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**Analysis of the
President's FY 2023 Budget Request
for Federal Research, Health, and Higher
Education Programs**

**Implications for Research, Higher Education, and
Academic Medicine**

Prepared by Lewis-Burke Associates LLC
March 31, 2022

Biden Administration FY 2023 Policy Priorities



Public Health



Climate and Clean Energy



Innovation



Education

Highlights

Biden Policy Priorities and Funding Increases

Public health, climate and clean energy, innovation, manufacturing, education, environmental justice, and racial equity

Modest Growth for Several Key Agencies

Most new funding for NIH is for the newly created ARPA-H with modest growth proposed for core biomedical research programs; Key NASA programs face significant headwinds that will impact future missions.

Significant Cut Proposed for DOD S&T

A 13 percent cut proposed for DOD's Science and Technology accounts with continuing shift to prototyping, testing, and commercialization activities

Note

This analysis is based on the President's fiscal year (FY) 2023 budget request and does not indicate what final appropriation levels will be. This analysis is also based on best available budget information at the time of this writing for each federal agency and program. In some cases, limited information was available, such as a budget in brief or high-level funding tables.

While this document is important for understanding President Biden's policy priorities, it is up to Congress to embrace, modify, or reject budget proposals. Lewis-Burke will continue to provide updates on proposed federal agency priorities and new initiatives as additional budget information is released as well as analyses of congressional appropriations for major federal agencies and programs.

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Executive Summary

On March 28, 2022, President Biden released his second budget proposal to Congress. The fiscal year (FY) 2023 President's budget request proposes close to a 6 percent boost in discretionary spending compared to the FY 2022 enacted level for a total of around \$1.6 trillion. This would include \$813 billion for defense spending and \$769 billion for non-defense spending. Consistent with the FY 2022 request, President Biden's top FY 2023 budget priorities are public health, climate and clean energy, manufacturing, innovation, and education. With the war in Ukraine and the threat from near-peer adversaries, the budget request would also boost funding for nuclear deterrence and national security programs that bolster capabilities and readiness for the U.S. and NATO allies.

The release of the budget request kicks off the FY 2023 appropriations process, including congressional budget hearings and mark up of the 12 annual appropriations bills. The House plans to start advancing its appropriations bills in May and the Senate shortly after. While the budget request is just a recommendation to Congress, it does provide insight into federal agencies' priorities and future directions, many of which can be advanced within existing authorities and without explicit congressional approval.

Congress only completed FY 2022 appropriations two weeks ago, but the debate and final outcome provides helpful insight on how the FY 2023 budget request may fare. The Biden Administration had mixed success in advancing its priorities in FY 2022. For example, Congress supported the creation and \$1 billion in funding for a new Advanced Research Projects Agency-Health (ARPA-H) within the Department of Health and Human Services; the creation of a new Technology, Innovation, and Partnerships Directorate (TIP) within the National Science Foundation (NSF); and a new Office of Clean Energy Demonstrations within the Department of Energy (DOE). However, overall funding increases for most federal agencies and programs were much more modest than proposed and some proposals, such as the creation of the Advanced Research Projects Agency-Climate (ARPA-C), were completely rejected. It is ultimately up to Congress to decide which new proposals to embrace, modify, or reject as part of the annual appropriations process, but the budget request is influential in shaping and advancing new initiatives.

Overall, the FY 2023 budget request would increase funding for research and development, climate and environment, manufacturing, education, and healthcare programs of interest to the research, higher education, and academic medicine communities. Similar to last year, the notable exception is a \$2.4 billion proposed cut to basic, applied research, and advanced technology development accounts for DOD's Science and Technology programs compared to FY 2022 appropriations levels. This is consistent with a greater emphasis on prototyping, deployment, and commercialization of technologies rather than early-stage research and development. In addition, some non-defense research and development programs outside of the Administration's priority areas are proposed for much smaller growth than in the FY 2022 request.

The graphic below shows proposed FY 2023 funding levels for major federal research and education agencies compared to the FY 2022 enacted levels.

Key Agencies at a Glance (IN BILLIONS)

Commerce
\$11.7 B
+18%

HHS
\$127 B
+15%

NIH
\$49 B
+9%

NSF
\$10.5 B
+19%

Defense S&T
(6.1-6.3)
\$16.5 B
-13%

NASA
\$26 B
+8%

Energy
\$48 B
+7%

Agriculture
\$28.5 B
+13%

Education
Total Requested:
\$88 B
+16% increase over
FY 2022
appropriations

FY 2023 Biden Administration Science and Technology Priorities

Major proposed initiatives include:

- \$5 billion for Advanced Research Projects Agency for Health (ARPA-H) within NIH;
- \$880 million for the new NSF Directorate for Technology, Innovation, and Partnership to strengthen U.S. leadership in emerging technology areas;
- \$700 million for ARPA-E to fund new programs in climate change adaptation, mitigation, and resilience that would have been funded by ARPA-C;
- \$50 million for new DOE Energy Earthshot Research Centers;
- \$275 million, a \$117 million increase, for NIST's Manufacturing Extension Partnership and increases for DOE's Industrial Assessment Centers;
- \$42 million to launch three new Manufacturing Innovation Institutes, with two at NIST and one at DOE;
- \$23 million for USDA-led Climate Hubs;
- \$12.1 billion at NIH for research, development, and secure lab infrastructure related to future pandemic preparedness and biosecurity; and
- Increases in funding across major agencies to support emerging technologies such as quantum information science, AI, microelectronics, advanced communications, and biotechnology.

Similar to last year, while the budget proposal increases funding for fundamental research at most science agencies, its primary focus is on use-inspired research, translation, and technology development and deployment. For example, the budget proposal would boost funding to \$880 million for the new NSF Directorate for Technology, Innovation, and Partnership to support use-inspired research and technology development; provide \$5 billion to the new Advanced Research Projects Agency for Health (ARPA-H) within NIH to accelerate health breakthroughs especially for cancer, diabetes, and dementia; allocate \$700 million for Advanced Research Projects Agency-Energy (ARPA-E) to fund new programs in climate change adaptation, mitigation, and resilience; proposes more than a \$1 billion increase for DOE applied energy programs and \$90 million for a new Office of Grid Deployment and \$27 million for a new Office of Manufacturing and Energy Supply Chains; and establish three new Manufacturing Innovation Institutes through NIST and DOE. The budget proposal would also continue to grow investments for emerging technology areas, such as quantum information science, Artificial Intelligence, microelectronics, and advanced communications.

Beyond top Biden Administration priorities, the budget request proposes modest increases for key federal agencies compared to the FY 2022 request and/or final FY 2022 appropriations. For example, most new funding for NIH is for the newly created ARPA-H with modest growth proposed for core biomedical research programs; major NASA programs and missions face significant budget pressure; and the DOE Office of Science cannot fully fund on-going construction projects for research facilities while applied energy programs would see double digit percentage growth.

