the R&D budget requests of selected individual federal departments and agencies that collectively account for approximately 99% of total federal R&D funding.

The **text box** below provides definitions of selected terms associated with federal R&D funding. The **Appendix** lists the primary CRS experts on R&D funding for the agencies covered in this report.

<sup>1</sup> For example, the Budget Control Act of 2011 (P.L. 112-25) imposed caps on discretionary spending through FY2021, and the Fiscal Responsibility Act of 2023 (P.L. 118-5) set new caps on defense and nondefense discretionary spending for FY2024 and FY2025. For more information, see CRS Insight IN12340, *The FY2025 President's Budget in Historical Context*, by D. Andrew Austin.

## Definitions Associated with Federal Research and Development (R&D) Funding

Two key sources of definitions associated with federal R&D funding are the White House Office of Management and Budget (OMB) and the National Science Foundation (NSF).

**Office of Management and Budget.** OMB provides definitions of R&D-related terms in OMB Circular No. A-11, “Preparation, Submission, and Execution of the Budget.”<sup>2</sup> This document provides guidance to agencies in the preparation of the President’s annual budget and instructions on budget execution. Though boundaries separating one type of R&D activity from another may not always be clear or seem relevant in practice, where such lines are drawn and how various R&D activities are categorized directly informs the budget process. OMB Circular No. A-11 provides definitions for R&D activities to be used in the identification and collection of federal R&D spending across federal agencies and departments. Importantly, these definitions have varied over time. For example, as of FY2017, OMB replaced the R&D category “development” with a subset referred to as “experimental development” to better align its data with those collected by NSF and to be consistent with international standards. OMB thus omits “non-experimental development” funding (which the Department of Defense [DOD] categorizes under budget activities 6.7 and 6.8) from the calculation of DOD and total federal R&D funding levels. OMB Circular No. A-11 provides the following definitions:

- *Conduct of R&D:* Research and experimental development activities are defined as creative and systematic work undertaken in order to increase the stock of knowledge—including knowledge of people, culture, and society—and to devise new applications using available knowledge.
- *Basic Research:* Basic research is defined as experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts. Basic research may include activities with broad or general applications in mind, such as the study of how plant genomes change, but excludes research directed towards a specific application or requirement, such as the optimization of the genome of a specific crop species.
- *Applied Research:* Applied research is defined as original investigation undertaken in order to acquire new knowledge. Applied research is, however, directed primarily towards a specific practical aim or objective.
- *Experimental Development:* Experimental development is defined as creative and systematic work, drawing on knowledge gained from research and practical experience, which is directed at producing new products or processes or improving existing products or processes. Like research, experimental development will result in gaining additional knowledge.
- *R&D Equipment:* R&D equipment includes amounts for major equipment for R&D. It includes acquisition, design, or production of major movable equipment, such as mass spectrometers, research vessels, DNA sequencers, and other major movable instruments for use in R&D activities. It includes programs of \$1 million or more that are devoted to the purchase or construction of major R&D equipment.
- *R&D Facilities:* R&D facilities includes amounts for the construction of facilities that are necessary for the execution of an R&D program. This may include land, major fixed equipment, and supporting infrastructure such as a sewer line or housing at a remote location.

**National Science Board and National Science Foundation (NSF).** The National Science Board and NSF provide the following definitions of R&D-related terms:<sup>3</sup>

- *Research and Experimental Development:* Research and experimental development comprises creative and systematic work undertaken to increase the stock of knowledge—including knowledge of humankind, culture, and society—and to devise new applications of available knowledge.
- *Basic Research:* Experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.
- *Applied Research:* Original investigation undertaken to acquire new knowledge—directed primarily toward a specific, practical aim or objective.
- *Development (or Experimental Development):* Systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

<sup>2</sup> Executive Office of the President, Office of Management and Budget (OMB), “Preparation, Submission, and Execution of the Budget,” Circular No. A-11, July 2024, <https://www.whitehouse.gov/wp-content/uploads/2018/06/a11.pdf>.

<sup>3</sup> National Science Board, National Science Foundation (NSF), *Research and Development: U.S. Trends and International Comparisons*, May 21, 2024, <https://ncses.nsf.gov/pubs/nsb20246>.



## The President's FY2025 Budget Proposal

On March 11, 2024, President Biden released his proposed FY2025 budget, which includes \$201.9 billion for R&D, \$7.4 billion (4%) above the FY2024 estimated level of \$194.6 billion.<sup>4</sup> Adjusted for inflation to FY2023 dollars,<sup>5</sup> the President's FY2025 R&D proposal represents a constant-dollar increase of 1.5% above the FY2024 estimated level.<sup>6</sup> Unless otherwise noted, the funding amounts discussed in this report have not been adjusted for inflation, that is, the amounts generally represent current dollars.

The President's proposal includes continued R&D funding for existing single-agency and multiagency programs and activities, as well as new initiatives. This report provides government-wide, multiagency, and individual agency analyses of the President's FY2025 proposal as it relates to R&D and related activities. The government-wide analysis in this report is based on data from OMB that include advance appropriations (already enacted) for FY2025,<sup>7</sup> as well as new funding requested for FY2025; with a few exceptions, individual agency analyses that follow are based on agency budget justifications and do not include advance appropriations. More information will become available as the House and Senate act on the President's budget request through appropriations bills. Factors that complicate analysis of the President's FY2025 budget request are detailed in the following **text box**.

### Factors Affecting Analysis of the FY2025 Budget Request

Several factors complicate the analysis of changes in R&D funding for FY2025, both in aggregate and for selected agencies:

- The government-wide analysis in this report is based on data from OMB that include *advance appropriations* (i.e., appropriations provided in an act signed in one fiscal year for a future fiscal year) that become available in FY2025, as well as new funding requested for FY2025. In contrast, individual agency analyses in this report are based on agency budget justifications and generally do not include advance appropriations. Where information is provided on advance appropriations in the discussions of individual agencies, the advance appropriations information is given in the footnotes. Similarly, when agencies received *supplemental appropriations* for the fiscal years described in this report, this is noted in individual agency analyses.

<sup>4</sup> According to OMB, the President's FY2025 proposal presented in the *Analytical Perspectives* report that accompanies the President's FY2025 budget request includes advance appropriations provided to agencies for FY2025. (Email conversation between CRS and OMB, May 1, 2024.) Additionally, FY2024 amounts are estimates because most appropriations acts do not specify research and development (R&D) amounts; rather, R&D amounts generally are known after agencies allocate appropriations to specific activities and report those figures. Executive Office of the President, Office of Management and Budget, "Research and Development," in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025*, March 2024, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

<sup>5</sup> As calculated by CRS using the gross domestic product (GDP) (chained) price index for FY2024-FY2025 in White House, Table 10.1, "Gross Domestic Product and Deflators Used in the Historical Tables: 1940–2029," in *Budget of the United States Government, Fiscal Year 2025*, [https://www.whitehouse.gov/wp-content/uploads/2024/03/hist10z1\\_fy2025.xlsx](https://www.whitehouse.gov/wp-content/uploads/2024/03/hist10z1_fy2025.xlsx).

<sup>6</sup> The FY2024 estimates apply "the main 2025 Budget volume approach of using annualized appropriations provided by the 2024 Continuing Resolution"; Executive Office of the President, OMB, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025, Research and Development*, March 2024, p. 58, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

<sup>7</sup> An *advanced appropriation* is "one made to become available one year or more beyond the year for which the appropriations act is passed." For example, "the Infrastructure Investments and Jobs Appropriations Act (Division J of P.L. 117-58) was enacted in fiscal year 2022 and provided advanced appropriations for several programs that become available in fiscal years 2023 through 2026." See White House, "Advance Appropriations," in *Budget of the United States Government, Fiscal Year 2025*, [https://www.whitehouse.gov/wp-content/uploads/2024/03/aaa\\_fy2025.pdf](https://www.whitehouse.gov/wp-content/uploads/2024/03/aaa_fy2025.pdf).

- Inconsistency among agencies in reporting R&D activities and the inclusion of R&D activities in accounts with non-R&D activities may result in different figures being reported by OMB and the White House Office of Science and Technology Policy (OSTP), including those shown in **Table 1** and **Table 4**, and those in agency budget analyses that appear later in this report.

## Federal R&D Funding Perspectives

Federal R&D funding can be analyzed from a variety of perspectives that provide different insights. The following sections examine the data by agency, by the character of the work supported, and by a combination of these two perspectives.

### Federal R&D by Agency

Congress makes decisions about R&D funding through the authorization and appropriations processes, primarily from the perspective of individual agencies and programs. **Table 1** provides data on R&D funding by agency for FY2023 (actual), FY2024 (estimated), and FY2025 (requested).<sup>8</sup>

Under the FY2025 request, eight federal agencies would receive approximately 97% of total federal R&D funding: the Department of Defense (DOD), 46.0%; Department of Health and Human Services (HHS), primarily the National Institutes of Health (NIH), 25.5%; Department of Energy (DOE), 11.6%; National Aeronautics and Space Administration (NASA), 5.8%; National Science Foundation (NSF), 4.0%; Department of Commerce (DOC), 1.9%; U.S. Department of Agriculture (USDA), 1.6%; and Department of Veterans Affairs (VA), 0.8%. This report provides an analysis of the R&D budget requests for these agencies, as well as for the Department of Homeland Security (DHS), Department of the Interior (DOI), Department of Transportation (DOT), and Environmental Protection Agency (EPA). Additionally, for artificial intelligence (AI), the budget includes “\$200 million in mandatory R&D funding that will bolster efforts to harness the capacity of AI to accelerate scientific research across a variety of disciplines at multiple agencies.”<sup>9</sup>

R&D funding for six federal agencies would decrease under the President’s FY2025 request, compared with those agencies’ FY2024 estimated levels: NASA, DOC, USDA, VA, DHS, and the Department of Education (ED). R&D funding for the eight other federal agencies with R&D funding amounts included in the President’s FY2025 budget request would increase compared to their FY2024 estimated levels: DOD (up \$2.1 billion, 2.3%), HHS (up \$3.8 billion, 7.9%), DOE (up \$1.2 billion, 5.4%), NSF (up \$322 million, 4.1%), DOT (up \$51 million, 3.5%), DOI (up \$72 million, 5.7%), EPA (up \$46 million, 8.1%), and the Smithsonian Institution (up \$43 million, 12.4%). (See **Table 1**.)

<sup>8</sup> Executive Office of the President, OMB, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025, Research and Development*, March 2024, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

<sup>9</sup> Ibid.

**Table I. Federal Research and Development (R&D) Funding by Agency, FY2023-FY2025**

(budget authority, in millions of current dollars)

Department/Agency	FY2023 Actual	FY2024 Estimate	FY2025 Request	FY2024-FY2025	
				Dollar Change	Percentage Change
Department of Defense	95,541	90,632	92,757	2,125	2.3%
Department of Health and Human Services	48,393	47,591	51,364	3,773	7.9%
Department of Energy	20,790	22,237	23,440	1,203	5.4%
National Aeronautics and Space Administration	11,691	11,797	11,715	-82	-0.7%
National Science Foundation	7,988	7,800	8,122	322	4.1%
Department of Agriculture	3,380	3,379	3,283	-96	-2.8%
Department of Commerce	5,141	3,930	3,926	-4	-0.1%
Department of Veterans Affairs	1,684	1,799	1,709	-90	-5.0%
Department of Transportation	1,411	1,462	1,513	51	3.5%
Department of the Interior	1,296	1,258	1,330	72	5.7%
Department of Homeland Security	634	634	544	-90	-14.2%
Environmental Protection Agency	568	568	614	46	8.1%
Department of Education	389	446	441	-5	-1.1%
Smithsonian Institution	347	347	390	43	12.4%
Other	702	684	601	-83	-12.1%
Artificial Intelligence (AI) Mandatory Proposal <sup>a</sup>	0	0	200	200	—
<b>Total</b>	<b>199,955</b>	<b>194,564</b>	<b>201,949</b>	<b>7,385</b>	<b>3.8%</b>

**Source:** CRS analysis of data from Executive Office of the President, Office of Management and Budget (OMB), “Research and Development,” in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025*, March 2024, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

**Notes:** Components may not sum to totals because of rounding. FY2025 data includes advance appropriations and new appropriations proposed by the President. DOD amounts include budget activities 6.1 through 6.6.

- a. According to the *Analytical Perspectives* report, the FY2025 budget request includes “\$200 million in mandatory R&D funding that will bolster efforts to harness the capacity of AI to accelerate scientific research across a variety of disciplines at multiple agencies.”

## Federal R&D by Character of Work, Facilities, and Equipment

Federal R&D funding can also be examined by the character of work it supports—basic research, applied research, or development—and by funding provided for construction of R&D facilities and acquisition of major R&D equipment. (See **Table 2.**) President Biden’s FY2025 request includes \$47.7 billion for basic research, an increase of \$1.6 billion (3.4%) above the FY2024 estimated level; \$51.2 billion for applied research, an increase of \$3.3 billion (6.9%); \$96.8 billion for experimental development, an increase of \$2.0 billion (2.1%); and \$6.2 billion for R&D facilities and equipment, an increase of \$487 million (8.5%).

**Table 2. Federal R&D Funding by Character of Work, Facilities, and Equipment, FY2023-FY2025**

(budget authority, in millions of current dollars)

Character of Work, Facilities, and Equipment	FY2023 Actual	FY2024 Estimate	FY2025 Request	FY2024-FY2025	
				Dollar Change	Percentage Change
Basic research	47,023	46,105	47,684	1,579	3.4%
Applied research	49,725	47,930	51,221	3,291	6.9%
Development	98,017	94,803	96,831	2,028	2.1%
Facilities and equipment	5,190	5,726	6,213	487	8.5%
<b>Total</b>	<b>199,955</b>	<b>194,564</b>	<b>201,949</b>	<b>7,385</b>	<b>3.8%</b>

**Source:** CRS analysis of data from Executive Office of the President, OMB, “Research and Development,” in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025*, March 2024, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

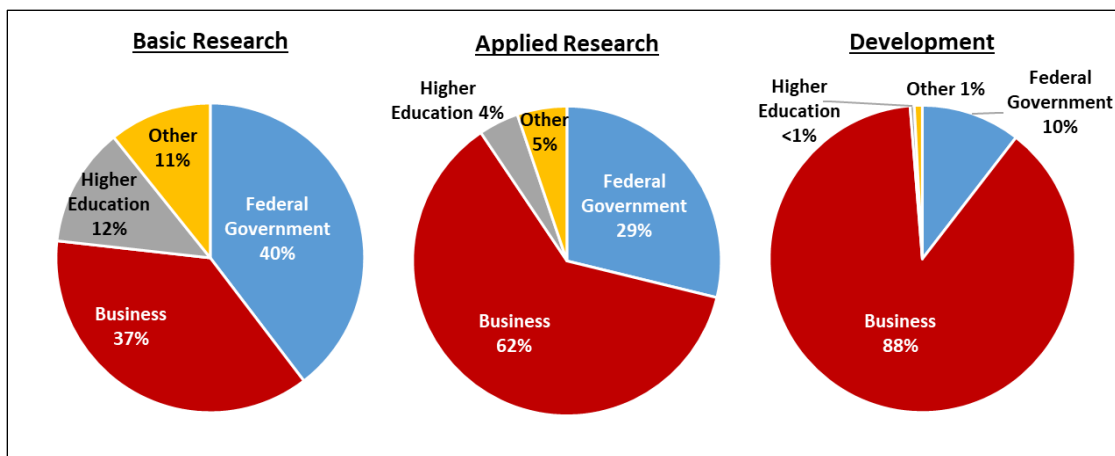
**Note:** Components may not sum to totals because of rounding. FY2025 data include both advance appropriations and new appropriations proposed by the President.

## Federal Role in U.S. R&D by Character of Work

A primary policy justification for public investments in basic research and incentives for private sector research (e.g., tax credits) is the view that, absent such policies, the private sector tends to underinvest in basic research from a societal perspective. The usual argument for this view, which is widely held by economists, is that the social returns (i.e., the benefits to society at large) exceed the private returns (i.e., the benefits accruing to the private investor, such as increased revenues or higher stock value). Other factors that may inhibit corporate investment in basic research include long time horizons for achieving commercial applications (diminishing the potential returns because of the time value of money), high levels of technical risk and uncertainty, shareholder demands for shorter-term returns, and asymmetric and imperfect information regarding potential returns of those research investments.

The federal government is the nation’s largest supporter of basic research, funding 40% of it in 2022 (the most recent year for which comprehensive data are available). Business funded 37% of U.S. basic research in 2022, with higher education, state governments, and other nonprofit organizations funding the remaining 23%. For U.S. applied research, business is the primary funder, accounting for an estimated 62% in 2022, while the federal government accounted for an estimated 29%. State governments, higher education, and other nonprofit organizations funded the remaining 9%. Business also provides the vast majority of U.S. funding for development. Business accounted for 88% of development funding in 2022, while the federal government provided 10%. State governments, higher education, and other nonprofit organizations funded the remaining approximately 2%. (See **Figure 1**.<sup>10</sup>)

<sup>10</sup> CRS analysis of NSF, *National Patterns of R&D Resources: 2021-2022 Data Update*, NSF 24-318, Tables 7-9, January 2024. Some data are preliminary and may be revised. Components may not add to total because of rounding.

**Figure I. Composition of U.S. Basic Research, Applied Research, and Development by Funding Sector, 2022**

**Source:** CRS analysis of National Science Foundation, *National Patterns of R&D Resources: 2021-2022 Data Update*, NSF 24-318, Tables 7-9, January, 2024.

**Notes:** Data are preliminary and may be revised.

## Federal R&D by Agency and Character of Work Combined

Federal R&D funding can also be viewed from the combined perspective of each agency's contribution to basic research, applied research, development, and facilities and equipment. **Table 3** lists the three agencies with the most funding in each of these categories as proposed in the President's FY2025 budget. The overall federal R&D budget reflects a wide range of national priorities, including supporting advances in spaceflight, developing new and affordable sources of energy, and understanding and deterring adversaries. These priorities and the mission of each individual agency contribute to the composition of that agency's R&D spending (i.e., the allocation of R&D funding among basic research, applied research, development, and facilities and equipment).

In President Biden's FY2025 budget request, HHS, primarily NIH, would account for around half (49.5%) of all federal funding for basic research. HHS would also be the largest federal funder of applied research, accounting for about 53.2% of all federally funded applied research in the President's FY2025 budget request. DOD would be the primary federal funder of experimental development, accounting for 86.8% of total federal development funding in the President's FY2025 budget request. DOE would be the primary federal funder of R&D facilities and equipment, accounting for 61.5% of total federal R&D facilities and equipment funding in the President's FY2025 budget request.<sup>11</sup>

<sup>11</sup> CRS analysis of data from Executive Office of the President, OMB, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025, Research and Development*, March 2024, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

**Table 3. Selected R&D Funding Agencies by Character of Work, Facilities, and Equipment: FY2023-FY2025**

(budget authority, in millions of current dollars)

Character of Work and Agency	FY2023 Actual	FY2024 Estimate	FY2025 Request	FY2024-FY2025	
				Dollar Change	Percentage Change
Basic research					
Department of Health and Human Services	23,097	22,748	23,602	854	3.8%
National Science Foundation	6,775	6,324	6,923	599	9.5%
Department of Energy	6,290	6,134	6,267	133	2.2%
Total	47,023	46,105	47,684		
Applied research					
Department of Health and Human Services	24,819	24,363	27,262	2,899	11.9%
Department of Energy	6,643	7,086	7,351	265	3.7%
Department of Defense	8,013	6,237	6,024	-213	-3.4%
Total	49,725	47,930	51,221		
Experimental development					
Department of Defense	84,681	81,624	84,019	2,395	2.9%
Department of Energy	4,499	5,270	5,343	73	1.4%
National Aeronautics and Space Administration	4,654	4,399	4,133	-266	-6.0%
Total	98,017	94,803	96,831		
Facilities and equipment					
Department of Energy	2,873	3,557	3,823	266	7.5%
National Science Foundation	827	492	649	157	31.9%
Department of Commerce	520	511	640	129	25.2%
Total	5,190	5,726	6,213		

**Source:** CRS analysis of data from Executive Office of the President, OMB, “Research and Development,” in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025*, March 2024, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

**Note:** This table shows only the top three funding agencies in each category, based on the FY2025 request. FY2025 data include advance appropriations and new appropriations proposed by the President.

## Multiagency R&D Initiatives

For many years, presidential budgets have reported on multiagency R&D initiatives. Often, they have also provided details of agency funding for these initiatives. Some of these efforts have a statutory basis—for example, the Networking and Information Technology Research and Development (NITRD) program, the National Nanotechnology Initiative (NNI), and the U.S. Global Change Research Program (USGCRP). These programs generally produce annual budget supplements identifying objectives, activities, funding levels, and other information, usually



shortly after the presidential budget release.<sup>12</sup> Other multiagency R&D initiatives have operated at the discretion of the President, without a specific statutory mandate. President Biden's FY2025 budget is largely silent on funding levels for these efforts and whether any, or all, of the nonstatutory initiatives will continue. Some activities related to these initiatives are discussed in agency budget justifications and may be addressed in the agency analyses later in this report. This section provides available multiagency information on selected statutorily required initiatives.

## Networking and Information Technology Research and Development (NITRD) Program<sup>13</sup>

Established by the High-Performance Computing Act of 1991 (P.L. 102-194), the NITRD program coordinates unclassified federal networking and information technology R&D investments in areas such as supercomputing, high-speed networking, AI, cybersecurity, software engineering, and information management. The NITRD National Coordination Office (NCO) coordinates the information technology R&D activities of 25 federal agency members and more than 45 other participating agencies with program interests and activities in IT R&D. NITRD efforts are further coordinated by the National Science and Technology Council (NSTC) NITRD Subcommittee.<sup>14</sup>

P.L. 102-194, as reauthorized by the American Innovation and Competitiveness Act of 2017 (P.L. 114-329), requires the director of the NITRD NCO to deliver an annual report to Congress along with the President's budget request. This annual report, often referred to as a budget supplement, is to include, among other things, detailed information on the program's budget for the current and previous fiscal years and the proposed budget for the next fiscal year.