Addressing racial equity in science and engineering, education, and health care delivery remain a high priority. Examples of specific investments include over \$1.5 billion at NSF, DOE, USDA, NASA, and the Department of Education for programs dedicated to increasing the participation of historically under-represented communities in science and engineering fields and building science and technology infrastructure in underserved institutions, including Minority Serving Institutions; a new Environmental Justice National Program Manager at EPA and new funding to implement an enforcement plan for climate and environmental justice inspections and community outreach; and new funding to expand programs to address health inequities especially in mental health, maternal health, and vaccine access.

The budget request would also provide increased discretionary funding for most education and workforce programs. Notable funding provisions include: a significant increase to the Pell Grant program, with a \$8,670 maximum award, and expansion of Pell eligibility for Deferred Action for Childhood Arrivals recipients; \$450 million to expand research and development infrastructure at four-year HBCUs and MSIs; and \$514 million for the Education Innovation and Research (EIR) program, which would include \$350 million for identifying and scaling models that improve teacher and school staff recruitment and retention. The budget request would also increase support for Registered Apprenticeships (RA) at the Department

of Labor (DOL), with \$303 million in funding proposed, a \$68 million increase above the FY 2022 enacted level.

Congress still has not started negotiations to set an overall discretionary funding level for FY 2023. Without a bipartisan budget agreement in place, the House and Senate cannot negotiate final FY 2023 appropriations bills. To start to advance all 12 of its appropriations bills, the House and Senate will assume a discretionary spending level of \$1.6 trillion—the same proposed by the Biden Administration. The House and Senate will then have to adjust funding levels based on a final budget agreement.

With the lack of a budget agreement and a mid-term congressional election year, the likelihood that Congress can complete appropriations before the end of the fiscal year on September 30 is very low. A Continuing Resolution will likely be needed through mid-November to avoid a government shutdown and continue government operations at FY 2022 funding levels. Completing FY 2023 appropriations will then be contingent on the mid-term election outcomes and the willingness of both parties to compromise ahead of a new Congress in calendar year 2023.

Below is an analysis of major new initiatives and funding proposals for relevant federal agencies of interest to the research, higher education, and academic medicine communities.

Department of Agriculture



The discretionary programs within USDA's National Institute of Food and Agriculture (NIFA) would see an increase of \$180 million (11 percent), compared to FY 2022 enacted level. USDA's Agricultural Research Service (ARS) Salaries & Expenses would see an increase of \$225.2 million (14 percent).

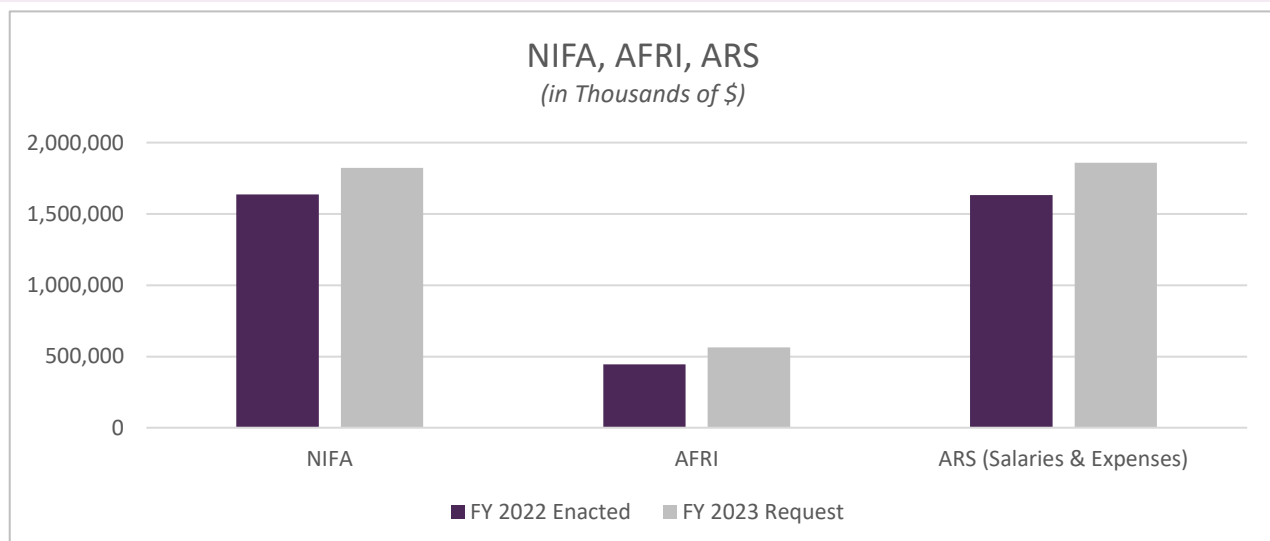
Quick Take: This budget offers relatively stable funding levels in comparison to FY 2022 enacted levels. Some smaller programs would receive outsized funding increases. Although the total funding is small, the proposed increases signal a commitment to minority-serving institutions and women and minority-serving programs. Climate activities continue to be a priority.

Major Cuts/Eliminations: Some NIFA programs are proposed for elimination or decreases, but the vast majority of USDA's extramural research arm would be flat funded. Within ARS, there are no proposed facility closures nor proposed eliminations to ARS research programs.

New Initiatives/Priorities: The Farm of the Future program would receive \$3 million; it is the first time the president's budget request has requested funds for this program. Funding for Extension services at the 1994 Institutions, which serve Native American communities and Tribal Colleges, would increase by \$9.5 million over FY 2022 levels, a 100 percent increase, and the Women & Minorities in STEM program would receive an additional \$1.3 million, a 130 percent increase. A new, \$1 million program for an Open Data Standards Repository has been proposed to provide a public-private framework, in collaboration with land-grant universities, to store and disseminate the big data generated by technological advancements in agriculture. Finally, the Agriculture Advanced Research and Development Authority (AGARDA) would receive \$4.9 million, which would build on the \$1 million it recently received in the FY 2022 appropriation.

The Bottom Line

USDA's extramural funding would see flat or modest increases in the FY 2023 budget request. Priorities are consistent with last year's budget request with increased funding sought for minority-serving and climate programs. There will continue to be bipartisan congressional support for USDA's Research and Extension programs, but there will not be uniform agreement on how to appropriate funding.





National Institute of Food and Agriculture

Many of NIFA's signature programs would receive flat or near-flat funding in the FY 2023 president's budget request, including: Smith-Lever (b) and (c); Hatch Act (1.9 percent increase); 1994 Research Grants; 1890 Extension; Hispanic-Serving Institutions Education Grants Program; Education Grants at 1890s (8.8 percent decrease); Scholarships at 1890s; Research Grants at 1994 Institutions; Extension Services at 1890 institutions; Crop Protection and Pest Management; Aquaculture Centers; and Capacity Building Grants for Non Land-Grant Colleges of Agriculture.

However, several programs would see significant increases—particularly those that will play a larger role in the Biden Administration's climate strategy:

- McIntire-Stennis Cooperative Forestry, proposed increase of \$7.3 million, 20.3 percent over FY 2022 enacted level.
- Sustainable Agriculture Research Education and Extension (SARE), proposed increase of \$15 million, 33 percent over FY 2022 enacted level.
- Evans-Allen (Research at 1890s), proposed increase of \$12.8 million, 16 percent over FY 2022 enacted level.
- Minor Crop Pest Management (IR-4), proposed increase of \$5.5 million, 38 percent over FY 2022 enacted level.
- Ag in the Classroom, proposed increase of \$448,000, 45 percent over FY 2022 enacted level.

Agriculture and Food Research Institute

Within NIFA, AFRI would receive an increase of \$119 million, a 27 percent increase over FY 2022 levels that would bring it to \$564 million, still short of its authorized level of \$700 million. Once again, AFRI is directed to focus investments in three areas:

- *Sustainable Agricultural Systems (SAS) (\$140 million), program goals/highlights:*
 - Climate-smart agriculture
 - Convergence of agricultural science with engineering, data science, nutritional and food science, and other disciplines
 - Nanotechnology, computation sciences, and advanced manufacturing
 - \$10 million award size with opportunities for smaller mid-size awards
- *Foundational and Applied Science (\$368 million), areas of focus:*
 - Mitigation and adaptation to climate change
 - Plant and animal breeding
 - Application of AI and climate-smart agriculture
 - Robotics, unmanned aerial systems, cyberphysical systems, big data
 - Microbiomes of foods, food animals, plants, human gut, and soils
 - Emerging technologies—gene editing, machine learning, precision animal agriculture
 - Artificial intelligence and data-driven entrepreneurship in rural America
- *Education and Workforce Development (\$56 million), program goals:*
 - Promoting agricultural literacy and workforce training through professional development and training grants
 - Developing pathways for undergraduates to work in food, agriculture, or related disciplines or attend graduate programs in the food and agricultural sectors
 - Support and advance graduate and post-graduate education in agriculture

NIFA Proposed Reductions and Terminations

Despite the very positive budget request for some NIFA programs, several would see funding decreases. In each of these cases, the same decrease was proposed in last year's budget request.

Department of Agriculture



- Supplemental and Alternative crops would be decreased by \$337,000; it was funded at \$1 million in FY 2022.
- Proposed elimination of the Alfalfa Seed and Alfalfa Forage Systems and Potato Research programs.
- The Food Animal Residue Avoidance Database (FARAD) would be funded at \$2 million, down \$500,000.
- Smith-Lever 3(d) New Technologies for Extension would be funded at about \$3 million, about \$500,000 less than the FY 2022 enacted level.
- No funding for Genome to Phenome is included in the request. The program was funded by Congress at \$2 million in FY 2022.

Agricultural Research Service

ARS Salaries and Expenses (S&E) would be funded at just under \$1.9 billion, an increase of \$225.2 million over FY 2022. This increase includes \$361 million in funding for several climate related initiatives that span nearly all S&E accounts: \$109 million would be set aside for climate science research; \$103 million for environmental stewardship research; \$101 million for clean energy research, including sustainable clean energy development and biowaste-stream to bioenergy research; \$14 million for mitigating the impact of extreme weather events, \$18 million for climate adaptation and resilience activities, and \$5 million that would go to the Climate Hubs to support the USDA-ARS Climate Hub Fellowship program.

Of note, the request would also fund the National Bio and Agro-Defense Facility (NBAF) at \$112.1 million for FY 2023. This reflects additional funding for people, programs like research and medical countermeasures, and operations and maintenance.

Human nutrition would remain essentially flat and would receive \$121.7 million. Funding would be used for adjusting for pay inflation and the Federal Employees Retirement System (FERS). No cuts or eliminations of ARS human nutrition research facilities or extramural projects are proposed.

Rural Development

The President's Budget Request includes \$600 million to continue the Broadband Pilot Program (ReConnect) that provides loans, grants, and a loan/grant combination to deploy broadband to underserved areas. This amount is \$113.4 million more than the FY 2022 enacted level and notes that it builds on the *Infrastructure Investment and Jobs Act* which provided an additional \$2 billion for the program.

The Distance Learning and Telemedicine (DLT) grants would receive significant cuts, the President's Budget Request would fund this program at \$60 million, far below the FY 2022 enacted level of \$536.4 million. This program is designed to assist rural communities that otherwise do not have access to learning and medical services over the Internet and is likely seeing decreases as many of the covid-era programs are downsized or removed.

The budget provides flat funding for the Rural Innovation Stronger Economy (RISE) Grant program at \$5 million. The program assists distressed rural communities, particularly energy communities, in establishing jobs accelerators to create good jobs.

Source: USDA's FY 2022 Budget Summary and Congressional Justifications can be found at: <https://www.usda.gov/our-agency/about-usda/budget>.

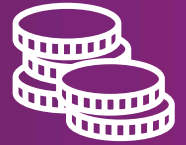
Department of Agriculture



U.S Department of Agriculture (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
Agricultural Research Service, Salaries & Expenses	1,633,496	1,858,719	225,223 (13.8%)
National Institute of Food and Agriculture, Discretionary	1,636,849	1,823,382	186,533 (11.4%)
Agriculture and Food Research Initiative (AFRI)	445,000	564,000	119,000 (26.7%)
Hatch Act	260,000	265,000	5,000 (1.9%)
Smith-Lever Act 3(b) and 3(c)	320,000	320,000	--
McIntire-Stennis Cooperative Forestry Act	36,000	43,283	7,283 (20.2%)
Research at 1890 Institutions (Evans-Allen Program)	80,000	92,837	12,837 (15.5%)
Research Grants for 1994 Institutions	4,500	4,500	--
Extension Services at 1890 Institutions	65,000	65,000	--
Extension Services at 1994 Institutions	9,500	19,000	9,500 (100%)
Payments to the 1994 Institutions	5,500	15,000	9,500 (172.7%)
Education Grants for 1890 Institutions	28,500	26,000	-2,500 (8.8%)
Women and Minorities in STEM Fields	1,000	2,305	1,305 (130.5%)
Capacity Building for Non-Land Grant Colleges of Agriculture	5,000	5,000	--
Multicultural Scholars, Graduate Fellowship, and Institution Challenge Grants	10,000	10,000	--
Hispanic-Serving Agricultural Colleges and Universities Endowment Fund	14,000	14,000	--
Food Safety and Inspection Service (FSIS)	1,108,664	1,226,148	117,484 (10.6%)
Animal and Plant Health Inspection Service (APHIS), Salaries & Expenses	1,110,218	1,149,286	39,068 (3.5%)

Department of Commerce



The Department of Commerce includes the Economic Development Administration (EDA), National Institute of Standards and Technology (NIST), and National Oceanic and Atmospheric Administration (NOAA). The Department of Commerce overall would receive \$11.7 billion in discretionary funding, an 18 percent increase above FY 2022 appropriations.