The latest annual report was published in November 2023 and related to the FY2024 budget request. Information is not available as of the writing of this report regarding the program's funding under the President's FY2025 budget request. The President's FY2024 budget request for federal agencies' NITRD-related R&D was \$10.9 billion, up 13.5% from the FY2023 requested level. (See **Table 4**.)

For additional information on the NITRD program, see <https://www.nitrd.gov>.

<sup>12</sup> See, for example, discussion of national coordination offices' operations and budgets in CRS Report R47410, *The Office of Science and Technology Policy (OSTP): Overview and Issues for Congress*, by Emily G. Blevins.

<sup>13</sup> For additional information on the Networking and Information Technology Research and Development program, contact Patricia Moloney Figliola, Specialist in Internet and Telecommunications Policy.

<sup>14</sup> The National Science and Technology Council (NSTC) was established by Executive Order 12881 in 1993. According to the White House,

This Cabinet-level Council is the principal means within the executive branch to coordinate science and technology policy across the diverse entities that make up the Federal research and development enterprise. Chaired by the President, the membership of the NSTC is made up of the Vice President, the Director of the Office of Science and Technology Policy, Cabinet Secretaries and Agency Heads with significant science and technology responsibilities, and other White House officials.

In practice, the Assistant to the President for Science and Technology Policy oversees the NSTC's ongoing activities. The quote is from Executive Office of the President, Office of Science and Technology Policy, "NSTC," <https://obamawhitehouse.archives.gov/administration/eop/ostp/nstc>. For more information on the NSTC, see CRS Report R47410, *The Office of Science and Technology Policy (OSTP): Overview and Issues for Congress*, by Emily G. Blevins.

**Table 4. Networking and Information Technology Research and Development (NITRD) Program Funding, FY2022-FY2025**

(budget authority, in millions of current dollars)

	<b>FY2022 Actual</b>	<b>FY2023 Estimate</b>	<b>FY2024 Request</b>	<b>FY2025 Request</b>
<b>Total</b>	9,409 <sup>a</sup>	10,272 <sup>b</sup>	10,910	n/a

**Source:** Executive Office of the President, National Science and Technology Council, *The Networking & Information Technology R&D Program and the National Artificial Intelligence Initiative Office: Supplement to the President's FY 2024 Budget*, November 2023, <https://www.nitrd.gov/pubs/FY2024-NITRD-NAIIIO-Supplement.pdf>.

**Notes:** n/a = not available. Funding for activities that contribute to NITRD has been appropriated to more than 20 federal departments and agencies in the past. Almost all of the funding is spent directly by agencies on research and related activities; a small percentage is spent for interagency coordination and communications in the NITRD program office. The FY2025 request amount is not available because the FY2025 Supplement to the President's Budget was not published at the time of this report.

a. Congress appropriated an additional \$591.4 million in supplemental appropriations for FY2022.

b. Congress appropriated an additional \$1.534 billion in supplemental appropriations for FY2023.

## Climate-Change-Related R&D

The President's FY2025 budget proposes "over \$10.7 billion in clean energy innovation activities," as well as "\$4.5 billion in climate research activities," including various activities of the USGCRP.<sup>15</sup> While the *Analytical Perspectives* report in the President's FY2025 budget identifies activities and funding proposals for certain components of the request, the itemization is limited. In past years, most of the clean energy and climate technology R&D has been appropriated to DOE.

### U.S. Global Change Research Program (USGCRP)

The USGCRP, established by the Global Change Research Act of 1990 (GCRA; P.L. 101-606), coordinates and integrates federal research and applications to understand, assess, predict, and respond to human-induced and natural processes of global change. The program seeks to advance global climate change science and to "empower the nation and the world to anticipate and respond to urgent risks of climate and global change by creating and providing accessible, usable knowledge."<sup>16</sup> In February 2023, DHS became the 14<sup>th</sup> member of the USGCRP and the first new member in nearly 20 years.<sup>17</sup>

In FY2024, 10 departments and agencies reported funding in support of their USGCRP participation.<sup>18</sup> (See **Table 5** for total USGCRP funding by fiscal year.) USGCRP efforts are coordinated by the NSTC Subcommittee on Global Change Research. Each agency develops and

<sup>15</sup> Executive Office of the President, OMB, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025, Research and Development*, March 2024, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>.

<sup>16</sup> U.S. Global Change Research Program, "USGCRP's 2022-2031 Strategic Plan," <https://www.globalchange.gov/about-us/strategic-plan>.

<sup>17</sup> U.S. Global Change Research Program, *Our Changing Planet: The U.S. Global Change Research Program for Fiscal Year 2024: A Supplement to the President's Budget for Fiscal Year 2024*, 2024, [https://downloads.globalchange.gov/ocp/ocp2024/Our-Changing-Planet\\_FY2024.pdf](https://downloads.globalchange.gov/ocp/ocp2024/Our-Changing-Planet_FY2024.pdf).

<sup>18</sup> Ibid., p. 37.



carries out its activities as its contribution to the USGCRP, and funds are appropriated to each agency for those activities; those activities may or may not be identified as associated with the USGCRP in agency budget justifications or other program materials available publicly. Complementing USGCRP activities are many federal climate change or global-change-related activities with programmatic missions, not predominantly scientific. These are reported separately in budget justifications.

The GCRA requires each federal agency or department involved in global change research to report annually to Congress on each element of its proposed global change research activities, as well as the portion of its budget request allocated to each element of the program.<sup>19</sup> The President is also required to identify those activities and the annual global change research budget in the President's annual budget request. The President's budget requests for years later than FY2017 do not report these budget data required by the GCRA, although some agencies report their contributions in their budget justifications to Congress.

In addition, in most of the 20 years prior to FY2018, appropriations laws required the President to submit a comprehensive report to the appropriations committees "describing in detail all Federal agency funding, domestic and international, for climate change programs, projects, and activities ... including an accounting of funding by agency."<sup>20</sup> The USGCRP reports, pursuant to the GCRA, enacted and proposed budgets by agency each fiscal year, along with agency descriptions of major programs and initiatives, in a publication entitled *Our Changing Planet*.

For additional information on the earlier climate change budget crosscuts, see CRS Report R43227, *Federal Climate Change Funding from FY2008 to FY2014*, by Jane A. Leggett, Richard K. Lattanzio, and Emily Bruner. For additional USGCRP information, see <http://www.globalchange.gov>.

**Table 5. U.S. Global Change Research Program (USGCRP) Funding, FY2022-FY2025**  
(budget authority, in millions of current dollars)

	<b>FY2022 Enacted</b>	<b>FY2023 Enacted</b>	<b>FY2024 Request</b>	<b>FY2025 Request</b>
<b>Total</b>	3,761	4,221	5,140	n/a

**Source:** USGCRP, *Our Changing Planet: The U.S. Global Change Research Program for Fiscal Year 2024*, January 2024, [https://downloads.globalchange.gov/ocp/ocp2024/Our-Changing-Planet\\_FY2024.pdf](https://downloads.globalchange.gov/ocp/ocp2024/Our-Changing-Planet_FY2024.pdf).

**Notes:** n/a = not available. Funding for activities that contribute to the USGCRP has been appropriated to more than a dozen federal departments and agencies in the past, and some of USGCRP's spending is transferred or coordinated through interagency agreements. Almost all of the funding is spent directly by agencies on research and related activities; a small percentage is spent for interagency coordination and communications in the USGCRP program office. The FY2025 request amount is not available because the USGCRP annual report to Congress, which includes supplemental USGCRP budgetary information, was not published at the time of this report.

## National Nanotechnology Initiative (NNI)

Launched in FY2001, the NNI is a multiagency R&D initiative to advance understanding and control of matter at the nanoscale, where the physical, chemical, and biological properties of materials differ in fundamental and sometimes useful ways from the properties of individual

<sup>19</sup> Directives to report annually to Congress on budget requests and spending occur in several sections of P.L. 101-606, including Sections 105(b) and (c) on Budget Coordination and Section 107, Annual Report.

<sup>20</sup> See, most recently, P.L. 115-31, Consolidated Appropriations Act, 2017, Section 416.

atoms or bulk matter.<sup>21</sup> In 2003, Congress enacted the 21<sup>st</sup> Century Nanotechnology Research and Development Act (P.L. 108-153), providing a legislative foundation for some of the activities of the NNI. NNI efforts are coordinated by the NSTC Subcommittee on Nanoscale Science, Engineering, and Technology (NSET). For FY2024, the President's request included NNI funding for 18 federal departments and independent agencies and commissions with budgets dedicated to nanotechnology R&D. The NSET includes other federal departments and independent agencies and commissions with responsibilities for health, safety, and environmental regulation; trade; education; intellectual property; international relations; and other areas that might affect or be affected by nanotechnology.

P.L. 108-153 requires the NSTC to deliver an annual report to Congress at the same time as the President's budget request. This annual report, often referred to as a budget supplement, is to include detailed information on the program's budget for the current fiscal year and the program's proposed budget for the next fiscal year, as well as additional information and data related to the performance of the program. The latest annual report was published in March 2024 and related to the FY2024 budget request. President Biden requested \$2.16 billion for NNI research in FY2024, an increase of almost \$90 million (4.3%) from the estimated FY2023 level. (See **Table 6**.<sup>22</sup>)

For additional information on the NNI, see <http://www.nano.gov>.

**Table 6. National Nanotechnology Initiative (NNI) Funding, FY2022-FY2025**  
(budget authority, in millions of current dollars)

	<b>FY2022 Actual</b>	<b>FY2023 Estimate</b>	<b>FY2024 Request</b>	<b>FY2025 Request</b>
<b>Total</b>	2,521.1	2,073.9	2,163.6	n/a

**Source:** Executive Office of the President, National Science and Technology Council, *The National Nanotechnology Initiative: Supplement to the President's 2024 Budget*, March 5, 2024.

**Notes:** n/a = not available. Funding for activities that contribute to the NNI has been appropriated to more than a dozen federal departments and agencies in the past. Almost all of the funding is spent directly by agencies on research and related activities; a small percentage is spent for interagency coordination and communications in the National Nanotechnology Coordination Office. The FY2025 request amount is not available because the NNI Supplement to the President's 2025 Budget was not published at the time of this report.

## FY2025 Appropriations Status

The remainder of this report provides a more in-depth analysis of R&D in 12 federal departments and agencies that, in aggregate, receive nearly 99% of total federal R&D funding. Agencies are presented in order of the size of their FY2025 R&D budget requests, with the largest presented first.

Annual appropriations for these agencies are provided through 9 of the 12 regular appropriations bills. For each agency covered in this report, **Table 7** shows the corresponding regular appropriations bill that provides primary funding for the agency, including its R&D activities.

<sup>21</sup> In the context of the National Nanotechnology Initiative and nanotechnology, the *nanoscale* refers to lengths of 1 to 100 nanometers. A nanometer is one-billionth of a meter, or about the width of 10 hydrogen atoms arranged side by side in a line.

<sup>22</sup> Executive Office of the President, NSTC, *The National Nanotechnology Initiative: Supplement to the President's 2024 Budget*, March 2024.

Because of the way that agencies report budget data to Congress, it can be difficult to identify the portion that is R&D. Consequently, R&D data presented in the agency analyses in this report may differ from R&D data in the President’s budget or otherwise provided by OMB.

Funding for R&D is often included in appropriations line items that also include non-R&D activities; therefore, in such cases, it may not be possible to identify how much of the funding provided in appropriations laws is allocated to R&D specifically. In general, R&D funding levels are known only after departments and agencies allocate their appropriations to specific activities and report those figures.

As of the date of this report, the House has passed four of the nine appropriations bills that provide R&D funding; the Senate has not had a floor vote on any of its versions of the appropriations bills shown in **Table 7**.

In addition to this report, CRS produces individual reports on each of the appropriations bills and for a number of federal agencies. These reports can be accessed via the CRS website at <http://www.crs.gov/iap/appropriations>. Also, the status of each appropriations bill is available on the CRS web page “Appropriations Status Table,” available at <http://www.crs.gov/AppropriationsStatusTable/Index>.

**Table 7. Alignment of Agency R&D Funding and Regular Appropriations Bills**

Department/Agency	Regular Appropriations Bill
Department of Defense	Department of Defense Appropriations Act
Department of Health and Human Services <ul style="list-style-type: none"> <li>National Institutes of Health</li> </ul>	(1) Departments of Labor, Health and Human Services, and Education, and Related Agencies Appropriations Act (2) Department of the Interior, Environment, and Related Agencies Appropriations Act
Department of Energy	Energy and Water Development and Related Agencies Appropriations Act
National Aeronautics and Space Administration	Commerce, Justice, Science, and Related Agencies Appropriations Act
National Science Foundation	Commerce, Justice, Science, and Related Agencies Appropriations Act
Department of Agriculture	Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act
Department of Commerce <ul style="list-style-type: none"> <li>National Institute of Standards and Technology</li> <li>National Oceanic and Atmospheric Administration</li> </ul>	Commerce, Justice, Science, and Related Agencies Appropriations Act
Department of Veterans Affairs	Military Construction and Veterans Affairs, and Related Agencies Appropriations Act
Department of the Interior	Department of the Interior, Environment, and Related Agencies Appropriations Act
Department of Transportation	Transportation, Housing and Urban Development, and Related Agencies Appropriations Act
Department of Homeland Security	Department of Homeland Security Appropriations Act
Environmental Protection Agency	Department of the Interior, Environment, and Related Agencies Appropriations Act

**Source:** CRS Report R40858, *Locate an Agency or Program Within Appropriations Bills*, by Justin Murray.

## Department of Defense (DOD)<sup>23</sup>

DOD's mission is to provide "the military forces needed to deter war and ensure our nation's security."<sup>24</sup> Congress supports DOD R&D activities through the department's Research, Development, Test, and Evaluation (RDT&E) funding. These funds support the development of the nation's future military hardware and software and the science and technology (S&T) base on which those products rely.

Most of what DOD spends on RDT&E is appropriated in Title IV (Research, Development, Test, and Evaluation) of the annual defense appropriations bill. Title IV RDT&E funds support activities such as R&D performed by academic institutions, DOD laboratories, and companies, as well as test and evaluation activities at specialized DOD facilities. For FY2025, the Biden Administration's request includes \$143.2 billion for DOD's Title IV RDT&E accounts, \$5.2 billion (-3.6%) below the FY2024 enacted level (in current dollars). On June 28, 2024, the House passed H.R. 8774, the Department of Defense Appropriations Act, 2025, which would provide \$146.0 billion for DOD's Title IV RDT&E accounts, \$2.9 billion (2.0%) above the requested level and \$2.4 billion (-1.6%) below the FY2024 enacted level, if the legislation were enacted. (See **Table 8**.)

RDT&E funds also are appropriated in other parts of the defense appropriations bill, including Title V (Revolving and Management Funds) and Title VI (Other Department of Defense Programs). Following are two examples:

- The Defense Health Program (DHP) supports the delivery of health care to DOD personnel and their families. DHP funds (including RDT&E funds) are requested through the Defense-wide Operations and Maintenance request. The program's RDT&E funds support congressionally directed research on breast, prostate, and ovarian cancer; traumatic brain injuries; orthotics and prosthetics; and other medical conditions. Congress appropriates funds for this program in Title VI.
- The Chemical Agents and Munitions Destruction Program supports activities to destroy the U.S. inventory of lethal chemical agents and munitions to avoid future risks and costs associated with storage. Funds for this program are requested through the Defense-wide Procurement request. Congress appropriates funds for this program in Title VI.
- The National Defense Sealift Fund supports procurement, operation and maintenance, and R&D associated with the nation's naval reserve fleet as well as a U.S.-flagged merchant fleet that can serve in times of need. In some fiscal years, RDT&E funding for this effort is requested in the Navy's Procurement request and appropriated in Title V.

The FY2025 request includes \$972.4 million in RDT&E through DHP (down \$1.9 billion, -66.2%, from FY2024 enacted amounts), \$754.8 million in RDT&E through the Chemical Agents and Munitions Destruction Program (down \$247.8 million, -24.7%, from FY2024 enacted amounts), and \$1.9 million for the Inspector General for RDT&E-related activities (down \$1.5

<sup>23</sup> This section was written by Marcy E. Gallo, Analyst in Science and Technology Policy, CRS Resources, Science, and Industry Division.

<sup>24</sup> U.S. Department of Defense (DOD), "About," <https://www.defense.gov/About/>.

million, -44.1%, from FY2024). The FY2025 budget includes no RDT&E funding via the National Defense Sealift Fund (the same as FY2024).

For more than a decade, RDT&E funds were also requested and appropriated as part of DOD's separate funding to support efforts in what the George W. Bush Administration termed the "Global War on Terror" (GWOT) and what the Obama and Trump Administrations referred to as "Overseas Contingency Operations" (OCO). In appropriations bills, the combined term "Overseas Contingency Operations/Global War on Terror" (OCO/GWOT) was used. Typically, the RDT&E funds appropriated for OCO activities were directed toward specified program elements in Title IV. President Biden's FY2025 request does not include separate OCO/GWOT funding.

In general, DOD's RDT&E budget request is organized by DOD component. (See **Table 8**.) Each military department requests and receives its own RDT&E funding. So, too, do various DOD agencies (e.g., the Missile Defense Agency and the Defense Advanced Research Projects Agency); these are aggregated in the Defense-wide account.

DOD's RDT&E budget request and funding is often analyzed by budget activity code, which describes the type of RDT&E supported (e.g., basic research). The budget activities designated as 6.1, 6.2, and 6.3 (basic research, applied research, and advanced technology development, respectively) constitute DOD's S&T program and represent the more research-oriented part of the RDT&E program. Budget activities 6.4 and 6.5 focus on the development of specific weapon systems or components for which an operational need has been determined and an acquisition program established. Budget activity 6.6 provides management support, including support for test and evaluation facilities. Budget activity 6.7 supports the development of system improvements in existing operational systems. A new budget activity, 6.8, was added as part of DOD's FY2021 budget request and supports software and digital technology pilot programs.<sup>25</sup>

Many congressional policymakers are particularly interested in DOD S&T program funding, since these funds support the development of new technologies and the science that underlies them. Some in the defense community see ensuring adequate support for S&T activities as imperative to maintaining U.S. military superiority into the future. The knowledge generated at this stage of development may also contribute to advances in commercial technologies. The FY2025 request for Title IV S&T funding is \$17.2 billion, \$4.3 billion (-20.0%) below the FY2024 enacted level. The proposed FY2025 cuts in S&T are spread across a variety of program elements in the Army, Navy, Air Force, Space Force, and Defense-wide accounts. The largest cut to an S&T budget in both percentage and dollars (-38.8%, \$1.8 billion) would be to the Army, followed by the Navy (-25.8%, \$880.9 million), Air Force (-24.8%, \$883.5 million), Space Force (-22.3%, \$242.7 million), and Defense-wide (-5.6%, \$497.4 million).

Over half of DOD's basic research budget, characterized as 6.1 within the S&T program, is spent at universities. The Biden Administration is requesting \$2.5 billion for DOD basic research for FY2025, \$175.3 million (-7.1%) below the FY2024 enacted level. Among the proposed cuts to basic research in FY2025 are the University Research Initiatives program elements in the Army (-8.8%, \$7.5 million), Navy (-11.4%, \$12.1 million), and Air Force (-22.7%, \$42.1 million). By contrast, the University Research Initiatives program element in the Space Force would increase (2.3%, \$331,000).

<sup>25</sup> OMB data on R&D funding included in **Table 1** excludes "non-experimental development" funding (which DOD categorizes under budget activities 6.7 and 6.8) from the calculation of DOD and total federal R&D funding levels. Though OMB also temporarily omitted DOD budget activity 6.6, characterizing it as "non-investment activity," between FY2017-FY2022, it resumed its inclusion of budget activity 6.6 funding in FY2023 to fully capture DOD's contribution to total federal R&D funding. Email communication and telephone conversation between CRS and OMB staff, September 8, 2022.

Additionally, there would be cuts to the following program elements within the Defense-wide account, relative to FY2024 enacted levels: Basic Research Initiatives (-31.0%, \$34.7 million) and Historically Black Colleges and Universities and Minority Institutions (-1.7%, \$1.7 million).

DOD is a substantial source of federal funds for university R&D in certain fields, such as industrial and manufacturing engineering (64%); aerospace, aeronautical, and astronautical engineering (62%); electrical, electronic, and communications engineering (58%); metallurgical and materials engineering (48%); mechanical engineering (47%); computer and information sciences (46%); and materials science (38%).<sup>26</sup>

**Table 8. Department of Defense (DOD) Research, Development, Test, and Evaluation (RDT&E)**

(total obligational authority, in millions of current dollars)

Budget Account	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Title IV—RDT&amp;E by Organization</b>					
Army	17,115.0 <sup>a</sup>	14,073.3	15,335.7		
Navy	27,964.8 <sup>b</sup>	25,697.8	26,668.3		
Air Force	47,470.0 <sup>c</sup>	49,108.8	48,648.6		
Space Force	18,669.8	18,700.2	18,279.5		
Defense-wide	36,892.9 <sup>d</sup>	35,227.8	36,742.1		
Director, Operational Test and Evaluation	337.5	348.7	348.7		
<b>Total (by Organization)</b>	<b>148,450.1<sup>e</sup></b>	<b>143,156.6</b>	<b>146,022.9</b>		
<b>Title IV—RDT&amp;E by Budget Activity</b>					
6.1 Basic Research	2,628.2	2,452.9	2,527.8		
6.2 Applied Research	7,592.8	5,795.9	6,712.4		
6.3 Advanced Technology Development	11,286.9	8,959.0	9,893.5		
<b>Subtotal Defense S&amp;T (6.1-6.3)</b>	<b>21,507.9</b>	<b>17,207.8</b>	<b>19,133.7</b>		
6.4 Advanced Component Development and Prototypes	39,096.6	37,131.1	38,374.0		
6.5 Systems Development and Demonstration	26,573.3	26,933.3	26,299.1		
6.6 Management Support	9,828.8	9,534.5	9,857.0		
6.7 Operational Systems Development	51,140.3	51,958.5	43,302.4		
6.8 Software and Digital Technology Pilot Projects	303.2	391.3	9,056.7		

<sup>26</sup> CRS analysis of data from NSF, “Table 14,” in *Higher Education Research and Development Survey, Fiscal Year 2022*, November 2023, <https://nces.nsf.gov/surveys/higher-education-research-development/2022#data>.