Economic Development Administration



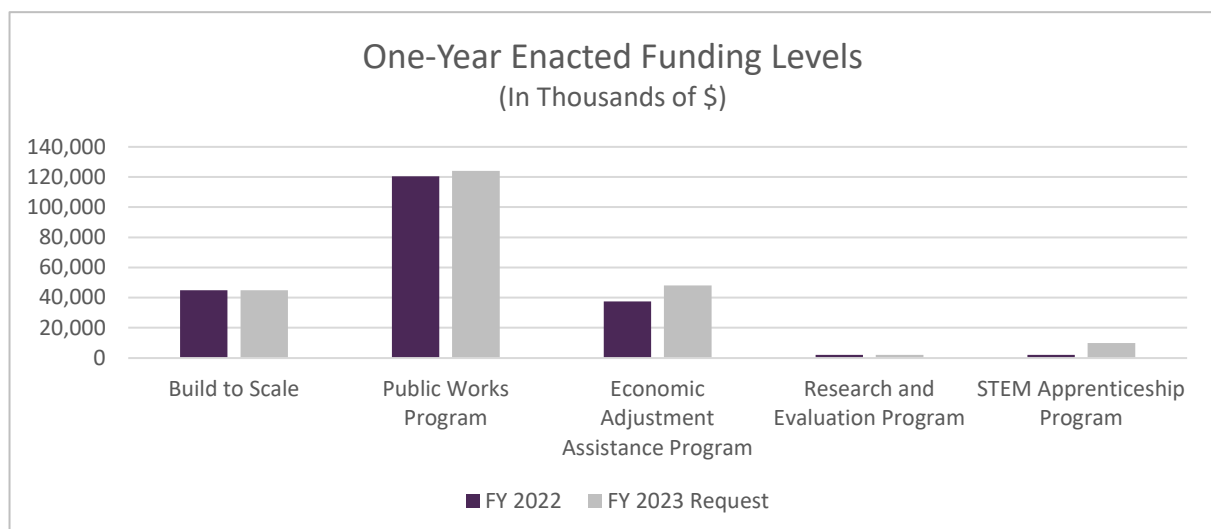
In the FY 2023 budget request, the Biden Administration proposes a \$502.52 million appropriation for the Economic Development Administration (EDA) in FY 2023, a \$129 million increase over the FY 2022 level.

Quick Take: The president's FY 2023 budget request would provide a 34 percent increase over FY 2022 appropriations. This is a stark reversal from the previous Administration, which routinely proposed the elimination of EDA.

New Initiatives/Priorities: The budget request for EDA reflects its investment priorities,¹ which were updated in 2021 to support DOC's four pillars to increase American competitiveness. These four pillars are: revitalizing U.S. advanced manufacturing, building a 21st century workforce, maintaining leadership in global innovation, and promoting American business. Another theme prevalent throughout the budget request is the need to create a resilient economy that promotes diversification, as well as racial and regional equity. To this end, the FY 2023 budget would devote new investments in the Secretary's vision to foster targeted workforce engagement in underserved communities.

The Bottom Line

The Administration's proposal for FY 2023 requested nearly the same funding levels for core programs as the budget request for FY 2022, demonstrating its commitment to increasing funding at EDA above the modest support the agency received from Congress in the final FY 2022 appropriations measure. The budget would increase funding for EDA to benefit federal economic development efforts across the U.S., including activities at anchor institutions like universities. The proposed budget is indicative of the Administration's philosophy for the government to play an active role in supporting economic development and recovery. It remains to be seen if Congress and the Administration will look to EDA to manage larger initiatives in future years when more is known about the outcomes of the \$3 billion in flexible emergency support the agency received from the American Rescue Plan. (ARP), most of which is still being distributed.



1. A full list of EDA's updated investment priorities is available at <https://content.govdelivery.com/accounts/USEDA/bulletins/2ccd92e>.



New and Signature Initiatives

Build to Scale

The request would fund the Build to Scale program (formerly known as the Regional Innovation Program) at \$45 million, flat funding compared to the FY 2022 enacted level. The proposed budget and FY 2022 enacted level are historic for the program but still \$5 million below the program's authorized level. Build to Scale provides support for universities and research institutes to develop and scale commercialization efforts, to cultivate funding campaigns for promising startups, and to further tech-based economic development initiatives. Build to Scale currently runs two core challenges, the Venture Challenge and the Capital Challenge, as well as the occasional sector-specific Industry Challenge.

In the budget request, EDA specifies that it would allocate \$33-35 million to the Venture Challenge, which received around \$38 million in the most recent competition for FY 2022; \$9 million for the Capital Challenge, which received around \$7 million in FY 2022; and \$2-3 million for the Industry Challenge, depending on availability of funding from a partner agency. The Industry Challenge has not been competed since FY 2020. EDA also plans to leverage additional funds to "reach new geographies and industries, or geographies and industries that have historically been underinvested in by this program."

Recompete Pilot Program

The President's budget request would provide \$50 million to create a new program called the Recompete Pilot Program, which would provide grants to communities experiencing persistently high employment gaps among prime-age workers (ages 25-54) to develop 10-year comprehensive economic development plans ("Recompete Plans") and invest in the implementation of those plans. Plans would be locally tailored to address multifaceted needs of communities to engage those not participating in the labor force and could include workforce training, infrastructure improvements, entrepreneurial guidance and more. This Pilot Program will be used as a test to evaluate a new model of grant making for EDA where clusters of projects are strategically funded in particularly distressed communities for extended periods of time, with the hopes of being scaled.

There is significant congressional momentum around this initiative, as the program was proposed in the bipartisan *RECOMPETE Act*, which was included in the final *America COMPETES Act*. The legislation would authorize \$4 billion for the program. Funding for the program was also included in the stalled Build Back Better reconciliation package at \$1.2 billion. Given the high level of congressional interest, if successful, this pilot program could lead to much larger funding in the future.

Public Works and Economic Adjustment Assistance

The budget request would fund the Public Works Program at \$124 million, a \$3.5 million increase from the FY 2022 level. This program invests in infrastructure, such as technology-based facilities, research and development centers, and skills training facilities. Investments aim to "create good jobs, build resilient infrastructure, and help revitalize rural communities and persistent poverty areas."

The Economic Adjustment Assistance Program (EAA), which provides funding for activities like technical assistance, construction, and other activities that can strengthen regional economies, would receive \$48 million in FY 2023. This is a \$10.5 million increase over FY 2022. In its justification for the funding increase for EAA, EDA specifically states the \$10.5 million funding increase is needed to ensure EDA can respond to the "next crisis," whether it is another pandemic, natural disaster, or other major event.

Research and Evaluation

EDA's Research and Evaluation program would receive \$2 million in funding from President Biden's budget request, flat funding with respect to FY 2022. The budget justification specifically notes the new funds are to go toward the Equitable Access Initiative to focus on engaging communities that are underserved by EDA.

Department of Commerce



Assistance to Coal Communities

The largest proposed increase in the budget request would be an additional \$47 million for the Assistance to Coal Communities program to support areas facing significant job losses from the downturn in the coal economy. This would be more than double the amount provided in FY 2022 and further reflect the Administration's priority to support the transfer from economic reliance on fossil fuels. The additional funding will provide support for larger grants for infrastructure, industry clusters, entrepreneurship and small business support, and workforce programming in these communities.

STEM Apprenticeship Program

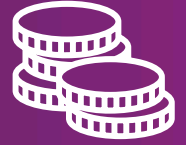
The budget request proposed funding the STEM Apprenticeship Program at \$10 million in FY 2023, which would be an \$8 million increase from FY 2022. In EDA's budget justification document, they argue the increase is necessary because the program is "oversubscribed," having received 77 applications in the last competition while only being able to make 8 awards. With the increase in funds, they intend to expand the program and the number of grantees and the range of support to grantees.

Source: EDA's budget request can be found at <https://www.commerce.gov/sites/default/files/2022-03/FY2023-EDA-Congressional-Budget-Submission.pdf> and its new investment priorities are available at <https://content.govdelivery.com/accounts/USEDA/bulletins/2ccd92e>.

Economic Development Administration (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022
Economic Development Administration (EDA)	373,500	502,518	129,018 (34.5%)
Build to Scale	45,000	45,000	--
Public Works Program	120,500	124,000	3,500 (2.9%)
Economic Adjustment Assistance Program	37,500	48,000	10,500 (28%)
Research and Evaluation Program	2,000	2,000	--
STEM Apprenticeship Program	2,000	10,000	8,000 (400%)

Department of Commerce



National Institutes of Standards and Technology



The President's FY 2023 budget request proposes \$1.5 billion for NIST, which would be an increase of \$462.7 million or 44.7 percent above the FY 2021 enacted level.

Quick Take: The budget request would increase funding for research in critical and emerging technologies, including artificial intelligence, quantum science, advanced communications, and biotechnologies. NIST would also prioritize strengthening the nation's supply chain and domestic manufacturing capabilities.

New Initiatives/Priorities: The budget request would increase funding for Manufacturing USA and the Hollings Manufacturing Extension Partnership (MEP), including the creation of two additional manufacturing institutes, though the potential topic areas are not included in the request. The budget request would also provide funding for developing international standards for critical and emerging technologies.

Major Cuts/Eliminations: The FY 2023 request would continue to provide funding boosts for NIST, consistent with last year's budget request.

The Bottom Line

The FY 2023 budget request reflects many of the Administration's priorities in emerging technology research areas as well as activities to advance U.S. capabilities in supply chain resiliency and domestic manufacturing. NIST has requested funding in previous years to support additional Manufacturing USA Institutes that Congress has not previously supported.

Department of Commerce



National Oceanic and Atmospheric Administration



At the time of this writing, the NOAA FY 23 Blue Book was not available. Below reflects the information that is currently available in the budget appendices for the Department of Commerce.

The budget requests a total of \$6.816 billion for NOAA in FY 2023. This increase of nearly \$1 billion or 16 percent follows President Biden's pattern of proposing large increases for the agency and is indicative of the Biden Administration's intent to make climate change and climate science a top priority. The Office of Oceanic and Atmospheric Research (OAR), the main extramural research office, would grow by \$66.5 million or 11.1 percent compared to the FY 2022 enacted level. This is the largest percent increase for a line office within the Operations, Research, and Facilities (ORF) accounts. The National Ocean Service (NOS) and National Marine Fisheries Service (NMFS) would see similar growth patterns of 7.7 percent and 9.0 percent increases, respectively. The National Weather Service (NWS) would see more consistent funding of \$1.2 billion, an increase of 3.8 percent over the FY 2022 enacted level.

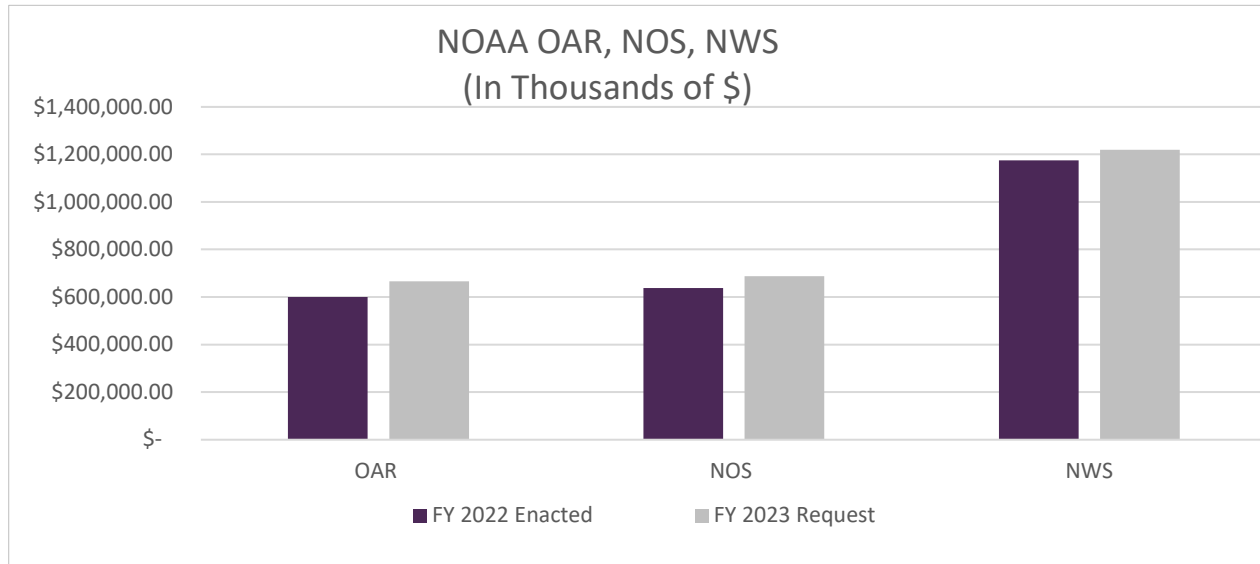
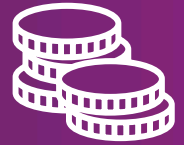
Quick Take: While the proposed increases to NOAA's programs are slightly less dramatic in President Biden's FY 2023 budget request than in the FY 2022 Budget request, each of NOAA's offices would have budget increases. The majority Democratic Congress has shown consistent support for NOAA and climate-related initiatives. However, stagnant topline allocations due to inflation and deficit concerns, coupled with the upcoming midterm elections, signal a difficult road to finalization of FY 2023 appropriations.