Budget Account	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Total (by Budget Activity)</b>	<b>148,450.1<sup>e</sup></b>	<b>143,156.6</b>	<b>146,022.9</b>		
National Defense Sealift Fund	n/a	n/a	n/a		
Defense Health Program	2,877.0	972.4	2,238.4		
Chemical Agents and Munitions Destruction	1,002.3	754.8	754.8		
Inspector General	3.4	1.9	1.9		
<b>Grand total<sup>f</sup></b>	<b>152,203.5</b>	<b>144,885.7</b>	<b>149,018.0</b>		

**Source:** CRS analysis of Office of the Under Secretary of Defense (Comptroller), *Department of Defense Budget, Fiscal Year 2025, RDT&E Programs (R-1)*, March 2024, [https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2025/FY2025\\_r1.pdf](https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2025/FY2025_r1.pdf); P.L. 118-50; H.R. 8774; and H.Rept. 118-557.

**Notes:** n/a = not available. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action. According to DOD, “Total Obligation Authority (TOA) is the sum of (1) all budget authority (BA) granted (or requested) from the Congress in a given year, (2) amounts authorized to be credited to a specific fund, (3) BA transferred from another appropriation, and (4) unobligated balances of BA from previous years which remain available for obligation. In practice, this term is used primarily in discussing the DOD budget, and most often refers to TOA as the ‘direct program,’ which equates to only (1) and (2) above.” DOD defines *budget authority* as “the authority becoming available during the year to enter into obligations that result in immediate or future outlays of Government funds.” See Office of the Under Secretary of Defense (Comptroller), “Department of Defense Financial Management Regulation,” DOD 7000.14-R, <http://comptroller.defense.gov/fmr.aspx>.

- a. The total does not include the \$18.6 million in supplemental funding provided in P.L. 118-50 “to respond to the situation in Ukraine.”
- b. The total does not include the \$13.8 million in supplemental funding provided in P.L. 118-50 “to respond to the situation in Ukraine” or the \$7.0 million in supplemental funding provided in P.L. 118-50 “to support improvements to the submarine industrial base.”
- c. The total does not include the \$406.8 million in supplemental funding provided in P.L. 118-50 “to respond to the situation in Ukraine.”
- d. The total does not include the \$194.1 million in supplemental funding provided in P.L. 118-50 “to respond to the situation in Ukraine.”
- e. The total does not include the following supplemental funding amounts provided in P.L. 118-50: \$640.4 million “to respond to the situation in Ukraine” and \$542.4 million “for transfer to operation and maintenance accounts, procurement accounts, and research, development, test and evaluation accounts...for unfunded priorities of the United States Indo-Pacific Command for fiscal year 2024.” Further, the specific amount that may be transferred to RDT&E accounts is unknown.
- f. The grand totals for FY2024 and FY2025 include funding for budget activities 6.7 and 6.8 that OMB no longer counts as R&D. For these and other reasons, these amounts do not align with the DOD totals in **Table 1**. The grand total for FY2024 does not include supplemental funding provided in P.L. 118-50.

## Department of Health and Human Services (HHS)

HHS’s mission is “to enhance and protect the health and well-being of all Americans ... by providing for effective health and human services and fostering advances in medicine, public health, and social services.”<sup>27</sup> This section focuses on HHS R&D funded through NIH, an HHS agency that accounts for nearly 97% of total HHS R&D funding.<sup>28</sup> Other HHS agencies that

<sup>27</sup> U.S. Department of Health and Human Services (HHS), “About,” <http://www.hhs.gov/about>.

<sup>28</sup> Unpublished data provided to CRS by OMB. Email communication, April 2024.

support R&D include the Centers for Disease Control and Prevention (CDC), Centers for Medicare and Medicaid Services (CMS), Food and Drug Administration (FDA), Agency for Healthcare Research and Quality (AHRQ), Health Resources and Services Administration (HRSA), and Administration for Children and Families (ACF); additional R&D funding is attributed to departmental management.<sup>29</sup>

## National Institutes of Health (NIH)<sup>30</sup>

NIH is the primary agency of the federal government charged with performing and supporting biomedical and behavioral research. It also has major roles in training biomedical researchers and disseminating health information. NIH's mission is "to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability."<sup>31</sup> The agency consists of the NIH Office of the Director (OD) and 27 institutes and centers (ICs). Of these, 24 ICs and OD manage research programs. Each IC plans and manages its own research programs in coordination with OD. FY2022 appropriations established a new entity that has been placed within NIH: the Advanced Research Projects Agency for Health (ARPA-H).<sup>32</sup> This report includes ARPA-H in its discussion and analysis of NIH funding.

According to NIH, about 11% of its budget supports intramural research projects conducted by nearly 6,000 NIH federal scientists, most of whom are located on the NIH campus in Bethesda, MD. All 25 research ICs have intramural research programs of varying sizes. Nearly 83% of NIH's budget goes to the extramural research community in the form of grants, contracts, and other awards. This funding supports research performed by more than 300,000 nonfederal scientists and technical personnel who work at more than 2,500 universities, hospitals, medical schools, and other research institutions. The remaining 6% covers research support and other administrative and operational costs.<sup>33</sup>

Funding for NIH comes primarily from the annual Labor, HHS, and Education (LHHS) appropriations act, with an additional amount for Superfund-related research activities at the National Institute of Environmental Health Sciences from the Department of the Interior, Environment, and Related Agencies Appropriations Act (hereinafter referred to as the "Interior/Environment appropriations act").<sup>34</sup> Those two appropriations acts provide NIH's discretionary budget authority. In addition, NIH has received mandatory funding of \$150 million annually through the Public Health Service Act (PHSA), Section 330B, for the Special Diabetes Program for type 1 diabetes. This mandatory funding is set to expire on December 31, 2024 (as

<sup>29</sup> Ibid.

<sup>30</sup> This section was written by Kavya Sekar, Analyst in Health Policy, CRS Domestic Social Policy Division, with support from John Gorman, Research Assistant, CRS Domestic Social Policy Division.

<sup>31</sup> National Institutes of Health (NIH), "About NIH, What We Do, Mission and Goals," <http://www.nih.gov/about-nih/what-we-do/mission-goals>.

<sup>32</sup> See CRS Report R47568, *Advanced Research Projects Agency for Health (ARPA-H): Overview and Selected Issues*, by Kavya Sekar and Marcy E. Gallo.

<sup>33</sup> NIH, "What We Do: Budget," <https://www.nih.gov/about-nih/what-we-do/budget>.

<sup>34</sup> The Superfund program was created to carry out the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA; P.L. 96-510), which authorized the federal government to prioritize contaminated sites in the United States for cleanup in coordination with the states in which the sites are located and to make the "potentially responsible parties" connected to those sites financially liable for the cleanup costs. The National Institute of Environmental Health Sciences (NIEHS) within NIH supports health research and training related to hazardous waste sites through its Superfund Research Program. See NIEHS, "Superfund Research Program," <https://www.niehs.nih.gov/research/supported/centers/srp>.



extended in P.L. 118-42). NIH also receives some funding under unique transfer authorities (the Public Health Service [PHS] Evaluation set-aside)<sup>35</sup> and budget enforcement rules (21<sup>st</sup> Century Cures Act Innovation account).<sup>36</sup>

As shown in **Table 9**, separate appropriations are provided to 24 of the 27 ICs, ARPA-H, OD, the Innovation Account (established by the 21<sup>st</sup> Century Cures Act in 2016; P.L. 114-255), and an intramural Buildings and Facilities account. The other three centers, which perform centralized support services, are funded through transfers from the other ICs.

President Biden’s FY2025 budget request proposes a total NIH and ARPA-H program level of \$50.174 billion, an increase of \$1.36 billion (i.e., an increase of 2.8% in current dollars, which does not account for inflation) from FY2024 enacted levels. The proposed FY2025 program level would provide (see **Table 9**)

- \$47.812 billion in discretionary LHHS budget authority (nontransfer),
- \$2.018 billion in PHS program evaluation transfers,
- \$83 million for the Superfund research program and related activities from Interior/Environment appropriations, and
- \$260 million in proposed funding for the mandatory type 1 diabetes research program.<sup>37</sup>

Under this request, most IC accounts would receive an increase in funding compared with FY2024 enacted levels (see **Table 9**), though in many cases an increase of less than 1% (without accounting for inflation). (Note that the FY2025 request was formulated before FY2024 enacted appropriations were finalized.) The accounts that would see decreases are (1) the National Institute on Aging (-1.8%, \$82 million decrease), (2) the National Institute on Minority Health and Health Disparities (-1.4%, \$7.7 million decrease), and (3) the National Center for Advancing Translational Sciences (-0.2%, \$2.2 million decrease).<sup>38</sup> Funding for ARPA-H would remain the

<sup>35</sup> The Public Health Service (PHS) Evaluation set-aside, also known as the PHS Evaluation Tap transfer authority, under Section 241 of the PHS Act (42 U.S.C. §238j). This provision allows the Secretary of HHS, with the approval of appropriators, to redistribute a portion of eligible PHS agency appropriations across HHS for program evaluation purposes. Although the PHS Act limits the tap to no more than 1% of eligible appropriations, in recent years, annual Labor, HHS, and Education appropriations acts have specified a higher amount (2.5% in FY2024; P.L. 118-47, Division D). Those acts also have typically directed specific amounts of funding from the tap for transfer to a number of HHS programs, including at NIH, particularly for the National Institute of General Medical Sciences (NIGMS). Funding amounts in this report show amounts “transferred in” to NIH under the PHS evaluation set-aside but do not show amounts “transferred out” under the same authority.

<sup>36</sup> Appropriations to the NIH Innovation Account created by the 21<sup>st</sup> Century Cures Act (Cures Act; P.L. 114-255) fund programs authorized by that act. Appropriations of funds in this account are, in effect, not subject to discretionary spending limits. The NIH Director may transfer these amounts from the NIH Innovation Account to other NIH accounts but only for the purposes specified in the Cures Act. All amounts authorized by the Cures Act have been fully appropriated to the Innovation Account since FY2017, including \$407 million for FY2024. See the section on the 21<sup>st</sup> Century Cures Act in CRS Report R41705, *The National Institutes of Health (NIH): Background and Congressional Issues*, by Judith A. Johnson and Kavya Sekar.

<sup>37</sup> Under current law, funding for the type 1 diabetes research program expires at the end of December 31, 2024, and is set at \$150 million annually. See PHS Act §330B; 42 U.S.C. §254c-2.

<sup>38</sup> These figures account for proposed transfers and other funding sources. Excluding the PHS evaluation tap transfer, NIGMS would see a decrease of \$601.3 million compared to FY2024 enacted (-18.5%). Excluding the mandatory type 1 diabetes funding, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) would also see a slight decrease compared to FY2024 enacted.

same as for FY2024 enacted appropriations: \$1.5 billion. The Innovation Account would receive the full amount authorized to be appropriated: \$127 million.<sup>39</sup>

The budget request also proposes two new mandatory appropriations for NIH in FY2025: \$1.49 billion in new mandatory appropriations for the Cancer Moonshot for FY2025 and \$2.69 billion in new mandatory appropriations for pandemic preparedness, to be made available for five years. Accounting for this proposed mandatory funding, NIH and ARPA-H would receive a total FY2025 program funding level of \$54.312 billion, a \$5.5 billion (11.3%) increase from the FY2024 enacted level.

The mandatory proposed funding for the Cancer Moonshot would go to the National Cancer Institute, which, in addition to \$742 million in proposed discretionary funding, would provide for an overall Cancer Moonshot funding level of \$2.164 billion in FY2025. The Cancer Moonshot is President Biden's initiative to cut the U.S. death rate from cancer by 50% over the next 25 years and to improve the experience of patients and their families living with cancer.<sup>40</sup> The total program funding would support related research, training, and health education activities.<sup>41</sup> The \$2.96 billion pandemic preparedness funding is NIH's portion of a \$20 billion in total FY2025 funding across HHS, to be appropriated to the Public Health and Social Services Emergency Fund according to the request.<sup>42</sup> The proposal generally does not designate specific amounts for NIH ICs but describes a number of activities the new funding would support, including developing vaccines and therapies, expanding laboratory capacity, and developing next-generation diagnostics.<sup>43</sup>

The Administration estimates that the proposed FY2025 funding level would support 43,636 research project grants, an increase of 460 from the FY2023 enacted level, with a total of 10,273 new and competing grants.<sup>44</sup> With respect to specific research areas and initiatives, following are some highlights and increases from the request:<sup>45</sup>

- **AI:** Under the FY2025 request, \$1.6 billion in investments in AI-related activities will be made across NIH. This includes a program to increase representation in the AI and machine learning field of underrepresented researchers and communities.<sup>46</sup>
- **Women's health research:** The FY2025 request includes \$154 million for the Office of Women's Health research within the OD, an increase of \$76 million from FY2023 and FY2024 enacted levels, each of which provided \$76.5 million.<sup>47</sup> The new funds are intended to support research on topics such as research in menopause and diabetes, opioid use disorder in pregnant women, and

<sup>39</sup> NIH, *Overview of FY 2025 President's Budget Proposal*, p. 47, <https://officeofbudget.od.nih.gov/pdfs/FY25/br/Overview%20of%20FY%202025%20Presidents%20Budget.pdf>.

<sup>40</sup> CRS In Focus IF12504, *The Cancer Moonshot: Overview and Issues*, by Kavya Sekar.

<sup>41</sup> NIH, *Overview of FY 2025 President's Budget Proposal*, p. 8.

<sup>42</sup> Called "biodefense" in HHS, *Budget in Brief: FY2025*, p. 171, <https://www.hhs.gov/sites/default/files/fy-2025-budget-in-brief.pdf>.

<sup>43</sup> NIH, *Overview of FY 2025 President's Budget Proposal*, pp. 19-20.

<sup>44</sup> HHS, *Budget in Brief: FY2025*, p. 54, <https://www.hhs.gov/sites/default/files/fy-2025-budget-in-brief.pdf>.

<sup>45</sup> *Ibid.*, pp. 47-51.

<sup>46</sup> The White House, "Research and Development," in *President's Budget: Analytical Perspectives*, March 11, 2024, p. 52, [https://www.whitehouse.gov/wp-content/uploads/2024/03/ap\\_6\\_research\\_fy2025.pdf](https://www.whitehouse.gov/wp-content/uploads/2024/03/ap_6_research_fy2025.pdf).

<sup>47</sup> *Congressional Record*, vol. 168, no. 198, Book II (December 20, 2022), pp. S8881-S8887, S8853; *Congressional Record*, vol. 170, no. 51, Book II (March 22, 2024), p. H1891.

alcohol use during pregnancy. NIH also intends to create a new nationwide network of centers of excellence and innovation in women's health.

- **Mental and behavioral health:** The FY2025 request includes an increase of \$200 million relative to FY2023 for the National Institute of Mental Health (NIMH) to support better diagnostics, improved treatments, and enhanced precision of care for mental health. This would result in a \$274.8 million (12.1%) increase under the FY2025 request (accounting for Cures Act transfers) compared with the FY2024 enacted level. (See **Table 9**.)

**Table 9. National Institutes of Health (NIH) Funding**

(budget authority, in millions of current dollars)

Institute or Center	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
National Cancer Institute (NCI)	7,224	7,839			
National Heart, Lung, and Blood Institute (NHLBI)	3,982	3,997			
National Institute of Dental and Craniofacial Research (NIDCR)	520	522			
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) <sup>a</sup>	2,311	2,310			
National Institute of Neurological Disorders and Stroke (NINDS)	2,604	2,788			
National Institute of Allergy and Infectious Diseases (NIAID)	6,562	6,581			
National Institute of General Medical Sciences (NIGMS) <sup>b</sup>	1,832	1,231			
National Institute of Child Health and Human Development (NICHD)	1,759	1,766			
National Eye Institute (NEI)	897	899			
National Institute of Environmental Health Sciences (NIEHS) <sup>c</sup>	914	917			
National Institute on Aging (NIA)	4,508	4,425			
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)	685	690			
National Institute on Deafness and Other Communication Disorders (NIDCD)	534	536			
National Institute on Alcohol Abuse and Alcoholism (NIAAA)	595	599			
National Institute of Nursing Research (NINR)	198	198			
National Institute on Drug Abuse (NIDA)	1,663	1,668			
National Institute of Mental Health (NIMH)	2,188	2,503			
National Human Genome Research Institute (NHGRI)	663	664			
National Institute of Biomedical Imaging and Bioengineering (NIBIB)	441	442			

Institute or Center	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
National Center for Complementary and Integrative Health (NCCIH)	170	171			
National Institute on Minority Health and Health Disparities (NIMHD)	534	527			
Fogarty International Center (FIC)	95	95			
National Library of Medicine (NLM)	498	527			
National Center for Advancing Translational Sciences (NCATS)	928	926			
Office of the Director (OD) <sup>d</sup>	2,606	3,013			
Innovation Account <sup>e</sup>	407	127			
Buildings and Facilities (B&F)	350	350			
<b>Subtotal, NIH (LHHS Discretionary Budget Authority)</b>	<b>45,669</b>	<b>46,312</b>			
PHS Program Evaluation (provided to NIGMS)	1,412	2,018			
Superfund (Interior appropriations to NIEHS) <sup>f</sup>	80	83			
Mandatory type 1 diabetes funds (to NIDDK) <sup>g</sup>	150	260 <sup>h</sup>			
<b>NIH Program Level</b>	<b>47,311</b>	<b>48,674</b>			
Advanced Research Projects Agency for Health (ARPA-H)	1,500	1,500			
<b>NIH and ARPA-H Program Level</b>	<b>48,811</b>	<b>50,174</b>			
Pandemic Preparedness (proposed mandatory) <sup>i</sup>	—	2,690			
Cancer Moonshot (proposed mandatory) <sup>j</sup>	—	1,448			
<b>Total with Proposed Mandatory Amounts</b>	<b>48,811</b>	<b>54,312</b>			

**Sources:** *Congressional Record*, daily edition, vol. 170, no. 51, Book 11 (March 22, 2024), p. H2022, <https://www.congress.gov/118/crec/2024/03/22/170/51/CREC-2024-03-22-bk2.pdf>, and P.L. 118-47, in addition to sources listed in footnotes below. FY2025 Request numbers are from NIH, *Overview of FY2025 President's Budget*, pp. 100, 101, <https://officeofbudget.od.nih.gov/pdfs/FY25/br/Overview%20of%20FY%202025%20Presidents%20Budget.pdf>, and ARPA-H, *Congressional Justification: FY2025*, p. 9, <https://arpa-h.gov/sites/default/files/2024-03/ARPA-H%20FY%202025.pdf>.

**Notes:** LHHS = Labor, HHS, and Education. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action. Amounts in table may differ from actual values in many cases. By convention, budget tables do not subtract the amount of transfers to the PHS Evaluation set-aside from the agencies' appropriation. In general, amounts provided to NIH for emergency requirements are excluded from these totals.

- Amounts for the NIDDK do not include mandatory funding for type 1 diabetes research (see note i).
- Amounts for NIGMS do not include funds from the Public Health Service (PHS) Evaluation Set-Aside (§241 of the PHS Act [PHSA]).
- Amounts for NIEHS do not include Interior/Environment Appropriations amount for Superfund research (see note g).
- Amounts for OD include transfer from the Pediatric Research Initiative Fund (PRIF) as authorized by the Gabriella Miller Kids First Research Act.
- Innovation Account amounts are to be transferred to other accounts. For FY2024, based on prior year practice, of the total \$172 million for the BRAIN Initiative, \$86 million may be transferred to each of NINDS and NIMH respectively. The total \$235 million for the Precision Medicine Initiative may be transferred to OD. For the FY2025 request, the budget request shows that of the total for BRAIN, \$45.5

- million would be transferred to each of NINDS and NIMH, respectively. The total \$36 million for PMI would go to OD.
- f. This is a separate account in the Interior/Environment appropriations for NIEHS research activities related to Superfund research.
  - g. Mandatory funds are available to NIDDK for type 1 diabetes research under PHSA Section 330B, which was most recently extended through December 31, 2024.
  - h. This is a proposed amount. The budget request proposes \$260 million in new mandatory funding for FY2025 under PHSA Section 330B (42 U.S.C. §254c-2). See NIH, *Overview of FY 2025 President's Budget Proposal*, p. 100.
  - i. The FY2025 request proposes new mandatory funding for pandemic preparedness to be available for five years. The request proposes an HHS-wide total of \$20 billion for pandemic preparedness with \$2.69 billion of the total designated for NIH. This amount is shown as a non-add in the request, meaning it was not added to the FY025 requested total for NIH.
  - j. The FY2025 request proposes new mandatory funding for the Cancer Moonshot. The request proposes \$716 million in discretionary funding and \$1.488 billion in mandatory funding for FY2025. NIH, *Overview of FY2025 President's Budget*, pp. 7, 19-20.