Signature Initiatives: Because the agency's full budget details were not available at time of writing, there are not yet details available on new or continuing initiatives. The FY 2023 compiled budget request mentioned \$45 million for NOAA's role in deploying offshore wind energy and \$92 million for competitive climate research grants related to the America the Beautiful Initiative, which is focused on conservation of the nation's lands and waters. Additionally, resilience is expected to continue to be a major area of investment, with \$376 million included for resilience and adaptation efforts at NOAA. The budget request proposed significant increases for the National Environmental Satellite, Data, and Information Systems (NESDIS) Office and the Office of Space Commerce (OSC), with \$2.3 billion included for next-generation weather satellites at NESDIS and \$88 million for OSC, an increase of \$72 million above the FY 2022 enacted level.

The Bottom Line

Much of the proposed increase of nearly \$1 billion for NOAA would be directed to the agency's climate science initiatives. Extramural programs stand to benefit from this growing support and from the continued implementation of funds from the *Infrastructure Investment and Jobs Act*.

Department of Commerce



National Oceanic and Atmospheric Administration (NOAA)

(in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
NOAA, total	5,877,000*	6,865,888	988,888 (16.8%)
Operations, Research, and Facilities (ORF)	4,157,311*	4,484,209	326,898 (7.9%)
Oceanic and Atmospheric Research (OAR)	599,448	666,000	66,552 (11.1%)
National Weather Service (NWS)	1,174,470	1,219,000	44,530 (3.8%)
National Ocean Service (NOS)	637,700	687,000	49,300 (7.7%)
National Marine Fisheries Service (NMFS)	1,015,955	1,107,000	91,045 (9.0%)
Procurement, Acquisition, and Construction (PAC)	1,672,689*	2,332,662	659,973 (39.5%)
National Environmental Satellite, Data, and Information Systems	1,294,989	1,874,000	579,011 (44.7%)

*Amounts shown are taken from the FY 2022 omnibus bill text and may not add up perfectly with the underlying accounts. https://www.whitehouse.gov/wp-content/uploads/2022/03/com_fy2023.pdf.



The President's FY 2023 budget request proposes \$130.1 billion for Research, Development, Technology, and Evaluation (RDT&E), a new high-water mark with an increase of nearly \$11 billion or 9.1 percent above the FY 2022 enacted level and \$18 billion or 16.2 percent above the FY 2022 request. As in the FY 2022 budget request, the science and technology (S&T) accounts— which include basic research (6.1), applied research (6.2), and advanced technology development (6.3)—would be cut in favor of more deliverable capabilities (6.4 and up).

Quick Take: Recognizing threats to U.S. competitiveness and national security from China, Russia, Iran, and North Korea, as well as the conflict in Ukraine, the Administration requests an increase to overall defense spending, totaling \$773 billion, a \$44.5 billion increase over the FY 2022 enacted level and \$66.5 billion over the FY 2022 budget request. Consistent with Undersecretary of Defense for Research and Engineering Heidi Shyu's statements earlier this year, the Administration's investments in RDT&E would continue to focus on modernization and advanced weapons capabilities in critical areas like artificial intelligence (AI), integrated networks, microelectronics, hypersonics, and space, among others. Similar to FY 2022, the request would include investments in energy and climate resilience S&T to address climate change and improve the capabilities of DOD operations in challenging environments. The request also highlights DOD's role in preventing and responding to future pandemics and the importance of investing in the national security workforce.

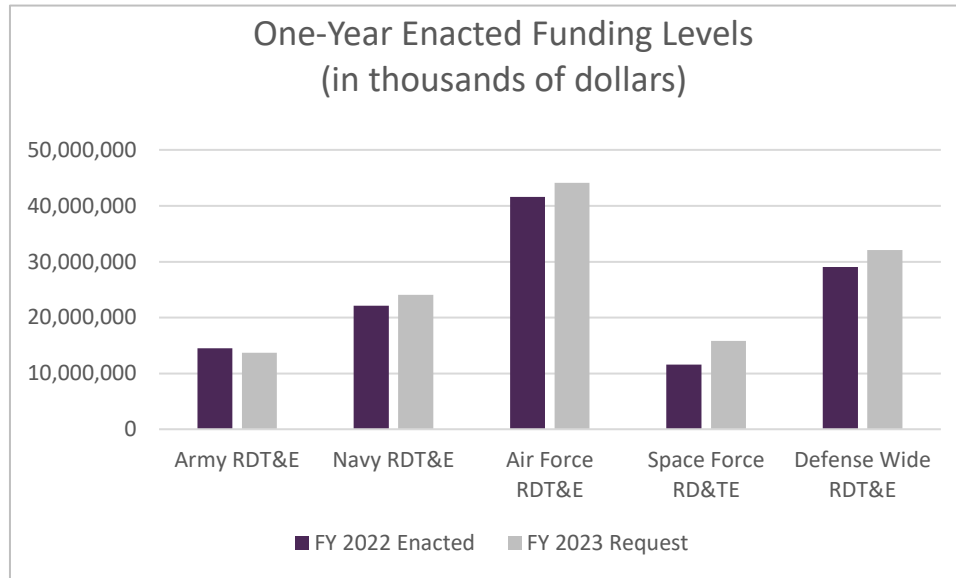
Major Cuts/Eliminations: In total, S&T (6.1-6.3) accounts across the Department would be cut by nearly 13 percent or \$2.4 billion, despite the \$10.8 billion increase to overall RDT&E. The budget request would reduce overall basic research (6.1) funding by 14 percent and applied research (6.2) funding by 16.2 percent relative to FY 2022 enacted levels, totaling \$2.4 billion and \$5.8 billion respectively.

New Initiatives/Priorities: With few details provided, the budget request includes defense priorities that continue to align with those set last year: tackling the climate crisis, countering emerging threats, protecting investments in capabilities, and ensuring that members of the military and civilian workforce are compensated well to attract and retain talent. The request would prioritize investments in the following areas:

- Sustain and strengthen deterrence against adversaries like Russia and China;
- Fund breakthrough technologies that drive innovation and capacity and redirect resources to emerging technologies instead of continued investments in past weaponry;
- Strengthen the civilian workforce through investments to attract and retain talent;
- Build resilient supply chains and onshore technology development; and
- Invest in biodefense and pandemic preparedness.

The Bottom Line

With the conflict in Ukraine and a focus on accelerating U.S. global competitiveness, the Administration acknowledges the need to bolster strategic deterrence and force readiness by proposing a notable 4 percent increase over the FY 2022 level in discretionary funding for the Department of Defense. Although the budget request proposes historic increases to RDT&E to advance accounts 6.4 and up, it comes at the cost of \$2.4 billion in cuts to S&T (6.1-6.3) accounts. The Administration and the Department continue to signal its prioritization of modernizing and delivering fieldable capabilities to the warfighter faster and more efficiently.



Proposed Reductions and Terminations

While the DOD budget request would provide \$773 billion for DOD, which is significantly more than the FY 2022 enacted level of \$728.5 billion, significant decreases are proposed across the S&T accounts. The S&T accounts (6.1-6.3) would be funded at \$16.5 billion, a \$2.4 billion decrease compared to FY 2022 enacted levels. Basic research would be funded at \$2.4 billion (a 14 percent decrease), applied research would be funded at \$5.8 billion (a 16 percent decrease), and advanced technology development would be funded at \$8.3 billion (a 10 percent decrease), all compared to FY 2022 enacted levels. As mentioned, this is consistent with the Biden Administration's prioritization of accelerating the delivery of new capabilities to the warfighter.

The Army and Navy **basic research accounts** would decrease \$143 million and \$109 million, while the Air Force instead would increase by \$5.8 million. The Army, Navy, Air Force, and Space Force **applied research accounts** would all decrease by \$647 million total, with cuts of \$311 million, \$280 million, and \$43 million compared to the FY 2022 enacted levels, respectively.

While overall Defense-wide RDT&E would increase by 10.4 percent, the Defense-wide 6.1 and 6.3 accounts would decrease by \$141 million and \$161 million, respectively. The applied research account, 6.2, would receive a \$164 million increase compared to FY 2022 enacted levels. Of interest to the research and higher education community, the budget would reduce the **National Defense Education Program** by 8.9 percent and **Basic Research Initiatives** by 18.8 percent.

Ongoing Areas of Interest

For the second year, the Administration requests historic RDT&E funding levels aimed at innovating and modernizing weapons systems, advanced capabilities, soldier lethality, and cyber resilience, setting the FY 2023 target at \$130 billion in funding, more than a 9 percent increase over the FY 2022 enacted level. These investments include:

- **Long-range precision fire:** \$7.2 billion to develop long-range fires and field hypersonic weapons on air, land, and sea
- **Cyber:** \$11.2 billion dedicated to cyberspace and cyber security activities



- **Space:** \$27.6 billion in space and space-based systems
- **Climate Change:** \$3.1 billion invested in climate change and climate resilience initiatives
- **Microelectronics:** \$3.3 billion to improve assurance, availability, and access to advanced capability microelectronics (supply chain)
- **5G:** \$250 million to leverage 5G technologies and networks for military applications
- **AI:** \$32 million in new Army investments in AI basic, applied, and advanced research, as well as \$50 million to jump start the new Chief Digital and Artificial Intelligence Officer and relevant activities

Throughout the budget request, DOD proposes renewed or new emphasis in the following big-ticket areas:

Cyber

The request would include \$11.2 billion for cybersecurity, cyberspace operations, and cyber R&D. The request would increase funding for cyber-related pilot programs, services, and mission force teams to protect U.S. national security and bolster the defense industrial base (DIB). Cyber Mission Force, through the U.S. Cyber Command, would have budgetary resources starting in FY 2024 to support cross-cutting cyber and AI activities, such as rapid development, testing, and operational support. These efforts underscore the Administration's goal to deter cyber-attacks from adversaries, such as Russia.

Supply Chain

In line with the Biden Administration's effort to onshore manufacturing and make U.S. supply chains more efficient and resilient, the request would leverage the Defense Production Act and bolster Industrial Base Analysis and Sustainment programs. The request would prioritize investments in the following five supply chain areas: microelectronics (\$3.3 billion), casting and forging (\$48 million), batteries and energy storage (\$43 million), kinetic capabilities (\$605 million), and strategic and critical minerals (\$253 million).

Climate

The Biden Administration would invest \$3.1 billion in addressing climate change, including \$2 billion towards installation resiliency and adaptation and \$807 million towards science and technology (S&T). This S&T funding would support efforts ranging from basic research to prototyping (6.1-6.4) focused on reducing and managing the Department's energy demand and creating new energy supply and storage technologies.

Space

The budget request would include \$24.5 billion for the U.S. Space Force and the Space Development Agency (SDA), a \$5 billion or 25 percent increase above the FY 2022 enacted level, including \$15.8 billion for Space Force RDT&E. SDA is still expected to transition fully into Space Force by fall 2022, and the budget request reflects that reorganization by incorporating SDA funding into Space Force program elements. The budget would also transfer \$816 million from the Air Force to Space Force for weather services research.

Workforce

The budget request would continue the Administration's emphasis on upskilling/reskilling the defense workforce and increasing defense civilian and military compensation. With few details provided, the defense budget request indicates that STEM and training in new technologies, such as AI and cyber, will continue to be a priority and would receive funding to ensure that the future workforce is prepared to fill jobs in high-demand technology sectors. The request would include a 4.6 percent pay raise for military and civilian personnel and support for a \$15 per hour minimum wage for the federal workforce.

Department of Defense



Other Defense Agencies and Programs

The **Defense Advanced Research Projects Agency (DARPA)** would receive \$4.1 billion, including \$482.7 million for basic research and \$1.65 billion for applied research in funding. DARPA would prioritize applied research in electronics and biological technology as well as advanced technology development (6.3) accounts – including aerospace systems; electronics technology; command, control, and communications systems; network-centric warfare technology; and sensor technology.

The budget request would decrease funding for the **Defense Threat Reduction Agency (DTRA)**, allocating \$653.9 million, compared to the FY 2022 enacted amount of \$875.7 million. DTRA's basic research initiatives would be funded \$11.6 million, once again cut in favor of applied and advanced technology development accounts. Applied research would receive \$192.2 million and advanced technology development would receive \$402.2 million.

The **Defense Health Program** would receive \$909.9 million, a substantial decrease of 65.4 percent compared to the FY 2022 enacted level of \$2.4 billion. However, the Congressionally Directed Medical Research Program (CDMRP) accounts for the difference between the enacted and requested amounts, as CDMRP funding is added by Congress during the appropriations process.

Source: DOD's FY 2023 Budget Summary and Background Information is available at <https://comptroller.defense.gov/Budget-Materials/Budget2023/>.