## Department of Energy (DOE)<sup>48</sup>

DOE was established in 1977 by the Department of Energy Organization Act (P.L. 95-91), which combined energy-related programs from a variety of agencies, particularly defense-related nuclear programs that dated back to the Manhattan Project. Today, DOE conducts basic scientific research in fields ranging from nuclear physics to the biological and environmental sciences; basic and applied R&D relating to energy production and use; and R&D on nuclear weapons, nuclear nonproliferation, and defense nuclear reactors. The department has a system of 17 national laboratories around the country, mostly operated by contractors, that together account for about 40% of all DOE expenditures.<sup>49</sup>

The Administration's FY2025 budget request for DOE includes about \$21.0 billion for R&D and related activities, including programs in three broad categories: science, national security, and energy. This request is about 0.2% more (in current dollars) than the enacted FY2024 amount for DOE. (See **Table 10**.)

The FY2025 request for the DOE Office of Science is \$8.58 billion, an increase of 4.2% from the FY2024 enacted level of \$8.2 billion. Funding would increase for all of the office's major research programs except basic energy sciences, which would decrease by about \$44 million. The Fusion Energy Sciences (FES) budget would receive an increase of \$54 million and includes proposals to realign the FES program with the Administration's Bold Decadal Vision<sup>50</sup> which seeks to focus R&D efforts around fusion power.

In addition, the Isotope R&D and Production account would increase by \$54 million to support, in part, anticipated supply disruptions of critical and high-impact isotopes associated with supply chain vulnerabilities heightened since the Russian invasion of Ukraine.

The request for DOE national security R&D is more than \$6.1 billion, with an increase of \$99 million from the FY2024 enacted level. In the Weapons Activities account, the request for

<sup>48</sup> This section was written by Todd Kuiken, Analyst in Science and Technology Policy, CRS Resources, Science, and Industry Division.

<sup>49</sup> For additional information on the DOE Office of Science, see CRS In Focus IF12692, *Department of Energy (DOE) Office of Science*, by Todd Kuiken.

<sup>50</sup> The White House, *Fact Sheet: Developing a Bold Vision for Commercial Fusion Energy*, 2022, <https://www.whitehouse.gov/ostp/news-updates/2022/03/15/fact-sheet-developing-a-bold-vision-for-commercial-fusion-energy/>.

Stockpile Research, Technology, and Engineering would decrease by \$106 million compared to the FY2024 enacted level. The FY2025 budget request does not specify which programs within the account would be reduced but describes continued support for certain programs, including Enhanced Capabilities for Subcritical Experiments (ECSE) and the Inertial Confinement Fusion (ICF) program, and the development of new materials, technologies, and processes to modernize the nuclear systems and production complex.

The request for DOE energy R&D is \$6.3 billion, a decrease of \$394 million from the FY2024 enacted level. The largest overall decrease in funding, \$342 million, would be for energy efficiency and renewable energy R&D, while the Fossil Energy and Carbon Management budget would increase by \$35 million. The Advanced Research Projects Agency–Energy (ARPA-E), which is intended to advance high-impact energy technologies that have too much technical and financial uncertainty to attract near-term private sector investment, would decrease by \$10 million compared to the FY2024 level.

**Table 10. Department of Energy R&D and Related Activities**

(budget authority, in millions of current dollars)

Category/Program	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Science</b>					
Basic Energy Sciences	2,626	2,582			
High Energy Physics	1,200	1,231			
Biological and Environmental Research	900	945			
Nuclear Physics	804	833			
Advanced Scientific Computing Research	1,016	1,153			
Fusion Energy Sciences	790	844			
Isotope R&D and Production	130	184			
Accelerator R&D and Production	29	31			
Other	745	780			
<b>Total</b>	<b>8,240</b>	<b>8,583</b>			
<b>National Security</b>					
Weapons Activities Stockpile RT&E	3,280	3,174			
Naval Reactors	1,946	2,119			
Defense Nuclear Nonproliferation R&D	766	803			
Defense Environmental Cleanup Technology Development	36	31			
<b>Total</b>	<b>6,028</b>	<b>6,127</b>			
<b>Energy</b>					
Energy Efficiency and Renewable Energy	3,460	3,118			
Fossil Energy and Carbon Management	865	900			
Nuclear Energy	1,525	1,441			
Electricity	280	293			



Category/Program	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
CESER Risk Management Tools and Technologies	113	107			
Advanced Research Projects Agency–Energy	460	450			
<b>Total</b>	<b>6,703</b>	<b>6,309</b>			
<b>Grand total</b>	<b>20,971</b>	<b>21,019</b>			

**Sources:** FY2024 enacted from P.L. 118-42 and explanatory statement, <https://docs.house.gov/billsthisweek/20240304/FY24%20EW%20Conference%20JES%20scan.pdf>. FY2025 request from DOE FY2025 congressional budget justification, <https://www.energy.gov/cfo/articles/fy-2025-budget-justification>.

**Notes:** RT&E = Research, Technology, and Engineering; CESER = Cybersecurity, Energy Security, and Emergency Response. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action.

## National Aeronautics and Space Administration (NASA)<sup>51</sup>

NASA was created in 1958 by the National Aeronautics and Space Act (P.L. 85-568) to conduct civilian space and aeronautics activities. NASA has research programs in planetary science, Earth science, astrophysics, heliophysics, the biological and physical sciences, aeronautics, and astronaut health and performance, as well as development programs for future human spacecraft and for multipurpose space technology such as advanced propulsion systems. In addition, NASA operates the International Space Station (ISS) as a facility for R&D and other purposes.

The Administration's request includes \$25.4 billion for NASA in FY2025. This would be 2.1% more than the FY2024 level of \$24.9 billion (in current dollars). For a breakdown of these amounts, see **Table 11**. About half of NASA funding supports R&D. Some accounts (such as Science and Space Technology) fund R&D almost exclusively, while others (such as Exploration and Space Operations) fund a mix of R&D, testing and demonstration, operations, and other activities. **Table 11** indicates the estimated R&D share of each account, based on OMB data for the FY2025 request.<sup>52</sup> Those shares may be different for FY2024 and for FY2025 appropriations provided by Congress.

The FY2025 request for Science is \$7.6 billion, an increase of 3.2% from \$7.3 billion in the FY2024 enacted level. A requested 8.4% increase for Earth Science includes \$150 million for Landsat Next and \$168 million for the newly established Responsive Science Initiatives program, which consolidates selected Earth Science activities that connect NASA science with user needs. A requested increase of 0.5% for Planetary Science includes \$236 million for Near-Earth Object Surveyor (up from \$210 million in FY2024) and \$435 million for the Dragonfly mission to Saturn's moon Titan (up from \$360 million in FY2024). The initial FY2025 request did not include a proposed amount for Mars Sample Return, as NASA's internal assessment of the mission architecture was not yet completed. In April 2024, after completion of NASA's internal assessment, NASA issued a revised request including \$200 million for Mars Sample Return, which is \$100 million less than FY2024 appropriations. In response to concerns over the cost and timeline for Mars Sample Return, NASA is soliciting proposals for alternate mission architectures. The proposed funding would support the evaluation and potential incorporation of

<sup>51</sup> This section was written by Rachel Lindbergh, Analyst in Science and Technology Policy, CRS Resources, Science, and Industry Division.

<sup>52</sup> Based on federal R&D funding data provided to CRS by OMB via email communications, April 2024.

proposals.<sup>53</sup> The FY2025 request for Aeronautics is \$966 million, an increase of 3.3% from \$935 million in FY2024. The bulk of the proposed increase would be for Advanced Air Vehicles, supporting additional R&D on sustainable aviation fuels, composite aircraft manufacturing, and other topics.

The FY2025 request for Space Technology is \$1.2 billion, an increase of 7.4% from \$1.1 billion enacted for FY2024. Within this account, the request includes \$459 million for Technology Demonstration, \$341 million for Technology Maturation, \$140 million for Early-Stage Innovation and Partnerships, and \$242 million for Small Business Innovation Research and Small Business Technology Transfer. In the Technology Demonstration program, the request proposes \$123 million for space nuclear technologies.

The FY2025 request for Deep Space Exploration Systems (currently Exploration) is \$7.6 billion, a decrease of 0.6% from \$7.7 billion in FY2024. Within this account, the request for Moon to Mars Transportation System (formerly Common Exploration Systems Development) includes \$1.0 billion for the Orion crew capsule (down from \$1.1 billion in FY2024) and \$2.4 billion for the Space Launch System (SLS) heavy-lift rocket (down from \$2.6 billion in FY2024). As the Orion and SLS programs mature, they are focusing more on testing and production of flight hardware, with less R&D content than in previous years. The proposed 1.6% increase for the Moon to Mars Lunar System Development (formerly Artemis Campaign Development) would support continued development of the Gateway platform in lunar orbit (\$818 million) and the lunar Human Landing System (\$1.90 billion, up slightly from \$1.88 billion enacted for FY2024).

In the Space Operations account, requests for R&D-related activities include \$261 million for ISS research; \$109 million to develop a U.S. deorbit vehicle to safely deorbit the ISS in 2030; \$143 million for the Human Research Program (in Space and Flight Support); and \$170 million for Commercial Low Earth Orbit Development (down from \$229 million in FY2024). Commercial crew transport activities have largely transitioned from development to operations (which is funded separately, but also in Space Transportation). SpaceX launched its first post-certification crewed flight to the ISS in November 2020; a crewed test flight of Boeing's competing crew transport system launched in June 2024.

**Table I I. National Aeronautics and Space Administration (NASA) R&D**

(budget authority, in millions of current dollars)

Category/Program	Estimated R&D Share	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Science</b>	<b>96%</b>					
Earth Science		2,195	2,379			
Planetary Science		2,717	2,732			
Astrophysics		1,530	1,578			
Heliophysics		805	787			
Biological and Physical Sciences		88	91			
<b>Total</b>		<b>7,334</b>	<b>7,566</b>			

<sup>53</sup> NASA, "NASA Sets Path to Return Mars Samples, Seeks Innovative Designs," press release, April 15, 2024, <https://www.nasa.gov/news-release/nasa-sets-path-to-return-mars-samples-seeks-innovative-designs/>.



Category/Program	Estimated R&D Share	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Exploration/Deep Space Exploration Systems</b>	<b>26%</b>					
Common Exploration Systems Development		4,533	4,213			
Artemis Campaign Development		n/a	3,288			
Human Exploration Requirements and Architecture		n/a	117			
<b>Total</b>		<b>7,666</b>	<b>7,618</b>			
<b>Space Operations</b>	<b>6%</b>					
International Space Station		n/a	1,270			
Space Transportation		n/a	1,862			
Space and Flight Support		n/a	1,088			
Commercial LEO Development		228	170			
<b>Total</b>		<b>4,220</b>	<b>4,390</b>			
<b>Aeronautics</b>	<b>82%</b>	<b>935</b>	<b>966</b>			
<b>Space Technology</b>	<b>97%</b>	<b>1,100</b>	<b>1,182</b>			
<b>STEM Engagement</b>	<b>0%</b>	<b>143</b>	<b>144</b>			
<b>Safety, Security, and Mission Services</b>	<b>7%</b>	<b>3,129</b>	<b>3,044</b>			
<b>Construction and Environmental C&amp;R</b>	<b>12%</b>	<b>300</b>	<b>424</b>			
<b>Inspector General</b>	<b>0%</b>	<b>48</b>	<b>51</b>			
<b>Grand total</b>	<b>46%</b>	<b>24,875</b>	<b>25,384</b>			

**Sources:** Estimated R&D share calculated by CRS based on OMB data for R&D and R&D-related facilities and equipment funding in the FY2025 request, provided to CRS via email communications in April 2024. FY2024 enacted from P.L. 118-42 and *Explanatory Statement*, H.R. 4366, 118<sup>th</sup> Cong., 2<sup>nd</sup> sess., *Congressional Record*, vol. 170, no. 39 (March 5, 2024), pp. S1141-S1142, <https://www.congress.gov/118/crec/2024/03/05/170/39/CREC-2024-03-05.pdf>. FY2025 request from NASA FY2025 congressional budget justification, as revised in April 2024, <https://www.nasa.gov/fy-2025-budget-request/>.

**Notes:** n/a = not available. LEO = Low Earth Orbit. C&R = Compliance and Remediation. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action.

## National Science Foundation (NSF)<sup>54</sup>

NSF supports basic research and education in the nonmedical sciences and engineering. Congress established NSF as an independent federal agency in 1950 to “promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.”<sup>55</sup> NSF is a major source of federal support for U.S. university research, especially in the social sciences, mathematics, and computer science. It is also responsible for significant

<sup>54</sup> This section was written by Laurie Harris, Analyst in Science and Technology Policy, CRS Resources, Science, and Industry Division.

<sup>55</sup> The National Science Foundation Act of 1950 (P.L. 81-507).

shares of the federal science, technology, engineering, and mathematics (STEM) education program portfolio and federal STEM student aid and support.

NSF has six appropriations accounts: Research and Related Activities (RRA, the main research account), STEM Education (EDU, the main education account),<sup>56</sup> Major Research Equipment and Facilities Construction (MREFC), Agency Operations and Award Management (AOAM), the National Science Board (NSB), and the Office of Inspector General (OIG). Appropriations are generally provided at the account level, while program-specific direction may be included in appropriations acts or accompanying conference reports or explanatory statements.

Funding for R&D is included in the RRA, EDU, and MREFC accounts. (The RRA and EDU accounts also include non-R&D funding.) Together, these three accounts comprise 95% of the total requested funding for NSF. Actual and estimated R&D obligations for each account are known after NSF allocates funding appropriations to specific activities and reports those figures.<sup>57</sup> The budget request specifies R&D funding for the conduct of research, including basic and applied research, and for physical assets, including R&D facilities and major equipment. Funding amounts for FY2023 actual, FY2024 enacted, and FY2025 requested levels are reported by account, including amounts for R&D conduct and physical assets where applicable, in **Table 12**.

Funding for NSF for FY2024 was enacted on March 9, 2024.<sup>58</sup> Funding details for FY2024 enacted amounts below the account level were not available at the time the FY2025 budget request was prepared. Therefore, in this analysis, at the account level, the FY2025 request amounts are compared with the FY2024 enacted amounts; below the account level, the FY2025 request amounts are compared with the FY2023 actual amounts for subaccounts and R&D amounts. Comparisons are reported by account and for R&D conduct and facilities and equipment in **Table 12**.

## Overall

The Administration is requesting \$10.2 billion for NSF in FY2025, \$1.12 billion (12%) more than the FY2024 enacted amount (in current dollars). The request would increase budget authority in each of the three R&D accounts relative to the FY2024 enacted level: RRA by \$869 million (12%), EDU by \$128 million (11%), and MREFC by \$66.0 million (28%). Overall, NSF estimates that, under the FY2025 request, agency-wide funding rates for competitive awards (i.e., the percentage of submitted proposals that are successfully awarded funding after competitive review) would remain at 27%, with an estimated 10,900 awards.

For FY2025, \$8.12 billion is requested for R&D activities, a \$510 million (6.7%) increase from FY2023 actual funding for R&D. R&D activities account for approximately 80% of NSF's total funding. The total request for R&D activities includes \$7.48 billion (92%) for the conduct of R&D, and \$639 million (8%) for R&D facilities and major equipment. Of funding requested for

<sup>56</sup> In the FY2023 budget request, NSF proposed changing the name of the Directorate for Education and Human Resources to the Directorate for STEM Education. The name for the corresponding appropriations account is now STEM Education (EDU), rather than Education and Human Resources (EHR).

<sup>57</sup> R&D actual (FY2023), estimated (FY2024), and requested (FY2025) amounts are reported in the "Quantitative Data Tables" section of NSF, *FY 2025 Budget Request to Congress*, March 11, 2024, pp. QDT-1 to QDT-8, [https://nsf.gov-resources.nsf.gov/files/00\\_NSF\\_FY25\\_CJ\\_Entire%20Rollup\\_web.pdf?VersionId=cbkdqD\\_UMweHEIsZwPjtVgcQRwMccgvu](https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu) (hereinafter, *NSF FY 2025 Budget Request*).

<sup>58</sup> The Consolidated Appropriations Act, 2024 (P.L. 118-42); S.Rept. 118-62; and the "Explanatory Statement Submitted by Mrs. Murray, Chair of the Senate Committee on Appropriations, Regarding H.R. 4366, Consolidated Appropriations Act, 2024," Senate, *Congressional Record*, daily edition, vol. 170, no. 39 (March 5, 2024), pp. S1413-S1414.

the conduct of R&D, 84% is requested for basic research and 16% requested for applied research. Overall funding for R&D facilities and major equipment supports not only the construction and acquisition phases, funded through MREFC (\$300 million requested), but also planning, design, and post-construction operations and maintenance, funded through RRA (\$339 million requested).

## Research

The Administration seeks \$8.05 billion for RRA in FY2025, a \$869 million (12%) increase compared with the FY2024 enacted funding. Within the RRA account, the FY2025 request includes \$7.29 billion for R&D, an increase of \$376 million (5.4%) compared with the FY2023 actual amount. Of this amount, the majority (\$6.95 billion, 95%) is requested for conducting research, including \$6.07 billion for basic research and \$875 million for applied research.

Compared with the FY2024 enacted amounts, the FY2025 requested amount includes funding increases for 10 of 12 RRA subaccounts. This includes a request of \$900 million for the most recently created directorate, the Directorate for Technology, Innovation, and Partnerships (TIP), meant to advance key technologies; accelerate the translation of research to market; “cultivate new education pathways”; and catalyze partnerships across academia, industry, government, investors, and civil society.<sup>59</sup> The FY2025 request also includes \$258 million for the Established Program to Stimulate Competitive Research (EPSCoR), a \$6.34 million (2.5%) increase compared with FY2023 actual funding.

## Education

The FY2025 request for the EDU account is \$1.30 billion, \$128 million (11%) more than the FY2024 enacted amount. By program division, in terms of dollars and percentages, the Division of Undergraduate Education (DUE) would receive the largest increase, \$35.6 million (13%) over the FY2023 actual amount. The Division of Research on Learning in Formal and Informal Settings (DRL) would receive a slight decrease of \$1.48 million (-0.7%) from FY2023.

Within EDU, requested funding for R&D is \$523 million, which is equal to the FY2024 enacted funding amount and accounts for approximately 6% of the agency’s total R&D request. All of the account’s requested funding would support the conduct of R&D, including \$193 million for basic research and \$330 million for applied research.

## Construction

The MREFC account supports the acquisition, construction, and commissioning of major facilities and larger mid-scale research infrastructure, with all of the funding supporting R&D facilities.<sup>60</sup> The construction phases of such large-scale projects tend to span multiple years; therefore, NSF provides out-year estimates of funding for major facilities for the duration of the anticipated timeline. These estimates are updated annually. This section of the analysis includes comparisons with FY2025 requested funding for specific projects, based on these out-year

<sup>59</sup> The Directorate for Technology, Innovation, and Partnerships (TIP Directorate) was established in March 2022 and codified by the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act (P.L. 117-167). For more information on the TIP Directorate, see *NSF FY 2025 Budget Request*, pp. TIP-1 to TIP-6.

<sup>60</sup> Initial development and design and post-construction operations and maintenance are funded through the Research and Related Activities (RRA) account.

estimates. The Administration is seeking \$300 million for MREFC in FY2025, \$66.0 million (28%) more than the FY2024 enacted amount.

Requested MREFC funding would support mid-scale research infrastructure and continued construction on two ongoing major facility projects:

- the Antarctic Infrastructure Recapitalization program (\$60.0 million requested, equal to the FY2023 actual amount)<sup>61</sup> and
- the Leadership-Class Computing Facility, “envisioned as a distributed facility that will provide unique computational and data analytics capabilities, as well as critical software and services, for the nation’s science and engineering research community”; the anticipated funding amount and construction timeline is \$520 million from FY2024 through FY2027, with \$154 million requested for FY2025.<sup>62</sup>

Additionally, \$85 million is requested for Mid-scale Research Infrastructure Track 2 projects (those projects with funding amounts between \$20 million and \$100 million), an increase of \$8.75 million (11%) from the FY2023 actual amount.<sup>63</sup>

## Other Initiatives

The FY2025 NSF budget request includes funding for multiple agency-wide investments, including crosscutting research topics, as well as multiagency initiatives.<sup>64</sup> This funding is included in multiple NSF appropriations accounts, and R&D amounts are not separately provided.

For FY2025, NSF requests funding for various administration priority areas and crosscutting research topics. Requested funding amounts for each research area compared with the FY2023 actual amounts (in current dollars) include the following:<sup>65</sup>

- Advanced manufacturing: \$387 million requested, up \$32.3 million (9%) from FY2023
- Advanced wireless: \$168 million requested, up \$13.9 million (9%) from FY2023
- AI: \$729 million requested, up \$65.9 million (10%) from FY2023
- Biotechnology: \$421 million requested, up \$36.4 million (9%) from FY2023

<sup>61</sup> The Antarctic Infrastructure Recapitalization program is “a portfolio of investments in facilities and infrastructure across U.S. Antarctic Program (USAP) stations and gateways.” *NSF FY 2025 Budget Request*, p. Research Infrastructure-11.

<sup>62</sup> *NSF FY 2025 Budget Request*, p. Research Infrastructure-28.

<sup>63</sup> Mid-Scale Research Infrastructure Track 2 was a new funding line-item in the Major Research Equipment and Facilities Construction (MREFC) account as of FY2020, meant to manage support for upgrades to major facilities and stand-alone projects in this range as a portfolio. *NSF FY 2025 Budget Request*, p. Research Infrastructure-48.

<sup>64</sup> Prior versions of this CRS report included funding requests for NSF’s Big Ideas investments. As the budget request notes, “NSF’s Big Ideas, first put forth in FY 2017, ended as a unifying concept in FY 2023 as planned. Investments in these forward-looking research categories across the [RRA], EDU, and MREFC accounts provided the groundwork for many new successes. Most of the Big Ideas will continue as core research programs or be superseded by new but related efforts.” See NSF, *FY 2024 Budget Request to Congress*, March 13, 2023, p. Cross-Theme Topics-15, [https://nsf.gov-resources.nsf.gov/2023-08/NSF%20FY24%20CJ\\_Entire%20Rollup\\_web\\_%28ERRATA%20v4%29.pdf?VersionId=O1Um6rPm6xnLj80uA05Dm7IwxHUqScDO](https://nsf.gov-resources.nsf.gov/2023-08/NSF%20FY24%20CJ_Entire%20Rollup_web_%28ERRATA%20v4%29.pdf?VersionId=O1Um6rPm6xnLj80uA05Dm7IwxHUqScDO).

<sup>65</sup> For additional details on funding amounts by account, see *NSF FY 2025 Budget Request*, pp. Summary Tables-8 to Summary Tables-10.

- Quantum information science: \$294 million requested, up \$27.6 million (10%) from FY2023
- Microelectronics and semiconductors: \$175 million requested, up \$22.7 million (15%) from FY2023
- Clean energy technology: \$551 million requested, up \$28.6 million (6%) from FY2023

**Table 12. National Science Foundation (NSF) Funding**

(budget authority, in millions of current dollars)

Account	FY2023 Actual <sup>a</sup>	FY2024 Enacted	FY2025 Request <sup>b</sup>	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Research and Related Activities (RRA)<sup>c</sup></b>	<b>7,631.0</b>	<b>7,176.5</b>	<b>8,045.3</b>			
R&D, RRA Total	6,911.9	n/a	7,287.9			
<i>Conduct of R&amp;D</i>	6,591.5	n/a	6,948.5			
<i>R&amp;D Facilities and Major Equipment</i>	320.4	n/a	339.4			
<b>STEM Education (EDU)<sup>c</sup></b>	<b>1,229.3</b>	<b>1,172.0</b>	<b>1,300.0</b>			
R&D, EDU Total	522.9	n/a	523.0			
<i>Conduct of R&amp;D</i>	522.4	n/a	523.0			
<i>R&amp;D Facilities and Major Equipment</i>	0.6	n/a	0.0			
<b>Major Research Equipment and Facilities Construction (MREFC)</b>	<b>187.2</b>	<b>234.0</b>	<b>300.0</b>			
R&D, MREFC Total	159.9	n/a	300.0			
<i>Conduct of R&amp;D</i>	0.0	n/a	0.0			
<i>R&amp;D Facilities and Major Equipment</i>	159.9	n/a	300.0			
<b>Agency Operations and Award Management (AOAM)<sup>d</sup></b>	<b>463.0</b>	<b>448.0</b>	<b>504.0</b>			
<b>Office of Inspector General (OIG)<sup>d</sup></b>	<b>23.4</b>	<b>24.4</b>	<b>28.5</b>			
<b>National Science Board (NSB)<sup>d</sup></b>	<b>5.1</b>	<b>5.1</b>	<b>5.2</b>			
<b>NSF, Total Discretionary<sup>e</sup></b>	<b>9,539.0</b>	<b>9,060.0</b>	<b>10,183.0</b>			
R&D, NSF Total	7,610.8	7,800.0 <sup>f</sup>	8,120.9			
<i>Total, Conduct of R&amp;Ds</i>	7,130.0	n/a	7,481.5			
<i>Total, R&amp;D Physical Assets</i>	480.8	n/a	639.4			

**Sources:** Data in the columns titled “FY2023 Actual,” “FY2024 Enacted,” and “FY2025 Request” are from P.L. 118-42 and NSF, *FY 2025 Budget Request to Congress*, March 11, 2024, [https://nsf.gov-resources.nsf.gov/files/00\\_NSF\\_FY25\\_CJ\\_Entire%20Rollup\\_web.pdf?VersionId=cbkdqD\\_UMweHEIsZwPjtVgcQRwMccgvu](https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu).

**Notes:** n/a = not available. Appropriations accounts are in boldface. Non-boldface amounts are a subset of funding provided through the specified appropriations accounts, and italicized amounts are subsets of non-

boldface total amounts. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action.

- a. FY2023 actual funding amounts are as reported in the NSF FY 2025 *Budget Request to Congress*; these amounts reflect “the anticipated transfer of \$15.0 million of carryover within the [RRA] account to the AOAM account to be competed in FY 2024.” FY2023 amounts also included supplemental appropriations from Division B and Division N in P.L. 117-328.
- b. Figures in the FY2025 Request column do not include advance appropriations.
- c. Per the NSF FY 2025 *Budget Request to Congress*, FY2025 RRA and EDU accounts “are restated to show consolidation of NSF mission support activities within [RRA] comparably with FY 2025; [EDU] account shifts \$16.72 million to [RRA]” in the FY2023 Actual column.
- d. The AOAM, NSB, and OIG accounts have no reported R&D funding.
- e. In addition to discretionary funding, NSF reports mandatory funding from Creating Helpful Incentives to Produce Semiconductors (CHIPS) for American Workforce and Education Fund mandatory appropriations (per P.L. 117-167, Division A), and H-1B visa and donation sources, which are not included in this total.
- f. The “R&D, NSF Total,” amount for FY2024 is an estimate from the *Analytical Perspectives* report in the President’s FY2025 budget, based on annualized continuing resolutions. NSF did not include FY2024 R&D estimates in its FY2025 budget request.
- g. The “Total, Conduct of R&D” amounts include supplemental funding from the CHIPS for American Workforce and Education Fund, including \$16.1 million in FY2023 and \$10 million in FY2025, not shown in the account breakouts in this table. See NSF FY 2025 *Budget Request to Congress*, p. QDT-8.

## U.S. Department of Agriculture (USDA)<sup>66</sup>

USDA was created in 1862 in part to support agricultural research in an expanding, agriculturally dependent country. Today, USDA conducts intramural research at federal facilities with federally employed scientists and supports extramural research at universities and other facilities through competitive grants and capacity (formula-based) funding. The breadth of contemporary USDA research spans traditional agricultural production practices, as well as organic and sustainable agriculture, bioenergy, nutritional needs and food composition, food safety, animal and plant health, pest and disease management, economic decisionmaking, and other social science issues affecting consumers, farmers, and rural communities.

The four agencies of USDA’s Research, Education, and Economics (REE) mission area carry out the department’s research and education activities.<sup>67</sup> These agencies are the Agricultural Research Service (ARS), the principal intramural research agency; the National Institute of Food and Agriculture (NIFA), the principal extramural research agency; the National Agricultural Statistics Service (NASS), which undertakes a variety of surveys to capture relevant data; and the Economic Research Service (ERS), which applies economic analysis to a wide range of topics related to food and agriculture. In addition to the four REE agencies, the Office of the Chief Scientist (OCS), a staff office within the Office of the Under Secretary for REE, coordinates science activities across the department.

USDA’s FY2024 enacted discretionary appropriations and the Administration’s FY2025 budget request for the four REE agencies and OCS are discussed below, and funding amounts are presented in **Table 13**. In annual agriculture appropriations acts, Title I (Agricultural Programs) provides discretionary appropriations for USDA, including the REE agencies and OCS. REE agencies and programs receive additional funding from sources other than this title, including discretionary funding from Title VII (General Provisions) of annual agriculture appropriations

<sup>66</sup> This section was written by Eleni Bickell, Analyst in Agricultural Policy, CRS Resources, Science, and Industry Division.

<sup>67</sup> For additional information, see CRS Report R40819, *Agricultural Research: Background and Issues*, by Eleni G. Bickell.



acts, mandatory funding authorized by the 2018 farm bill (P.L. 115-334 nonfederal matching contributions, and private donations and grants.<sup>68</sup> Funding from these other sources is discussed separately in the text and is not presented in **Table 13**.

FY2024 enacted appropriations (Consolidated Appropriations Act, 2024, P.L. 118-42 provided a total of \$3.80 billion in discretionary spending for the REE activities through Division B (Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2024), Title I.<sup>69</sup> The Administration is requesting a total of \$3.81 billion for REE activities in FY2025, an increase of \$10 million (in current dollars).

## Agricultural Research Service (ARS)

ARS is USDA's in-house basic and applied research agency and is responsible for conducting and leading the national agricultural research effort. ARS operates approximately 90 laboratories with about 5,300 permanent employees, including approximately 2,000 research scientists.<sup>70</sup> The work of ARS laboratories includes a focus on efficient and sustainable food and fiber production, development of new products and uses for agricultural commodities, development of effective controls for pest management, and support of USDA regulatory and technical assistance programs. ARS also operates the National Agricultural Library (NAL). NAL is the world's largest agricultural research library and is a primary information repository for food, agriculture, and natural resource sciences.

For FY2024, P.L. 118-42 provided \$1.788 billion for ARS salaries and expenses, and \$57.2 million for buildings and facilities. For FY2025, the Administration is requesting \$1.755 billion for ARS salaries and expenses, a decrease of \$32.5 million below the FY2024 discretionary appropriations. This request includes increases of \$47 million for high priority program initiatives. The FY2025 request for buildings and facilities is \$28.4 million, a decrease of \$28.8 million (50.3%) from the FY2024 appropriations.

ARS continues to coordinate with DHS on the new National Bio and Agro-Defense Facility (NBAF), which DHS is constructing to replace the outdated Plum Island Animal Disease Center.<sup>71</sup> In January 2019, USDA and DHS signed a memorandum of agreement to govern the transition of NBAF from DHS to USDA, with ownership to transfer upon the completion and commissioning of NBAF.<sup>72</sup> For FY2024, P.L. 118-42 provided a total of \$24.5 million to remain available until expended to be used to carry out the science program and transition activities for the NBAF to Manhattan, KS. The FY2025 request includes an increase of \$13.0 million to be used for operations and maintenance required by the new NBAF.

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<sup>68</sup> Ibid.

<sup>69</sup> FY2024 enacted appropriations and related congressional directives presented in this section derive from P.L. 118-42 and the accompanying Joint Explanatory Statement, Division B—Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2024.

<sup>70</sup> Table ARS-4 (p. 20-7) of the 2025 U.S. Department of Agriculture (USDA) Explanatory Notes for the Agricultural Research Service states that in 2024, the Agricultural Research Service had a total of 5,334 permanent positions: 538 located in Washington, DC, and 4,796 located in field offices.

<sup>71</sup> For additional information, see CRS In Focus IF11492, *National Bio and Agro-Defense Facility: Purpose and Status*, by Genevieve K. Croft. Congressional readers may contact Eleni Bickell, Analyst in Agricultural Policy, for follow-up.

<sup>72</sup> USDA and Department of Homeland Security (DHS), *Memorandum of Agreement Between the U.S. Department of Agriculture Marketing and Regulatory Programs, the U.S. Department of Agriculture Research, Education, and Economics, and the Department of Homeland Security Science and Technology Directorate*, June 20, 2019, <https://www.usda.gov/sites/default/files/documents/usda-dhs-moa.pdf>.

## National Institute of Food and Agriculture (NIFA)

NIFA is USDA's principal extramural research agency. It provides federal funding for research, education, and extension projects conducted in partnership with land-grant colleges and universities (LGUs), State Agricultural Experiment Stations, the Cooperative Extension System, other research and education institutions, private organizations, and individuals. NIFA partnerships include the three types of LGUs—1862 (original) Institutions, 1890 (historically Black) Institutions, and 1994 (tribal) Institutions—as well as other higher education institutions.<sup>73</sup> Federal funds awarded through NIFA capacity (formula-based) and competitive grants enhance research capacity at these institutions.<sup>74</sup> While NIFA is headquartered in Washington, DC, USDA relocated the majority of NIFA staff positions to Kansas City, MO, in 2019.<sup>75</sup>

For FY2024, P.L. 118-42 provided \$1.679 billion in discretionary funds for NIFA activities. For FY2025, the Administration is requesting \$1.732 billion, an increase of \$52.9 million (3.2%). In the explanatory notes for NIFA, the Administration proposes a change in appropriations language that would combine three separate NIFA funding accounts—for research and education, extension, and integrated activities—into one agency account that includes all programs.<sup>76</sup>

### Research and Education

The Hatch Act and Evans-Allen Act funds support capacity grants for research and education activities at 1862 and 1890 Institutions, respectively. For Hatch Act programs, the enacted P.L. 118-42 provided \$265.0 million, and the Administration is requesting the same funding level for FY2025. For Evans-Allen programs, FY2024 appropriations provided \$89.0 million, and for FY2025, the Administration is requesting \$98.0 million, a 10.1% increase. The McIntire-Stennis program funds capacity building for forestry research. For FY2024, P.L. 118-42 provided \$38.0 million for this program, and the Administration is requesting \$36.0 million for FY2025.

The Agriculture and Food Research Initiative (AFRI) is USDA's flagship competitive research grants program and currently represents about 26.5% of NIFA's total discretionary budget. The FY2024 enacted bill provided \$445.2 million for AFRI, and the Administration is requesting \$475.0 million for FY2025, a 6.7% increase.

### Extension

The Smith-Lever Act created a cooperative extension service associated with each land-grant institution.<sup>77</sup> Smith-Lever subsections 3(b) and 3(c) authorize capacity grants to 1862 Institutions to support cooperative extension. The FY2024 enacted appropriations provided \$325.0 million for these programs, and the Administration is requesting the same funding level for FY2025. For

<sup>73</sup> 1862, 1890, and 1994 refer to the years of enactment of the laws that created these institutional classifications. For more information on land-grant colleges and universities (LGUs) and other institutions funded by the National Institute of Food and Agriculture (NIFA), see CRS Report R45897, *The U.S. Land-Grant University System: Overview and Role in Agricultural Research*, by Eleni G. Bickell; CRS In Focus IF11847, *1890 Land-Grant Universities: Background and Selected Issues*, by Eleni G. Bickell; and CRS In Focus IF12009, *1994 Land-Grant Universities: Background and Selected Issues*, by Eleni G. Bickell.

<sup>74</sup> The National Agricultural Research, Extension, and Teaching Policy Act of 1977 (P.L. 95-113) designated USDA as the lead federal agency for higher education in the food and agricultural sciences.

<sup>75</sup> For further information, see CRS In Focus IF11527, *Relocation of the USDA Research Agencies: NIFA and ERS*, by Genevieve K. Croft. Congressional readers may contact Eleni Bickell, Analyst in Agricultural Policy, for follow-up.

<sup>76</sup> Similar consolidations in NIFA have been proposed in seven of the past nine President's Budget Requests but were not adopted by Congress.

<sup>77</sup> USDA, NIFA, "About NIFA: Who We Are," <https://www.nifa.usda.gov/about-nifa/who-we-are/history>.



extension capacity grants for 1890 Institutions, FY2024 appropriations included \$72.0 million, and the Administration is requesting \$76.0 million for FY2025, a 5.6% increase.

Smith-Lever Act 3(d) programs provide for competitive grants to LGUs to support cooperative extension. These programs include grants for food and nutrition education; new technologies for agricultural extension; federally recognized tribes; children, youth, and families at risk; and farm safety education. For FY2024, P.L. 118-42 provided \$88.6 million for Smith-Lever 3(d) programs. For FY2025, the Administration is requesting \$114.6 million, a 29.3% increase. Of the FY2024 enacted appropriations, \$70.0 million supports the Expanded Food and Nutrition Education Program (EFNEP), and \$4 million supports the Federally-Recognized Tribes Extension Program. The Administration is requesting \$90 million for EFNEP and \$7.7 million for the Federally-Recognized Tribes Extension Program in FY2025.

### **Integrated Activities**

Integrated activities include some combination of teaching, education, and research. For FY2024, P.L. 118-42 provided \$41.1 million for integrated activities, and the Administration is requesting \$15.0 million for FY2025, a 63.5% decrease.

### **National Agricultural Statistics Service (NASS)**

NASS conducts the Census of Agriculture every five years and provides official statistics on agricultural production and farm sector indicators. It is one of the 13 principal statistical agencies of the U.S. Federal Statistical System. For FY2024, P.L. 118-42 provided \$187.5 million for NASS, of which up to \$46.9 million is reserved to support the Census of Agriculture. The Administration is requesting \$196.0 million for NASS in FY2025, of which up to \$48.2 million would be for the Census of Agriculture, a 4.5% increase in current dollars.

### **Economic Research Service (ERS)**

ERS supports economic and social science analysis about agriculture, rural development, food, commodity markets, and the environment. It also collects and disseminates data concerning USDA programs and policies. Like NASS, ERS is one of the principal statistical agencies of the U.S. Federal Statistical System. While ERS is headquartered in Washington, DC, USDA relocated the majority of ERS staff positions to Kansas City, MO, in 2019.<sup>78</sup>

For FY2024, P.L. 118-42 provided \$90.6 million for ERS activities. The Administration is requesting \$98.1 million for FY2025, an 8.3% increase.

### **Office of the Under Secretary for Research, Education, and Economics (REE) and Office of the Chief Scientist (OCS)**

Congress created OCS in 2008 when it established the dual role of the Under Secretary for REE as the USDA Chief Scientist (7 U.S.C. §6971). OCS coordinates research programs and activities across USDA. Administratively, it is a component of the Office of the Under Secretary for REE.

In recent years, congressional appropriations for the Office of the Under Secretary for REE have included funds for the Under Secretary and a partial staff. Congress has not directed appropriations specifically for OCS staff since its establishment. Therefore, OCS has been funded

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<sup>78</sup> See CRS In Focus IF11527, *Relocation of the USDA Research Agencies: NIFA and ERS*, by Genevieve K. Croft. For more information, congressional readers can contact Eleni Bickell, Analyst in Agricultural Policy.

via interagency agreement among the REE agencies. FY2024 appropriations provided \$1.9 million for the Office of the Under Secretary for REE. Of the \$1.9 million, \$0.5 million was allocated to OCS. The President's budget request for FY2025 includes \$4.2 million for the Office of the Under Secretary for REE, of which \$2.8 million would be allocated for OCS.

**Table 13. U.S. Department of Agriculture (USDA) R&D**

(budget authority, in millions of current dollars)

Agency or Major Program	FY2024 Enacted	FY2025 Request <sup>a</sup>	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Agricultural Research Service (ARS)</b>					
Salaries and Expenses	1,788.1	1,755.5			
Buildings and Facilities	57.2	28.4			
<b>Total, ARS</b>	<b>1,845.2</b>	<b>1,783.9</b>			
<b>National Institute of Food and Agriculture (NIFA)</b>					
<b>NIFA Research and Education</b>					
AFRI (competitive grants)	445.2	475.0			
Hatch Act (1862 Institutions)	265.0	265.0			
Evans-Allen (1890 Institutions)	89.0	98.0			
McIntire-Stennis (forestry)	38.0	36.0			
Other	238.8	232.7			
<b>Total, NIFA Research and Education</b>	<b>1,076.0</b>	<b>1,106.7</b>			
<b>NIFA Extension</b>					
Smith-Lever 3(b) and 3(c)	325.0	325.0			
Smith-Lever 3(d)	88.6	114.6			
1890 Extension Activities	72.0	76.0			
1994 Extension Activities	11.0	21.0			
Other	65.1	74.0			
<b>Total, NIFA Extension</b>	<b>561.7</b>	<b>610.6</b>			
<b>Integrated Activities</b>	<b>41.1</b>	<b>15.0</b>			
<b>Total, NIFA</b>	<b>1,678.8</b>	<b>1,732.3</b>			
<b>National Agricultural Statistics Service (NASS)</b>	<b>187.5</b>	<b>196.0</b>			
<b>Economic Research Service (ERS)</b>	<b>90.6</b>	<b>98.1</b>			
<b>Office of the Under Secretary for REE</b>	<b>1.9</b>	<b>4.2</b>			
Office of the Chief Scientist	0.5	2.8			
<b>Grand total, USDA Research, Education, and Economics Appropriations</b>	<b>3,804.0</b>	<b>3,814.5</b>			

**Sources:** CRS, compiled from *Consolidated Appropriations Act, 2024* (P.L. 118-42) and the accompanying Joint Explanatory Statement, Division B—Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2024; and USDA, *FY2025 USDA Budget Justification Notes*, <https://www.usda.gov/cj/fy2025-explanatory-notes>.

**Notes:** Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action.

a. Figures in the FY2025 Request column do not include advance appropriations.

## Department of Commerce (DOC)

Two DOC agencies have major R&D programs: the National Institute of Standards and Technology (NIST) and the National Oceanic and Atmospheric Administration (NOAA).

### National Institute of Standards and Technology (NIST)<sup>79</sup>

The mission of NIST is “to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.”<sup>80</sup> NIST research provides measurement, calibration, and quality assurance methods and techniques that support U.S. commerce, technological progress, product reliability, manufacturing processes, and public safety. NIST’s responsibilities include developing, maintaining, and retaining custody of the national standards of measurement; providing the means and methods for making measurements consistent with those standards; and ensuring that U.S. national measurement standards are compatible with those of other nations.<sup>81</sup>

Regular appropriations for NIST are provided through the annual Commerce, Justice, Science, and Related Agencies Appropriations Act. President Biden requests \$1.498 billion for NIST in FY2025, an increase of \$38.5 million (up 2.6%, in current dollars) from the FY2024 enacted appropriation of \$1.460 billion.<sup>82</sup> (See **Table 14.**)

NIST discretionary funding is provided through three accounts: Scientific and Technical Research and Services (STRS), Industrial Technology Services (ITS), and Construction of Research Facilities (CRF).

The President’s FY2025 request includes \$975.0 million for laboratory R&D programs, corporate services, and standards coordination and special programs in the STRS account, a decrease of \$105.0 million (down 9.7%) from the FY2024 enacted appropriation of \$1.080 billion.<sup>83</sup> Program changes highlighted in the STRS account include

<sup>79</sup> This section was written by Emily G. Blevins, Analyst in Science and Technology Policy, CRS Resources, Science, and Industry Division.

<sup>80</sup> National Institute of Standards and Technology (NIST) website, “General Information,” [http://nist.gov/public\\_affairs/general\\_information.cfm](http://nist.gov/public_affairs/general_information.cfm).

<sup>81</sup> 15 U.S.C. §272.

<sup>82</sup> CRS analysis of data from U.S. Department of Commerce, “National Institute of Standards and Technology,” in *The Department of Commerce Budget in Brief, Fiscal Year 2025*, p. 142, <https://www.commerce.gov/sites/default/files/2024-04/FY2025-Budget-in-Brief.pdf>; P.L. 118-42; and *Explanatory Statement*, H.R. 4366, 118<sup>th</sup> Cong., 2<sup>nd</sup> sess., *Congressional Record*, vol. 170, no. 39 (March 5, 2024), p. S1399, <https://www.congress.gov/118/crec/2024/03/05/170/39/CREC-2024-03-05.pdf>.

<sup>83</sup> The \$1,080.0 million FY2024 appropriation for the Scientific and Technical Research and Services (STRS) account included \$222.8 million for congressionally directed external projects. After the removal of congressionally directed spending for FY2024, the President’s FY2025 request of \$975.0 million for STRS represents an increase of \$117.8 million. CRS analysis of data from U.S. Department of Commerce, “National Institute of Standards and Technology,” in *The Department of Commerce Budget in Brief, Fiscal Year 2025*, p. 142; P.L. 118-42; and *Explanatory Statement*, H.R. 4366, 118<sup>th</sup> Cong., 2<sup>nd</sup> sess., *Congressional Record*, vol. 170, no. 39 (March 5, 2024), p. S1399.

- \$47.7 million for activities assigned to NIST in Executive Order 14110, “Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence,”<sup>84</sup> and
- \$13.9 million to expand NIST’s quantum information S&T-related R&D efforts.<sup>85</sup>

The FY2025 request would provide \$212.0 million for the ITS account, which would represent no change from the FY2024 enacted level.<sup>86</sup> The FY2025 request’s allocation of funding within the ITS account would also leave FY2024 program levels unchanged, with \$175.0 million requested for the Manufacturing Extension Partnership (MEP) program and \$37.0 million for Manufacturing USA.<sup>87</sup> Program changes highlighted in the ITS account include proposed spending reductions within the MEP program and Manufacturing USA to offset FY2025 inflationary costs.<sup>88</sup>

Funding requested for MEP would continue support for the national network of 51 MEP Centers, which develop a range of services for area manufacturers, such as initiatives focused on supply chain optimization, workforce development, and technology adoption.<sup>89</sup>

Funding for Manufacturing USA would continue program coordination and network support for a projected 18 Manufacturing USA institutes.<sup>90</sup> The proposed budget also requests funding for merit-based investments in industry test beds at Manufacturing USA institutes to accelerate the transfer of technology and workforce skills from institutes to U.S. production.<sup>91</sup>

The FY2025 request includes \$311.5 million for the CRF account to address the repair and maintenance backlog of NIST facilities, up \$143.5 million (up 85.4%) from the FY2024 enacted level of \$168.0 million.<sup>92</sup> Program changes highlighted within the CRF account include a requested \$178.3 million to complete the ongoing modernization of Building 245, which is NIST’s primary facility for its work on measurement standards and calibrations for electromagnetic radiation and radioactivity used by government entities and private industry throughout the United States as well as globally.<sup>93</sup>

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<sup>84</sup> U.S. Department of Commerce, “National Institute of Standards and Technology,” in *The Department of Commerce Budget in Brief, Fiscal Year 2025*, p. 146.

<sup>85</sup> Ibid.

<sup>86</sup> CRS analysis of data from U.S. Department of Commerce, “National Institute of Standards and Technology,” in *The Department of Commerce Budget in Brief, Fiscal Year 2025*, p. 142, <https://www.commerce.gov/sites/default/files/2024-04/FY2025-Budget-in-Brief.pdf>; P.L. 118-42; and *Explanatory Statement*, H.R. 4366, 118<sup>th</sup> Cong., 2<sup>nd</sup> sess., *Congressional Record*, vol. 170, no. 39 (March 5, 2024), p. S1399, <https://www.congress.gov/118/crec/2024/03/05/170/39/CREC-2024-03-05.pdf>.

<sup>87</sup> U.S. Department of Commerce, “National Institute of Standards and Technology,” in *The Department of Commerce Budget in Brief, Fiscal Year 2025*, p. 142.

<sup>88</sup> Ibid., p. 148.

<sup>89</sup> Ibid., p. 142.

<sup>90</sup> The FY2025 Budget Request estimates that by the end of FY2024, the network of Manufacturing USA institutes will include two institutes sponsored by the Department of Commerce, nine sponsored by DOD, and seven sponsored by DOE; *ibid.*, p. 142.

<sup>91</sup> Ibid.

<sup>92</sup> CRS analysis of data from U.S. Department of Commerce, “National Institute of Standards and Technology,” in *The Department of Commerce Budget in Brief, Fiscal Year 2025*, p. 142, <https://www.commerce.gov/sites/default/files/2024-04/FY2025-Budget-in-Brief.pdf>; P.L. 118-42; and *Explanatory Statement*, H.R. 4366, 118<sup>th</sup> Cong., 2<sup>nd</sup> sess., *Congressional Record*, vol. 170, no. 39 (March 5, 2024), p. S1399, <https://www.congress.gov/118/crec/2024/03/05/170/39/CREC-2024-03-05.pdf>.

<sup>93</sup> U.S. Department of Commerce, “National Institute of Standards and Technology,” in *The Department of Commerce Budget in Brief, Fiscal Year 2025*, p. 143.

**Table 14. National Institute of Standards and Technology (NIST) Funding**

(budget authority, in millions of current dollars)

Account or Program	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Scientific and Technical Research and Services</b>					
Laboratory Programs	n/a	848.9			
Corporate Services	n/a	17.7			
Standards Coordination and Special Programs	n/a	108.4			
Congressionally Directed External Projects	222.8	0			
<b>Total</b>	<b>1,080.0</b>	<b>975.0<sup>a</sup></b>			
<b>Industrial Technology Services</b>					
Manufacturing Extension Partnership	175.0	175.0			
Manufacturing USA	37.0	37.0			
<b>Total</b>	<b>212.0</b>	<b>212.0</b>			
<b>Construction of Research Facilities</b>					
Construction and Major Renovations	n/a	178.3			
Safety, Capacity, Maintenance and Major Repairs	87.8	133.2			
Congressionally Directed Extramural Construction	80.2	0			
<b>Total</b>	<b>168.0</b>	<b>311.5</b>			
<b>Grand total</b>	<b>1,460.0</b>	<b>1,498.5</b>			

**Source:** NIST, *National Technical Information Service: Fiscal Year 2025 Budget Submission to Congress*, March 2024, p. NIST-2, <https://www.commerce.gov/sites/default/files/2024-03/NIST-NTIS-FY2025-Congressional-Budget-Submission.pdf>; P.L. 118-42; and *Explanatory Statement*, H.R. 4366, 118<sup>th</sup> Cong., 2<sup>nd</sup> sess., *Congressional Record*, vol. 170, no. 39 (March 5, 2024), p. S1399, <https://www.congress.gov/118/crec/2024/03/05/170/39/CREC-2024-03-05.pdf>.

**Notes:** n/a = not available. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action.

- a. This amount does not include transfer of \$1.5 million from the Department of Justice for NIST Office of Law Enforcement Standards, see NIST *Fiscal Year 2025 Budget Submission to Congress*, p. NIST-10.

### FY2025 Funding Provided by the CHIPS Act of 2022

In addition to regular appropriations, in July 2022, Congress passed the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act (P.L. 117-167) which, among other things, included the CHIPS Act of 2022 as Division A. The CHIPS Act of 2022 provided mandatory funding for FY2022-FY2026 and amended NIST authorities established under the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (P.L. 116-283). These funds are not included in **Table 14**.

For FY2025, P.L. 117-167 appropriated \$6.1 billion for the Secretary of Commerce to carry out the provisions specified in Sections 9902 and 9906 of P.L. 116-283, as amended. The provisions seek to expand U.S. domestic semiconductor manufacturing fabrication capacity and R&D through financial incentives—direct financial assistance (i.e., grants, loans, loan guarantees) and tax deductions—and the formation of public-private joint research activities. NIST's FY2025

budget submission to Congress indicates that the \$6.1 billion appropriated for FY2025 by P.L. 117-167 will be allocated as follows:

- \$5 billion for the Incentives Program to continue making financial assistance awards to spur investment in domestic semiconductor production capacity and to continue addressing national security requirements;<sup>94</sup>
- \$1.03 billion for the National Semiconductor Technology Center to provide ongoing funding for projects and operations;<sup>95</sup>
- \$23 million to provide continued support for NIST metrology R&D programs;<sup>96</sup> and
- \$25 million to provide support for the Manufacturing USA institutes established using prior year funding.<sup>97</sup>

## National Oceanic and Atmospheric Administration (NOAA)<sup>98</sup>

NOAA conducts scientific research in areas such as coastal and marine ecosystems, the atmosphere, global climate change, weather, and oceans; collects and disseminates data on the oceans and atmosphere; and manages coastal and marine species and environments. NOAA was created in 1970 by Reorganization Plan No. 4.<sup>99</sup>

NOAA is organized into six line offices or subagencies: the National Environmental Satellite, Data, and Information Service (NESDIS); National Marine Fisheries Service (NMFS); National Ocean Service (NOS); National Weather Service (NWS); Office of Oceanic and Atmospheric Research (OAR); and the Office of Marine and Aviation Operations (OMAO). The line offices are supported by Mission Support, which conducts crosscutting administrative functions related to education, planning, information technology, human resources, and infrastructure. Through the annual Commerce, Justice, Science, and Related Agencies appropriations act, Congress provides most of the discretionary funding for the line offices and Mission Support through two accounts: (1) Operations, Research, and Facilities and (2) Procurement, Acquisition, and Construction.

NOAA has released several documents and guidance that describe its R&D mission and focus areas. The most recent NOAA R&D plan, published in June 2020, identifies R&D priorities in three thematic areas: (1) reduction of societal impacts from hazardous weather and other environmental phenomena, (2) sustainable use and stewardship of ocean and coastal resources, and (3) a robust and effective research, development, and transition enterprise.<sup>100</sup> In addition, the agency issued a NOAA administrative order (NAO) focused on R&D in June 2022.<sup>101</sup> The NAO “establishes the principles, policies, and responsibilities by which [R&D] throughout NOAA can

<sup>94</sup> Authorized in Section 9902 of P.L. 116-283; NIST, *National Technical Information Service: Fiscal Year 2025 Budget Submission to Congress*, March 2024, p. NIST-132, <https://www.commerce.gov/sites/default/files/2024-03/NIST-NTIS-FY2025-Congressional-Budget-Submission.pdf>.

<sup>95</sup> Authorized in Section 9906(c) of P.L. 116-283; *ibid.*, p. NIST-133.

<sup>96</sup> Authorized in Section 9906(e) of P.L. 116-283; *ibid.*

<sup>97</sup> Authorized in Section 9906(f) of P.L. 116-283; *ibid.*

<sup>98</sup> This section was written by Eva Lipiec, Specialist in Natural Resources Policy, CRS Resources, Science, and Industry Division.

<sup>99</sup> “Reorganization Plan No. 4 of 1970,” 35 *Federal Register* 15627-15630, October 6, 1970.

<sup>100</sup> National Oceanic and Atmospheric Administration (NOAA), *NOAA Research and Development Vision Areas: 2020-2026*, June 2020, p. 2, [https://research.noaa.gov/wp-content/uploads/2023/05/noaa\\_24933\\_DS1.pdf](https://research.noaa.gov/wp-content/uploads/2023/05/noaa_24933_DS1.pdf).

<sup>101</sup> NOAA, “NAO 216-115B: Research and Development in NOAA,” issued June 7, 2022, <https://www.noaa.gov/organization/administration/nao-216-115b-research-and-development-in-noaa>.



be continually reviewed, evaluated and rebalanced in light of evolving mission needs.”<sup>102</sup> The handbook accompanying the NAO provides information on the planning, monitoring, evaluation, and reporting of NOAA R&D.<sup>103</sup>

For FY2025, President Biden has requested \$1,164.9 million for NOAA R&D funding, including R&D-related equipment and facilities.<sup>104</sup> This is \$80.4 million (-6.5%) below the FY2024 enacted level of \$1,245.3 million.<sup>105</sup> The FY2025 request does not include advance appropriations from laws such as the Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58) or P.L. 117-169, commonly referred to as the Inflation Reduction Act (IRA). The President’s FY2025 request for NOAA R&D is 16.4% of the requested FY2025 NOAA discretionary direct obligations of \$7.1 billion.<sup>106</sup> According to OMB, direct obligations include annual appropriations, transfers, and recoveries from prior-year obligations.<sup>107</sup> Of the total requested for NOAA R&D in FY2025, \$684.0 million is for research (58.7%), \$176.7 million is for development (15.2%), and \$304.3 million is for R&D equipment and facilities (26.1%).<sup>108</sup> **Table 15** provides R&D amounts for NOAA enacted in FY2024 and as requested by the Administration for FY2025.

OAR accounts for the majority of NOAA R&D budget requests and enacted amounts in most years, including for the FY2025 budget request. The Administration requested \$608.8 million for OAR R&D in FY2025, which is \$95.7 million (-13.6%) below the FY2024 enacted funding level of \$704.5 million.<sup>109</sup> OAR conducts research in three major areas—(1) climate; (2) weather and air chemistry; and (3) oceans, coasts, and the Great Lakes—and supports high-performance computing requirements and research in uncrewed aircraft and marine systems.

For FY2025, among R&D activities, the Administration requested the largest amounts of R&D funding for climate and weather laboratories and cooperative institutes, and research supercomputing.<sup>110</sup> The President requested

<sup>102</sup> NOAA, *Procedural Handbook for NOAA Administrative Order (NAO) 216-115B: Research and Development in NOAA*, January 2023, p. 3, [https://www.noaa.gov/sites/default/files/2023-01/handbook\\_NAO-216-115B.pdf](https://www.noaa.gov/sites/default/files/2023-01/handbook_NAO-216-115B.pdf).

<sup>103</sup> *Ibid.*, pp. 3-4.

<sup>104</sup> NOAA, *Budget Estimates FY2025*, March 2024, p. NOAA-29, [https://www.noaa.gov/sites/default/files/2024-03/NOAA\\_FY25\\_Congressional\\_Justification.pdf](https://www.noaa.gov/sites/default/files/2024-03/NOAA_FY25_Congressional_Justification.pdf) (hereinafter NOAA, *Budget Estimates FY2025*). NOAA was unable to provide the amount of Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58) and Inflation Reduction Act (IRA; P.L. 117-169) funds requested for R&D in FY2025 (email correspondence with the NOAA Budget Office, May 1, 2024).

<sup>105</sup> Email correspondence with the NOAA Budget Office, April 29, 2024. R&D funding amounts in annual appropriations acts are estimated by NOAA because neither the legislative text nor the explanatory statement provide a breakout of R&D funding and include only discretionary direct obligations (telephone conversation with NOAA Budget Office, September 3, 2020). NOAA allocated another \$323.5 million from IIJA and IRA funds for FY2024 R&D activities. NOAA was unable to provide the amount of IIJA and IRA funds requested for R&D in FY2025 (email correspondence with the NOAA Budget Office, May 1, 2024).

<sup>106</sup> NOAA, *Budget Estimates FY2025*, p. Control Table-18.

<sup>107</sup> Congressional documents sometimes refer to direct obligations as program levels. (For example, see “Regarding the House Amendment to the Senate Amendment to H.R. 2471, Consolidated Appropriations Act, 2022,” Explanatory Statement Submitted by Ms. DeLauro, chair of the House Committee on Appropriations, *Congressional Record*, vol. 168 (March 9, 2022), pp. H1775 and H1781.) For further descriptions of what types of obligations are direct versus reimbursable, see OMB, “Preparation, Submission, and Execution of the Budget,” Circular No. A-11, July 2016, p. 3 of Section 83, [https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/a11\\_current\\_year/a11\\_2016.pdf](https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/a11_current_year/a11_2016.pdf).

<sup>108</sup> NOAA, *Budget Estimates FY2025*, p. Control Table-18.

<sup>109</sup> Email correspondence with the NOAA Budget Office, April 29, 2024. NOAA requested a total of \$645.7 million in FY2025 for Office of Oceanic and Atmospheric Research (OAR) R&D and non-R&D activities (NOAA, *Budget Estimates FY2025*, p. Control Table-3).

<sup>110</sup> Email correspondence with the NOAA Budget Office, April 29, 2024.



- \$95.2 million for climate labs and cooperative institutes in FY2025, \$8.9 million (-8.6%) less than the FY2024 enacted amount of \$104.1 million;<sup>111</sup>
- \$86.1 million for weather and air chemistry labs and cooperative institutes in FY2025, \$4.0 million (-4.5%) less than the FY2024 enacted amount of \$90.2 million;<sup>112</sup> and
- \$68.5 million for research supercomputing in FY2025, \$18.5 million (37%) more than the FY2024 enacted amount of \$50.0 million.<sup>113</sup>

**Table 15. National Oceanic and Atmospheric Administration (NOAA) Annual R&D Enacted and Requested Direct Obligations**

(budget authority, in millions of current dollars)

Office or Subagency	FY2024 Enacted <sup>a</sup>	FY2025 Request <sup>b</sup>	FY2025 House	FY2025 Senate	FY2025 Enacted
National Environmental Satellite, Data, and Information Service (NESDIS)	59.9	60.7			
National Marine Fisheries Service (NMFS)	75.6	60.9			
National Ocean Service (NOS)	121.1	105.3			
National Weather Service (NWS)	41.9	39.4			
Office of Marine and Aviation Operations (OMAO)	227.7	274.7			
Office of Oceanic and Atmospheric Research (OAR)	704.5	608.8			
Mission Support	14.8	15.0			
<b>Total</b>	<b>1,245.3</b>	<b>1,164.9</b>			

**Sources:** NOAA Budget Office via email correspondence in April 2024 and NOAA, *Budget Estimates Fiscal Year 2025*, May 2024, p. NOAA-29, [https://www.noaa.gov/sites/default/files/2024-03/NOAA\\_FY25\\_Congressional\\_Justification.pdf](https://www.noaa.gov/sites/default/files/2024-03/NOAA_FY25_Congressional_Justification.pdf).

**Notes:** Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action. Direct obligations include annual appropriations, transfers, and recoveries from

<sup>111</sup> NOAA, *Budget Estimates FY2025*, p. Control Table-3, and Sen. Murray, Unanimous Consent Agreement - H.R. 4366, *Congressional Record*, vol. 170, no. 39 (March 5, 2024), p. S1402 (hereinafter Sen. Murray, FY2024 Unanimous Consent Agreement, 2024). Congress provided \$104.1 million for climate laboratories and cooperatives institutes in FY2023 (Explanatory Statement Submitted by Sen. Leahy, chair of the Senate Committee on Appropriations, Regarding H.R. 2617, Consolidated Appropriations Act, 2023, *Congressional Record*, vol. 168, no. 198 (December 20, 2022), p. S7910 (hereinafter Sen. Leahy, FY2023 Explanatory Statement, 2022).

<sup>112</sup> Ibid. Congress provided \$93.2 million for weather and air chemistry laboratories and cooperatives institutes in FY2023 (Sen. Leahy, FY2023 Explanatory Statement, 2022, p. S7910).

<sup>113</sup> NOAA, *Budget Estimates FY2025*, p. Control Table-10, and Sen. Murray, FY2024 Unanimous Consent Agreement, 2024, p. S1402. Congress provided \$70.0 million for research supercomputing in FY2023 annual funding (Sen. Leahy, FY2023 Explanatory Statement, 2022, p. S7917).

prior-year obligations. Congress and NOAA use several different budgetary terms, such as direct obligations, program levels, budget authority, and appropriations.

- a. Amounts in the FY2024 Enacted column do not include advance appropriations, such as those from the Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58) or the Inflation Reduction Act (IRA; P.L. 117-169). Advance appropriations made up a total of \$323.5 million in FY2024, on top of the annual FY2024 amount, with the most funding allocated to OAR (\$221.2 million).
- b. Amounts in the FY2025 Request column do not include advance appropriations, such as those from IIJA and IRA.

## Department of Veterans Affairs (VA)<sup>114</sup>

The VA provides health care and health-related services to eligible veterans through the Veterans Health Administration (VHA). VHA's primary mission is to provide health care services to eligible veterans and some family members.<sup>115</sup> The VHA is also statutorily required to conduct medical research into the special health care needs of veterans.<sup>116</sup>

The President is requesting \$1.715 billion for VA R&D in FY2025, a decrease of \$110.5 million (6.1%) from FY2024 enacted levels.<sup>117</sup> (See **Table 16**.) According to the President's request, FY2025 strategic priorities for VA R&D include increasing veterans' access to clinical trials; increasing the real-world impact of VA research; effectively using VA data for veterans; promoting diversity, equity, and inclusion within the VA sphere of influence; and building community through VA research.<sup>118</sup> In addition, the VA plans to prioritize research on pain and opioid use, environmental exposures related to military service, traumatic brain injury, cancer and precision oncology, and suicide prevention.<sup>119</sup>

VA R&D is generally funded through two major streams—the Medical and Prosthetic Research and Medical Care Support accounts.<sup>120</sup> The Medical Care Support account provides administrative and other support for VA researchers and R&D projects, including infrastructure maintenance. Medical Care Support appropriations fund a range of activities across VHA; R&D is one of those activities. The funding that will be allocated from Medical Care Support to support R&D is generally unclear unless Congress provides funding at the precise level of the request. In general, R&D funding levels from Medical Care Support are known only after the VA allocates its appropriations to specific activities and reports those figures.

The FY2025 request includes \$868 million for VA's Medical and Prosthetic Research account, a decrease of \$75 million (8.0%) compared to FY2024 enacted levels.<sup>121</sup> The request includes \$787.9 million in funding for research supported by the agency's Medical Care Support account,

<sup>114</sup> This section was written by Jared S. Sussman, Analyst in Health Policy, CRS Domestic Social Policy Division.

<sup>115</sup> 38 U.S.C. §7301.

<sup>116</sup> 38 U.S.C. §7303(a)(3).

<sup>117</sup> Department of Veterans Affairs, *Volume II: Medical Programs, Congressional Submission, FY2025*, p. VHA-585. <https://www.va.gov/opa/docs/remediation-required/management/fy2025-va-budget-volume-ii.pdf>.

<sup>118</sup> *Ibid.*, pp. VHA-588 and VHA-589.

<sup>119</sup> *Ibid.*, p. VHA-589.

<sup>120</sup> The funding for Medical Care Support is derived from the Medical Services, Medical Support and Compliance, and Medical Facilities appropriations accounts. For more information, see CRS Report R48056, *Department of Veterans Affairs FY2024 Appropriations*, by Sidath Viranga Panangala and Jared S. Sussman.

<sup>121</sup> Department of Veterans Affairs, *Volume II: Medical Programs, Congressional Submission, FY2025*, p. VHA-585. The FY2024 amount for the Medical and Prosthetic Research account is the amount enacted in FY2024 as included in the Military Construction, Veterans Affairs, and Related Agencies Appropriations Act, 2024 (Division A of P.L. 118-42).

a decrease of \$48.5 million (5.8%) compared with FY2024 enacted levels.<sup>122</sup> As passed by the House on June 5, 2024, H.R. 8580, the Military Construction, Veterans Affairs, and Related Agencies Appropriations Act, 2025, would provide \$924 million for the Medical and Prosthetic Research Account, \$56 million (6.5%) more than the FY2025 request; levels for research supported by the Medical Care Support account are not specified.

The Honoring our PACT Act of 2022 (P.L. 117-168) established the Cost of War Toxic Exposure Fund (TEF) to be administered by the VA Secretary.<sup>123</sup> Among other purposes, funding from this mandatory account may be used for investment in medical and other research relating to exposure to environmental hazards. Beginning with FY2023, funds from TEF are included in VA's R&D budget. The President's budget request includes \$59 million for the TEF in FY2025, an increase of \$13.0 million from FY2024 enacted levels.<sup>124</sup>

The Medical and Prosthetics Research Program is an intramural program. In general, each program principal investigator (PI) and any co-principal investigator (Co-PI) must be a VA employee with at least a five-eighths appointment (25 hours per week) in the VA.<sup>125</sup> The Medical and Prosthetics R&D program is managed by the VHA Office of Research and Development (ORD) and supported research is conducted at VA Medical Centers and VA-approved sites nationwide. According to ORD, the mission of VA research includes “improv[ing] Veterans’ health and well-being via basic, translational, clinical, health services, and rehabilitative research and apply[ing] scientific knowledge to develop effective individualized care solutions for Veterans.”<sup>126</sup> ORD consists of four main research services, each headed by a director:

- Biomedical Laboratory R&D conducts preclinical research to understand life processes at the molecular, genomic, and physiological levels.
- Clinical Science R&D supports clinical trials and other human subjects research to determine the feasibility and effectiveness of new treatments such as drugs, therapies, or devices; compare existing therapies; and improve clinical care and practice.
- Health Services R&D conducts studies to identify and promote effective and efficient strategies to improve the quality and accessibility of the VA health system and patient outcomes and to minimize health care costs.
- Rehabilitation R&D conducts research and develops novel approaches to improving the quality of life of impaired and disabled veterans.<sup>127</sup>

In addition to intramural support, VA researchers are eligible to obtain funding for their research from extramural sources, including other federal agencies, private foundations and health

<sup>122</sup> Ibid.

<sup>123</sup> 38 U.S.C. §324. For more information on TEF, see CRS Report R48056, *Department of Veterans Affairs FY2024 Appropriations*, by Sidath Viranga Panangala and Jared S. Sussman, and CRS Report R47542, *Honoring Our PACT Act of 2022 (P.L. 117-168): Expansion of Health Care Eligibility and Toxic Exposure Screenings*, by Sidath Viranga Panangala.

<sup>124</sup> Department of Veterans Affairs, *Volume II: Medical Programs, Congressional Submission, FY2025*, p. VHA-585. The FY2024 amount for the Medical and Prosthetic Research account is the amount enacted in FY2024 as included in the Military Construction, Veterans Affairs, and Related Agencies Appropriations Act, 2024 (Division A of P.L. 118-42).

<sup>125</sup> Department of Veterans Affairs, Veterans Health Administration, *Department of Veterans Affairs Office of Research & Development Program Guide 1200.15: Eligibility for VA Research Support*, July 13, 2018, p. 1.

<sup>126</sup> Department of Veterans Affairs, “Office of Research and Development,” <https://www.research.va.gov/about/default.cfm>.

<sup>127</sup> Ibid.

organizations, and commercial entities. According to the President’s FY2025 budget request, these additional R&D resources are estimated at \$497 million in FY2025.<sup>128</sup>

**Table 16** summarizes VA R&D funding from the Medical and Prosthetic Research, Toxic Exposure Fund, and Medical Care Support accounts. **Table 17** details amounts to be spent in designated research areas, which VA describes as “areas where there is a prevalence of conditions within VA patient populations, uniqueness of a specific patient population, and where its disease burden or the importance of the question to health care delivery within VA.”<sup>129</sup> Funding for research projects that span multiple areas may be included in several designated research areas; thus, the amounts in **Table 17** total to more than the appropriation or request for VA R&D.

**Table 16. Department of Veterans Affairs (VA) R&D**

(budget authority, in millions of current dollars)

Account	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
Medical and Prosthetic Research	943.0	868.0	923.5		
Toxic Exposure Fund	46.0	59.0	n/a		
Medical Care Support	836.4	787.9	n/a		
<b>Total</b>	<b>1,825.4</b>	<b>1,714.9</b>	<b>n/a</b>		

**Sources:** VA, *Volume II: Medical Programs, Congressional Submission, FY2025*, p. VHA-585, <https://www.va.gov/opa/docs/remediation-required/management/fy2025-va-budget-volume-ii.pdf>, and VA, *Volume II: Medical Programs, Congressional Submission, FY2025*, p. VHA-585. The FY2024 amount for the Medical and Prosthetic Research account is the amount enacted in FY2024 as included in the Military Construction, Veterans Affairs, and Related Agencies Appropriations Act, 2024 (Division A of P.L. 118-42). The FY2025 House number for the Medical and Prosthetic Research account is the amount in H.R. 8580, the Military Construction, Veterans Affairs, and Related Agencies Appropriations Act, 2025, as passed by the House on June 5, 2024. The Toxic Exposure Fund and Medical Care Support amounts are not clearly stated in appropriations legislation; therefore, the amounts shown for these accounts for FY2024 are estimates from the FY2025 budget submission.

**Notes:** n/a = not available. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action. VA researchers also receive grants from other federal and nonfederal resources, including the National Institutes of Health, the Department of Defense, and the Centers for Disease Control and Prevention; these resources are estimated at \$540 million in FY2024 and \$497 million in FY2025. In addition, the VA estimates reimbursements associated with agency R&D at \$61 million in FY2024 and \$61 million in FY2025, increasing the total amount of R&D performed at VA to \$2.43 billion in FY2024 and \$2.27 billion in the FY2025 request.

<sup>128</sup> Department of Veterans Affairs, *Volume II: Medical Programs, Congressional Submission, FY2025*, p. VHA-585, <https://www.va.gov/opa/docs/remediation-required/management/fy2025-va-budget-volume-ii.pdf>.

<sup>129</sup> Ibid. p. VHA-589.

**Table 17. Department of Veterans Affairs (VA) R&D by Designated Research Area**  
(budget authority, in millions of current dollars)

Designated Research Area	FY2024 Estimate	FY2025 Request
Acute and Traumatic Injury	27.0	24.5
Aging	156.0	142.0
Autoimmune, Allergic, and Hematopoietic Disorders	40.8	37.2
Cancer	93.8	95.1
Central Nervous System Injury and Associated Disorders	160.2	154.9
Degenerative Diseases of Bones and Joints	42.9	39.0
Dementia and Neuronal Degeneration	43.7	39.7
Diabetes and Major Complications	49.2	44.8
Digestive Diseases	27.1	24.6
Emerging Pathogens/Bio-Terrorism	2.9	2.7
Gulf War Veterans Illness	15.2	16.0
Health Systems	73.3	66.7
Heart Disease/Cardiovascular Health	75.2	68.5
Infectious Disease	60.0	54.6
Kidney Disorders	18.8	17.1
Lung Disorders	29.1	26.5
Mental Illness	138.9	134.9
Military Occupations and Environmental Exposures	46.0	59.0
Other Chronic Diseases	7.7	7.0
Prosthetics	26.4	24.0
Sensory Loss	24.1	21.9
Special Populations	44.6	40.6
Substance Abuse	31.0	28.2

**Source:** VA, *Volume II: Medical Programs, Congressional Submission, FY2025*, p. VHA-590, <https://www.va.gov/opa/docs/remediation-required/management/fy2025-va-budget-volume-ii.pdf>.

**Notes:** Projects that span multiple areas may be included in several designated research areas; therefore, the amounts depicted in this table total to more than the FY2024 amount and the FY2025 request for Medical and Prosthetic Research.

## Department of Transportation (DOT)<sup>130</sup>

DOT was established by the Department of Transportation Act (P.L. 89-670) on October 15, 1966. The primary purposes of DOT R&D activities as defined by Congress are improving mobility of people and goods, reducing congestion, promoting safety, improving the durability

<sup>130</sup> This section was written by Jennifer J. Marshall, Analyst in Transportation Policy, CRS Resources, Science, and Industry Division.

and extending the life of transportation infrastructure, preserving the environment, and preserving the existing transportation system.<sup>131</sup>

Funding for DOT R&D is generally included in appropriations line items that also include non-R&D activities. The amount of funding provided by appropriations legislation that is allocated to R&D is unclear unless funding is provided at the precise level of the budget request. In general, R&D funding levels are known only after DOT agencies allocate their final appropriations to specific activities and report those figures. Therefore, the information provided below for FY2024 funding for DOT R&D largely uses the estimates for FY2024 provided as part of the Administration's FY2025 budget submission.

For FY2025, the Biden Administration is requesting a total of \$1.44 billion for DOT R&D activities and facilities in the Federal Highway Administration (FHWA), the Federal Aviation Administration (FAA), the Office of the Secretary (OST), the National Highway Traffic Safety Administration (NHTSA), the Federal Railroad Administration (FRA), the Federal Transit Administration (FTA), the Federal Motor Carrier Safety Administration (FMCSA), and the Pipeline and Hazardous Materials Safety Administration (PHMSA) (see **Table 18**). The bulk of DOT R&D funding goes to FHWA and FAA. The Biden Administration's request for FY2025 indicates a 1.4% increase (in current dollars) in funding for R&D activities over the FY2024 estimated funding of \$1.42 billion.<sup>132</sup>

## Federal Highway Administration (FHWA)

The President's request of \$520 million for R&D activities and facilities at FHWA is slightly higher than the FY2024 estimated amount of \$519 million. The request includes \$147 million for FHWA's Highway Research and Development program, which seeks to improve safety, foster innovation, accelerate projects; enhance the design and construction of transportation infrastructure; provide data and analysis for decisionmaking; and reduce congestion. The request also includes \$110 million for the deployment of technology to enhance the safety, efficiency, and convenience of surface transportation under the agency's Intelligent Transportation Systems program.<sup>133</sup>

## Federal Aviation Administration (FAA)

The President's FY2025 request of \$493.2 million for R&D activities and facilities at FAA would be a reduction of \$10.9 million (-2.2%) from the FY2024 estimated funding of \$504.1 million. The FY2025 request includes \$250 million for the agency's Research, Engineering, and Development (RE&D) account, a 5% decrease from \$255 million estimated for FY2024. Funding within the RE&D account seeks to improve aircraft safety through research in fields such as fire safety, advanced materials, propulsion systems, aircraft icing, and continued airworthiness, in addition to safety research related to unmanned aircraft systems and the integration of

<sup>131</sup> 49 U.S.C. §6501 note, "Findings."

<sup>132</sup> The President's FY2025 request for the Maritime Administration (MARAD), the Office of Inspector General (OIG), and the Great Lakes St. Lawrence Seaway Development Corporation (GLS) does not include R&D. As described in the DOT budget estimates, because full-year FY2024 appropriations were not enacted when the budget was prepared, "amounts included for 2024 reflect the annualized level provided by the continuing resolution." These are referred to in budget documents as the "annualized continuing resolution [CR]" funding amounts. DOT budget estimates are available at <https://www.transportation.gov/mission/budget/dot-budget-and-performance-documents#BudgetEstimates>.

<sup>133</sup> Federal Highway Administration, *Budget Estimates: Fiscal Year 2025*, 2024, p. IV-7, [https://www.transportation.gov/sites/dot.gov/files/2024-03/FHWA-FY-2025\\_Budget\\_508.pdf](https://www.transportation.gov/sites/dot.gov/files/2024-03/FHWA-FY-2025_Budget_508.pdf).



commercial space operations into the national airspace. The RE&D account also supports research to reduce the environmental impacts of aviation (i.e., noise and emissions).<sup>134</sup>

Additionally, the FY2025 request includes \$184.8 million for the agency's Facilities and Equipment account, a reduction of \$8.4 million (-4.4%) from FY2024 estimated amounts. The Facilities and Equipment account funds the construction and rehabilitation for physical assets.

## Office of the Secretary (OST)

The President's FY2025 request includes DOT R&D activities and facilities funding for OST, totaling \$161.9 million, \$8.2 million (5.3%) above the FY2024 estimated level of \$153.8 million. The request for OST includes funding for transportation planning research, transportation technology research, and the Strengthening Mobility and Revolutionizing Transportation (SMART) program.<sup>135</sup> The SMART program is a discretionary grant program established through the IIJA (P.L. 117-58).<sup>136</sup> Division J, Title VIII, of the IIJA appropriated \$100 million for each fiscal year from FY2022 through FY2026 for SMART from the General Fund. The IIJA also authorized appropriations from the General Fund of \$100 million annually for SMART for each fiscal year from FY2022 through FY2026.<sup>137</sup>

## National Highway Traffic Safety Administration (NHTSA)

The President is requesting \$124.3 million in R&D and R&D facilities funding for FY2025 for NHTSA, \$5.5 million (4.7%) above the FY2024 estimated funding level (\$118.7 million). NHTSA R&D focuses on automation and the study of human/machine interfaces, advanced vehicle safety technology, improving vehicle crashworthiness and crash avoidance, and reducing unsafe driving behaviors.

## Federal Railroad Administration (FRA)

The Administration's request for FRA R&D for FY2025 totals \$52 million, \$8 million (18.2%) above the FY2024 estimated level of \$44 million. R&D activities at FRA include railroad safety research, rail industry emerging technologies, and technical assistance.

## Federal Transit Administration (FTA)

The President is requesting \$39.4 million in R&D and R&D facilities funding for FY2025 for FTA, \$5.2 million (-11.7%) below the FY2024 estimated funding level (\$44.6 million). FTA R&D activities aim to improve public transportation safety, sustainability, equity, and accessibility. The FY2025 request does not include funding for Transit Infrastructure Grants which had a funding level of \$7 million in both of FY2023 and FY2024.

<sup>134</sup> Federal Aviation Administration, *Budget Estimates: Fiscal Year 2025, 2024*, p. 10, [https://www.transportation.gov/sites/dot.gov/files/2024-03/FAA\\_FY\\_2025\\_Budget\\_Request\\_508-v5.pdf](https://www.transportation.gov/sites/dot.gov/files/2024-03/FAA_FY_2025_Budget_Request_508-v5.pdf).

<sup>135</sup> U.S. Department of Transportation, Office of the Secretary, *SMART Grants Program*, <https://www.transportation.gov/grants/SMART>.

<sup>136</sup> P.L. 117-58 §25005; 23 U.S.C. §502 note.

<sup>137</sup> *Ibid.*



## Federal Motor Carrier Safety Administration (FMCSA)

The President is requesting \$26.1 million in research, development, and technology funding for FY2025 for FMCSA, \$12 million (85%) above the \$14.1 million enacted for FY2024. FMCSA's research and technology programs focus on research of driver, vehicle, and carrier issues impacting commercial motor vehicle safety, and crosscutting research related to safety data collection and information sharing to improve the effectiveness of commercial vehicle inspections. The increased funding request supports agency research efforts investigating the overall business, economic, and technical trends in the commercial motor vehicle industry, and identifying and evaluating new and refined methods for collecting, analyzing, and disseminating safety-related information.

## Pipeline and Hazardous Materials Safety Administration (PHMSA)

The President is requesting \$21.6 million in research, development, and technology funding for FY2025 for PHMSA, \$1.5 million (7.5%) above the \$20.1 million estimated level for FY2024. The PHMSA Office of Pipeline Safety focuses on the research of pipeline safety engineering, applications, and recommendations. The Office of Hazardous Materials Safety is responsible for “improv[ing] risk management and mitigation, fostering emerging technologies, promoting packaging integrity, and conducting technical analysis to aid in risk assessments.”<sup>138</sup>

**Table 18. Department of Transportation (DOT) R&D Activities and Facilities**

(budget authority, in millions of current dollars)

Agency	FY2024 Estimate <sup>a</sup>	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Federal Highway Administration (FHWA)<sup>b</sup></b>					
Highway Research and Development	147.0	147.0			
Technology and Innovation Deployment Program	110.0	110.0			
Training and Education Program	25.5	25.8			
Intelligent Transportation Systems	110.0	110.0			
University Transportation Centers	100.0 <sup>c</sup>	100.5			
Bureau of Transportation Statistics	26.5	26.8			
<b>Total</b>	<b>519.0</b>	<b>520.0</b>			
<b>Federal Aviation Administration (FAA)</b>					
Research, Engineering & Development <sup>d</sup>	255.0	250.0			
Facilities & Equipment <sup>e</sup>	193.2	184.8			
Grants-in-Aid for Airports	55.8 <sup>f</sup>	58.4			
<b>Total</b>	<b>504.1</b>	<b>493.2</b>			

<sup>138</sup> Pipeline and Hazardous Materials Safety Administration, *Budget Estimates: Fiscal Year 2025*, 2024, p. 93, [https://www.transportation.gov/sites/dot.gov/files/2024-03/PHMSA\\_FY\\_2025\\_CJ\\_508\\_Compliant.pdf](https://www.transportation.gov/sites/dot.gov/files/2024-03/PHMSA_FY_2025_CJ_508_Compliant.pdf).

Agency	FY2024 Estimate <sup>a</sup>	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
<b>Office of the Secretary</b>					
Research and Technology (R&T) <sup>§</sup>	53.8	61.9			
Strengthening Mobility and Revolution Transportation Grant Program <sup>h</sup>	100.0	100.0			
<b>Total</b>	<b>153.8</b>	<b>161.9</b>			
<b>National Highway Traffic Safety Administration (NHTSA)<sup>i</sup></b>					
Highway Safety Research	33.1	32.8			
Vehicle Safety and Behavioral Research	85.6	91.5			
<b>Total</b>	<b>118.7</b>	<b>124.3</b>			
<b>Federal Railroad Administration (FRA)<sup>j</sup></b>					
	<b>44.0</b>	<b>52.0</b>			
<b>Federal Transit Administration (FTA)</b>					
Transit Formula Grants <sup>k</sup>	37.6	39.4			
Transit Infrastructure Grants <sup>l</sup>	7.0	0.0			
<b>Total</b>	<b>44.6</b>	<b>39.4</b>			
<b>Federal Motor Carrier Safety Administration (FMCSA)</b>					
	<b>14.1</b>	<b>26.1</b>			
<b>Pipeline and Hazardous Materials Safety Administration (PHMSA)</b>					
Hazardous Materials Safety <sup>m</sup>	7.6	7.6			
Pipeline Safety <sup>n</sup>	12.5	14.0			
<b>Total</b>	<b>20.1</b>	<b>21.6</b>			
<b>Grand total</b>	<b>1,418.4</b>	<b>1,438.4</b>			

**Source:** DOT, *Fiscal Year 2025 Budget Estimate*, Exhibit IV-I Research, Development and Technology Budget Authority tables for each pertinent operating administration, <https://www.transportation.gov/mission/budget/fiscal-year-2025-budget-estimates>.

**Note:** Figures reported here are the totals for each administration's research, development, and technology budget table, except for those administrations for which the budget tables listed administrative expenses separately; in those cases, the administrative expenses were subtracted from the totals reported here. Components may not sum to totals because of rounding. Amounts shown do not include supplemental or advance appropriations.

- As described in the DOT budget estimates, because full-year FY2024 appropriations were not enacted at the time the budget was prepared, "amounts included for 2024 reflect the annualized level provided by the continuing resolution [CR]." These are referred to in budget documents as the "annualized CR" funding amounts. Additionally, several of the accounts shown here are funded at the administration's discretion and did not receive appropriations under the Consolidated Appropriations Act, 2024 (P.L. 118-42). Accounts that received appropriations will be noted when available.
- P.L. 117-58 §11101(c) authorized appropriations for FHWA-Research, Technology and Education programs for FY2022-FY2026.

- c. Division J, Title VIII of P.L. 117-58 makes \$95 million of supplemental funding available for University Transportation Centers. In FY2024, FHWA requested \$19 million in supplemental funding in addition to the \$81 million authorized to be appropriated from the Highway Trust Fund for FY2024 under P.L. 117-58 §1101(c)(1)(E)(iii).
- d. \$280 million was appropriated to FAA-Research, Engineering & Development by P.L. 118-42 for FY2024.
- e. \$3.19 billion was appropriated to FAA-Facilities and Equipment by P.L. 118-42 for FY2024.
- f. P.L. 118-42 provided \$3.35 billion in budget authority for the Grant-in-Aid for Airports account for FY2024. P.L. 118-42 provided \$15 million in budget authority for the Airport Cooperative Research Program and \$40.83 million in budget authority for the Airport Technology Program comprising the \$55.8 requested by FAA for Research, Engineering and Development through the Grants-in-Aid account for FY2024.
- g. \$49 million was appropriated to OST-Research and Technology by P.L. 118-42 for FY2024.
- h. P.L. 117-58 §25005 authorized \$100 million to be appropriated from the General Fund for OST-SMART.
- i. P.L. 118-42 appropriated \$223 million to the FMCSA-Operations and Research account for FY2024.
- j. \$54 million was appropriated to FRA-Railroad Research & Development by P.L. 118-42 for FY2024.
- k. P.L. 118-42 provided \$13.99 billion in budget authority for the FTA-Transit Formula Grants account for FY2024.
- l. P.L. 118-42 appropriated \$252.4 million to the FTA-Transit Infrastructure Grants account for FY2024.
- m. P.L. 118-42 appropriated \$74.556 million to the PHMSA-Hazardous Materials Safety account for FY2024.
- n. P.L. 118-42 appropriated \$218.186 million to the PHMSA-Pipeline Safety account for FY2024.

## Department of the Interior (DOI)<sup>139</sup>

DOI is responsible for the conservation and use of approximately two-thirds of the estimated 640 million acres of federal land.<sup>140</sup> DOI defines its mission as being to “protect and manage the nation’s natural resources and cultural heritage” for the benefit of the American people; “provide scientific and [scholarly] information about those resources” and natural hazards; and exercise the country’s “trust responsibilities or special commitments to American Indians, Alaska Natives,” and island territories under U.S. administration.<sup>141</sup> DOI has a wide range of responsibilities, including geological, hydrological, and biological science; migratory bird, wildlife, and endangered species conservation; surface-mined lands protection and restoration; and historic preservation, as well as energy and mineral leasing on public lands.

The Administration is requesting \$1.33 billion for R&D in FY2025.<sup>142</sup> This reflects an increase of \$72 million (6% in current dollars) from the FY2024 estimated level of \$1.26 billion.<sup>143</sup> Funding

<sup>139</sup> This section was written by Mark K. DeSantis, Analyst in Natural Resources Policy, CRS Resources, Science, and Industry Division.

<sup>140</sup> For more information on the Department of the Interior, see CRS Report R45480, *U.S. Department of the Interior: An Overview*, by Mark K. DeSantis.

<sup>141</sup> Department of the Interior, *Strategic Plan for Fiscal Years 2022-2026*, <https://www.doi.gov/sites/default/files/u.s.-department-of-the-interior-fy-2022-2026-strategic-plan.pdf>, and Department of the Interior, *Strategic Plan for Fiscal Years 2018-2022*, <https://www.doi.gov/sites/default/files/uploads/fy2018-2022-strategic-plan.pdf>.

<sup>142</sup> Executive Office of the President, OMB, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025, Research and Development*, March 2024, p. 57, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>. According to communications with OMB, the FY2025 request includes funding requested as part of the annual appropriations process, as well as supplemental funding provided under separate laws. For reference, the Administration’s request for total net discretionary funding for DOI in FY2025 is \$17.8 billion without accounting for supplemental appropriations and cap adjustments. The total net discretionary funding request including supplemental appropriations and cap adjustment is \$20.5 billion.

<sup>143</sup> FY2024 figures do not reflect enacted totals appropriated as part of the Consolidated Appropriations Act, 2024 (P.L. 118-42). Instead, FY2024 figures reflect annualized appropriations provided by the 2024 Continuing Resolution. A comparison of FY2025 request and enacted FY2024 would likely be different than that provided here with the estimated totals.

for DOI R&D is generally included in appropriations line items that also include non-R&D activities. How much of the funding provided in appropriations legislation is allocated to R&D specifically is unclear unless funding is provided at the precise level of the budget request. In general, R&D funding levels are known only after DOI bureaus and offices allocate their appropriations to specific activities and report those figures.

On July 24, 2024, the House passed H.R. 8998, the Department of the Interior, Environment, and Related Agencies Appropriations Act, 2025, which would provide appropriations to DOI if enacted but does not specify R&D amounts.

## U.S. Geological Survey (USGS)

USGS typically accounts for more than two-thirds of all DOI R&D funding. A single appropriations account, Surveys, Investigations, and Research (SIR), provides all USGS funding. USGS R&D is conducted under five SIR mission areas (Ecosystems, Energy and Mineral Resources, Natural Hazards, Water Resources, and Core Science Systems) and two budget lines (Science Support and Facilities).<sup>144</sup> For FY2025, the Administration requested \$916 million for USGS R&D, an increase of \$48 million (6%) from the FY2024 estimated level of \$868 million.<sup>145</sup>

## Other DOI Components

The President's FY2025 request also includes R&D funding for the following DOI components:

- Bureau of Reclamation (BOR): \$150 million for FY2025, up \$2 million (1%) from the FY2024 estimate.
- Bureau of Ocean Energy Management (BOEM): \$108 million for FY2025, up \$12 million (13%) from the FY2024 estimate.
- Fish and Wildlife Service (FWS): \$57 million for FY2025, up \$9 million (19%) the FY2024 estimate.
- National Park Service (NPS): \$32 million for FY2025, up \$3 million (10%) from the FY2024 estimate.
- Bureau of Safety and Environmental Enforcement (BSEE): \$32 million for FY2025, equal to the FY2024 estimate.
- Bureau of Land Management (BLM): \$21 million for FY2025, equal to the FY2024 estimate.
- Wildland Fire Management (WFM): \$5 million for FY2025, equal to the FY2024 estimate.

<sup>144</sup> In FY2024, Congress also included \$5.2 million in funding for Congressionally Directed Spending (CDS) items for the U.S. Geological Survey (USGS) under a "Special Initiatives" line item. For more information, see CRS In Focus IF12358, *The U.S. Geological Survey (USGS): Background and FY2024 Appropriations*, by Anna E. Normand, and CRS In Focus IF12620, *The U.S. Geological Survey (USGS): Background and FY2025 Appropriations*, by Anna E. Normand.

<sup>145</sup> Data provided via email to CRS by OMB, April 2024. According to OMB, the FY2025 request includes funding requested as part of the annual appropriations process, as well as advance appropriations and supplemental funding provided under separate laws. For reference, the Administration's FY2025 request for total net discretionary funding for USGS is \$1.58 billion; however, this figure does not include supplemental funding provided under separate laws. Accounting for supplemental funding and budgetary transfers, the FY2025 request for USGS is \$1.65 billion.

- Bureau of Indian Affairs (BIA): \$8 million for FY2025, up \$1 million (14%) from the FY2024 estimate.
- Office of Surface Mining Reclamation and Enforcement (OSMRE): \$1 million for FY2025, equal to the FY2024 estimate.

**Table 19** summarizes FY2024 estimated R&D funding and the President’s FY2025 R&D funding request for DOI components.

**Table 19. Department of the Interior (DOI) R&D**

(budget authority, in millions of current dollars)

Agency	FY2024 Estimate <sup>a</sup>	FY2025 Request <sup>b</sup>	FY2025 House	FY2025 Senate	FY2025 Enacted
U.S. Geological Survey (USGS)	868	916	n/a		
Bureau of Reclamation (BOR)	148	150	n/a		
Bureau of Ocean Energy Management (BOEM)	96	108	n/a		
Fish and Wildlife Service (FWS)	48	57	n/a		
National Park Service (NPS)	29	32	n/a		
Bureau of Safety and Environmental Enforcement (BSEE)	32	32	n/a		
Bureau of Land Management (BLM)	21	21	n/a		
Bureau of Indian Affairs (BIA)	5	5	n/a		
Wildland Fire Management (WFM)	7	8	n/a		
Office of Surface Mining Reclamation and Enforcement (OSMRE)	1	1	n/a		
<b>Total</b>	<b>1,255</b>	<b>1,330</b>	<b>n/a</b>		

**Sources:** Executive Office of the President, OMB, “Research and Development,” in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2025*, March 2024, p. 57, <https://www.whitehouse.gov/omb/budget/analytical-perspectives/>, and data provided to CRS by OMB via email communications, April 2024.

**Notes:** n/a = not available. Components may not sum to totals because of rounding. On July 24, 2024, the House passed H.R. 8998, the Department of the Interior, Environment, and Related Agencies Appropriations Act, 2025, which would provide appropriations to DOI if enacted but does not specify R&D amounts. Figures for the blank columns will be added as Congress completes each action.

- The FY2024 Estimate column reflect annualized appropriations provided by the 2024 Continuing Resolution.
- According to communications with OMB, the FY2025 request includes funding requested as part of the annual appropriations process, as well as advance appropriations and supplemental funding provided under separate laws.

## Environmental Protection Agency (EPA)<sup>146</sup>

The U.S. EPA administers multiple environmental pollution control laws, many of which are carried out under a delegated framework with states and tribes (and local governments for certain authorities). To carry out this mission, EPA funds a broad range of R&D activities intended to

<sup>146</sup> This section was written by Angela C. Jones, Analyst in Environmental Policy, CRS Resources, Science, and Industry Division. For an overview of FY2023 Environmental Protection Agency (EPA) appropriations, see CRS In Focus IF12349, *U.S. Environmental Protection Agency FY2023 Appropriations*, by Angela C. Jones.

provide scientific tools and knowledge that inform decisions relating to preventing, regulating, and abating environmental pollution. Since FY2006, Congress has funded EPA's discretionary budget through the Interior, Environment, and Related Agencies annual appropriations acts.

Appropriations for EPA R&D are generally included in programs and activities that also include non-R&D functions. Annual appropriations bills and the accompanying committee reports do not identify precisely how much funding is allocated to EPA R&D alone. EPA determines R&D funding levels for its operations by allocating the agency's appropriations for authorized activities and reporting those amounts.

The agency's S&T appropriations account funds much of EPA's scientific research activities,<sup>147</sup> which include R&D conducted by the agency at its own laboratories and facilities, and R&D and related scientific research conducted by universities, foundations, and other nonfederal entities that receive EPA grants. The S&T account generally receives a base appropriation and a transfer from the Hazardous Substance Superfund (Superfund) account for research on methods for remediating contaminated sites.<sup>148</sup>

EPA's ORD is the primary manager of R&D at EPA headquarters and laboratories around the country, as well as EPA-supported R&D external to the agency. A large portion of the S&T account funds EPA R&D activities managed by ORD, including research grants. Programs implemented by other offices within EPA also may have a research component, but the research component is not necessarily the primary focus of each particular program.

Enacted on March 9, 2024, the Consolidated Appropriations Act, 2024 (P.L. 118-42), includes the Department of the Interior, Environment, and Related Agencies appropriations for FY2024.

Division E, Title II, of the act provides \$788.4 million for EPA's S&T account, which includes a \$30.3 million transfer from the Superfund account.

For FY2025, the President requested a total of \$1.042 billion for EPA's S&T account, including a \$32.1 million transfer from the Superfund account.<sup>149</sup> The FY2025 requested amount is \$253.6 million (32.2%) more than the FY2024 enacted amount for the S&T account, including transfers (in current dollars).

**Table 20** compares the FY2024 enacted appropriations and the President's FY2025 request for program areas and activities funded within EPA's S&T account. The program areas and activities listed in **Table 20** are only those identified in funding tables presented in explanatory statements accompanying annual appropriations bills that fund EPA. The explanatory statements include additional breakouts of funding and directive language for certain activities within these broader program areas. EPA's annual budget justification also identifies specific amounts of funding for various subprogram activities not listed in these explanatory statements.

On July 24, 2024, the House passed H.R. 8998, the Department of the Interior, Environment, and Related Agencies Appropriations Act, 2025, which would provide \$554.6 million for EPA's S&T

<sup>147</sup> In 1995, Congress established eight statutory accounts for EPA, including the Science and Technology account. This account incorporates elements of the former EPA Research and Development account, as well as portions of the former Salaries and Expenses and Program Operations accounts, which were in place until FY1996. Currently, discretionary funding is annually appropriated to EPA among 10 statutory accounts established by Congress over time in annual appropriations acts. Because of the differences in the scope of the activities included in these accounts, a comparable breakout of funding for these same activities before FY1996 is not readily available.

<sup>148</sup> See footnote 34 for more information on the Superfund program.

<sup>149</sup> EPA, *Fiscal Year 2025 Justification of Appropriation Estimates for the Committee on Appropriations*, EPA-190-R-24-002, March 2024, <https://www.epa.gov/system/files/documents/2024-03/fy-2025-congressional-justification-all-tabs.pdf>.

account (including a \$32.1 million transfer from the Superfund account), \$487.5 million (-46.8%) less than the FY2025 request, and \$233.8 million (-30.0%) less than the FY2024 enacted amount.

**Table 20. U.S. Environmental Protection Agency (EPA)  
Science and Technology Account**

(budget authority, in millions of current dollars)

Program Area and Activity	FY2024 Enacted	FY2025 Request	FY2025 House	FY2025 Senate	FY2025 Enacted
Clean Air <sup>a</sup>	138.6	227.4	n/a		
Atmospheric Protection <sup>b</sup>	8.4	10.8	n/a		
Enforcement	14.9	19.3	n/a		
Homeland Security	34.7	75.7	n/a		
Indoor Air and Radiation	5.3	7.6	n/a		
Information Technology/Data Management/Security	3.1	3.3	n/a		
Operations and Administration	64.7	72.9	n/a		
Pesticide Licensing	5.9	11.2	n/a		
Research: Air and Energy <sup>c</sup>	96.0	140.3	n/a		
Research: Chemical Safety for Sustainability	127.0	152.0	n/a		
Research: Computational Toxicology	20.5	23.6	n/a		
Research: Endocrine Disruptors	15.5	18.0	n/a		
Research: National Priorities <sup>d</sup>	19.5	0.0	10.0		
Research: Safe and Sustainable Water Resources	111.5	143.7	5.0		
Research: Sustainable and Healthy Communities	132.2	149.5	n/a		
Ensure Safe Water	4.7	7.0	2.5		
<b>Subtotal Base S&amp;T Account</b>	<b>758.1</b>	<b>1,010.0</b>	<b>522.5</b>		
<b>Transfer from Hazardous Substance Superfund Account to the S&amp;T Account</b>	<b>30.3</b>	<b>32.1</b>	<b>32.1</b>		
<b>Total, S&amp;T Account (Net Appropriations)</b>	<b>788.4</b>	<b>1,042.1</b>	<b>554.6</b>		

**Source:** Amounts are generally as presented in P.L. 118-42; the explanatory statement accompanying H.R. 4366, *Congressional Record*, vol. 170, no. 39 (March 5, 2024), p. S1829 (funding tables); EPA, *Fiscal Year 2025 Justification of Appropriation Estimates for the Committee on Appropriations*, EPA-190-R-24-002, March 2024, <https://www.epa.gov/system/files/documents/2024-03/fy-2025-congressional-justification-all-tabs.pdf>, pp. 25, 1286-1287 (pp. 26, 1287-1288 of the PDF). Amounts in the FY2025 House column are from H.R. 8998, as passed by the House on July 24, 2024, and H.Rept. 118-581.

**Notes:** n/a = not available. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action.

- EPA's FY2025 budget justification refers to this program area as "Clean Air and Climate."
- EPA's FY2025 budget justification refers to this program area as "Climate Protection."
- EPA's FY2025 budget justification refers to this program area as "Research, Air, Climate, and Energy."
- The President's annual budget request typically does not include funding for "Congressional Priorities." The House and Senate refer to this program area as "Research: National Priorities" for which the House or Senate allocates funding for specific research activities.



## Department of Homeland Security (DHS)<sup>150</sup>

DHS has identified five core missions: to prevent terrorism and enhance security, to secure and manage the borders, to enforce and administer immigration laws, to safeguard and secure cyberspace, and to ensure resilience to disasters. New technology resulting from R&D can contribute to achieving all these goals. The Directorate of S&T has primary responsibility for establishing, administering, and coordinating DHS R&D activities. Other components, such as the Countering Weapons of Mass Destruction Office and the Transportation Security Administration, conduct R&D relating to their specific missions.

The President's FY2025 budget request for DHS includes \$493 million for activities identified as R&D. This would be an increase of 23.6% from \$399 million enacted for FY2024 (in current dollars). The requested total includes \$402 million for the R&D account in the S&T Directorate and smaller amounts for five other DHS components. On June 28, 2024, the House passed H.R. 8752, the Department of Homeland Security Appropriations Act, 2025, which would provide \$477 million for activities identified as R&D for five DHS components, \$16 million (-3.2%) less than the FY2025 request and \$78 million (19.5%) above the FY2024 enacted amount. (See **Table 21.**)

The S&T Directorate performs R&D in several laboratories of its own and funds R&D performed by DOE national laboratories, industry, universities, and others. It also conducts testing and other technology-related activities in support of acquisitions by other DHS components. The Administration's FY2025 request of \$402 million for the S&T Directorate R&D account would be an increase of 29.2% from \$311 million enacted for FY2024. Within the R&D account, the request for the Research, Development, and Innovation budget line is \$349 million. Within this budget line, the request for Border Security is \$101 million; Chemical, Biological, and Explosive Defense is \$17 million; Counter Terrorist is \$55 million; Cybersecurity/Information Analysis is \$34 million; First Responder/Disaster Resilience is \$25 million; Innovation Research and Foundational Tools is \$84 million; and Physical Security and Critical Infrastructure Resilience is \$34 million.<sup>151</sup> In the University Programs budget line, the request for Centers of Excellence is \$46 million, the same as FY2024, while the request for Minority Serving Institutions is \$8 million, up from \$5 million in FY2024.<sup>152</sup>

In addition to its R&D account, the S&T Directorate receives funding for laboratory facilities and other R&D-related expenses through two other accounts (not shown in **Table 21**). The total request for the directorate is \$836 million, an increase of 12.7% from \$742 million enacted for FY2024. The directorate's Procurement, Construction, and Improvements account would receive \$50 million under the Administration's request (vs. \$61 million enacted for FY2024), including \$10 million for critical repairs and replacements at various S&T Directorate laboratories, and \$40 million to continue preparations for the closure of the Plum Island Animal Disease Center—which is being replaced by the NBAF—and the sale of Plum Island itself.<sup>153</sup> Funding for the

<sup>150</sup> This section was written by Brian E. Humphreys, Analyst in Science and Technology Policy, CRS Resources, Science, and Industry Division.

<sup>151</sup> DHS, Science and Technology Directorate, *Budget Overview: Fiscal Year 2025 Congressional Justification*, Washington, DC, 2024, p. 4, [https://www.dhs.gov/sites/default/files/2024-04/2024\\_0308\\_science\\_and\\_technology.pdf](https://www.dhs.gov/sites/default/files/2024-04/2024_0308_science_and_technology.pdf). Comparisons with FY2024 are based on amounts enacted in P.L. 118-47, Division C, and explanatory statement, *Congressional Record*, daily edition, vol. 170, no. 51, Book 11 (March 22, 2024), pp. H1816-H1817, <https://www.congress.gov/118/crec/2024/03/22/170/51/CREC-2024-03-22-bk2.pdf>.

<sup>152</sup> *Ibid.*

<sup>153</sup> *Ibid.* The Science and Technology Directorate is building the National Bio and Agro-Defense Facility using (continued...)

Detection Sciences Testing and Applied Research Center would be zeroed out by the FY2025 budget request.

**Table 21. Department of Homeland Security (DHS) R&D Accounts**

(budget authority, in millions of current dollars)

Directorate, Office, or Agency	FY2024 Enacted	FY2025 Request <sup>a</sup>	FY2025 House	FY2025 Senate	FY2025 Enacted
Science and Technology Directorate	311	402	339		
Countering Weapons of Mass Destruction Office	61	61	111		
Transportation Security Administration	15	18	18		
U.S. Coast Guard	7	7	7		
Cybersecurity and Infrastructure Security Agency	1	3	n/a		
U.S. Secret Service	4	2	2		
<b>Total</b>	<b>399</b>	<b>493</b>	<b>477</b>		

**Sources:** Figures in the FY2024 Enacted column are from P.L. 118-47. Figures in the FY2025 Request column are from DHS, *Congressional Budget Justification Fiscal Year (FY) 2025*, April 2, 2024, <https://www.dhs.gov/publication/congressional-budget-justification-fiscal-year-fy-2025>. Figures in the FY2024 House column are from H.R. 8752, as passed in the House on June 28, 2024.

**Notes:** n/a = not available. Table includes accounts titled “Research and Development” in each DHS component. Some other accounts may also fund R&D-related activities. Components may not sum to totals because of rounding. Figures for the blank columns will be added as Congress completes each action.

a. Figures in the FY2025 Request column do not include advance appropriations.

previously appropriated funds and is to transfer the facility to USDA once it becomes operational. For more information, see CRS In Focus IF11492, *National Bio and Agro-Defense Facility: Purpose and Status*, by Genevieve K. Croft. Congressional readers may contact CRS Analyst Lisa S. Benson for follow-up.

## Appendix. CRS Contacts for Agency Research and Development (R&D)

The following table lists the primary CRS experts on R&D funding for the agencies covered in this report.

Agency	CRS Contact
Department of Agriculture	Eleni G. Bickell Analyst in Agricultural Policy
Department of Commerce	
National Institute of Standards and Technology	Emily G. Blevins Analyst in Science and Technology Policy
National Oceanic and Atmospheric Administration	Eva Lipiec Specialist in Natural Resources Policy
Department of Defense	Marcy E. Gallo Analyst in Science and Technology Policy
Department of Energy	Todd Kuiken Analyst in Science and Technology Policy
Department of Health and Human Services	
National Institutes of Health	Kavya Sekar Analyst in Health Policy
Department of Homeland Security	Brian E. Humphreys Analyst in Science and Technology Policy
Department of the Interior	Mark K. DeSantis Analyst in Natural Resources Policy
Department of Transportation	Jennifer J. Marshall Analyst in Transportation Policy
Department of Veterans Affairs	Jared S. Sussman Analyst in Health Policy
Environmental Protection Agency	Angela C. Jones Analyst in Environmental Policy
National Aeronautics and Space Administration	Rachel Lindbergh Analyst in Science and Technology Policy
National Science Foundation	Laurie Harris Analyst in Science and Technology Policy

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