Department of Defense (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
RDT&E, total	119,211,192	130,097,410	10,886,218 (9.1%)
S&T, Total	18,892,284	16,454,676	-2,437,608 (12.9%)
6.1, Total	2,763,498	2,375,872	-387,626 (14.0%)
6.2, Total	6,908,213	5,791,097	-1,117,116 (16.2%)
6.3, Total	9,220,573	8,287,707	-932,866 (10.1%)
Army RDTE	14,539,417	13,710,273	-829,144 (5.7%)
Army 6.1	609,725	466,823	-142,902 (23.4%)
Army 6.2	1,531,255	883,759	-647,496 (42.3%)
Army 6.3	2,191,638	1,392,065	-799,573 (36.5%)
Navy RDT&E	22,139,080	24,078,718	1,939,638 (8.8%)
Navy 6.1	698,319	589,192	-109,127 (15.6%)

Department of Defense



Navy 6.2	1,283,233	971,814	-311,419 (24.3%)
Navy 6.3	972,196	865,755	-106,441 (10.9%)
Air Force RDT&E	41,592,913	44,134,301	2,541,388 (6.1%)
Air Force 6.1	540,706	546,517	5,811 (1.1%)
Air Force 6.2	1,585,571	1,305,787	-279,784 (17.6%)
Air Force 6.3	968,538	827,271	-141,267 (14.6%)
Space Force RDTE*	11,597,405	15,819,372	4,221,967 (36.4%)
<i>Space Force 6.2</i>	286,505	243,737	-42,768 (14.9%)
<i>Space Force 6.3</i>	288,584	564,215	275,631 (95.5%)
Defense-wide RDT&E	29,065,786	32,077,552	3,011,766 (10.4%)
Defense-wide 6.1	914,748	773,340	-141,408 (15.5%)
Defense-wide 6.2	2,221,649	2,386,000	164,351 (7.4%)
Defense-wide 6.3	4,799,617	4,638,401	-161,216 (3.4%)
Defense Health R&D	2,633,488	909,994	-1,723,494 (65.4%)

Department of Education

Under the President's budget request, funding for the discretionary programs within the Department of Education (ED) would be \$88.3 billion, a 14.5% increase compared to the FY 2022 enacted level. The Pell Grant program's maximum award would be \$8,670 for the 2023–2024 award year, an increase of \$1,775 when compared to the 2022–2023 school year.

Quick Take: The FY 2023 budget request would support longstanding Biden Administration priorities of providing increased funding for Minority-Serving Institutions (MSIs), expanding funding for Title I programs, increasing the number of mental health professionals in schools, and providing support for K-12 students' learning advancement in the wake of COVID-19.

New Initiatives/Priorities: The request includes a proposed significant expansion, for a total of \$514 million, for the **Education Innovation and Research (EIR)** program. This would include \$350 million for identifying and scaling models that improve teacher and school staff recruitment and retention. Another new proposal is \$200 million for a new **Career-Connected High Schools** initiative to "support competitive grants to partnerships of local educational agencies, institutions of higher education, and employers to increase the integration and alignment of the last two years of high school and the first two years of postsecondary education." The request also notes the Administration's commitment to double the maximum **Pell Grant** by 2029 and continued support for expanding federal student aid to Deferred Action for Childhood Arrivals (DACA) recipients. Finally, the request includes \$450 million to expand research and development infrastructure at four-year HBCUs and MSIs.

Major Cuts/Eliminations: The Department has acknowledged that having prepared the FY 2023 budget request against an assumption of current levels equivalent to FY 2021 funding, many of its proposals may appear to be cut in funding when compared to final FY 2022 enacted levels. ED has noted that it will be updating its requests when engaging with Congress.

The Bottom Line

This budget request proposes a historic investment in American education that is focused on access, affordability, and equity. Although Democrats control both chambers of Congress, it is unlikely that this budget is passed into law as written, given recent high levels of spending in COVID-19 recovery bills and other Administration proposals.

Proposed Reductions and Terminations

There were no program cuts or consolidations recommended in the FY 2023 budget request.

New or Signature Initiatives and Funding for Programs of Note

Elementary and Secondary Education and Teacher Preparation

The FY 2023 request again calls for significant investments in Elementary and Secondary Education (ESEA) programs, including \$36.5 billion for **Title I**. The request includes a proposed \$1 billion investment to increase the number of counselors, nurses, school psychologists, social workers, and other health professionals in schools via a **School-Based Health Professionals program**. Significant funding is also proposed for **Personnel Preparation grants** (\$250 million, an increase of \$155 million compared to FY 2022) to support a pipeline of special educators.

\$132.1 million would be provided for **Teacher Quality Partnership (TQP) grants**, with a focus on teacher residencies and Grow Your Own programs. The request includes \$20 million for the soon-to-start **Augustus Hawkins Centers of Excellence** program, to support diversifying the educator workforce by increasing the number of high-quality teacher preparation programs at HBCUs and MSIs. The **Promise Neighborhoods program** would receive \$96 million, \$11 million more than in FY 2022. The **American History and Civics Education programs** would receive \$10.5 million, \$2.75 million above the FY 2022 level, which would support an increase in the number of grants under both the Academies and the National Activities competitions.

In the **Career and Technical Education (CTE)** space, \$215.4 million would be provided for the CTE National Program, with \$200 million for a new Career-Connected High Schools initiative. The request notes “key activities would include dual enrollment in postsecondary-level core content and career-connected coursework; work-based learning opportunities connected to programs of study; attainment of in-demand, career-related credentials;” among other activities.

Student Aid

The request would provide a discretionary funding increase to the maximum **Pell Grant** by \$500, “the largest one-time increase in the history of the program.” This increase would be paired with a proposed \$1,275 increase to the mandatory add-on award. The budget proposes \$1.19 billion for the **Federal Work Study (FWS)** program and \$880 million for the **Federal Supplemental Educational Opportunity Grant (SEOG)** program, which is equivalent to being flat funded with FY 2021 levels. However, when compared to FY 2022 enacted levels, both these programs would experience cuts in funding. The budget request again notes the Administration’s desire to work with Congress through a reauthorization of the Higher Education Act (HEA) to make income driven repayment plans and Public Service Loan Forgiveness (PSLF) more generous and to ensure access to federal student aid for DACA recipients.

Higher Education Grant Programs

For FY 2023, the request would call for \$886.1 million for **Title III programs**, which fund HBCUs, MSIs, and other institutions. \$265.6 million would also be provided for **Title V programs**. \$1.3 billion would be provided for the **TRIO programs**, an increase of \$200 million when compared to FY 2022. \$408 million would be provided for the **Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP)**, a \$30 million dollar funding increase when compared to FY 2022. The **Graduate Assistance in Areas of National Need (GAANN)** program would receive \$23.5 million dollars. The **Child Care Access Means Parents in School (CCAMPIS)** program would receive \$95 million in funding, an increase of \$30 million when compared to FY 2022. The **International Education and Foreign Language Studies** programs would be provided \$78.2 million, which would be a decrease when compared to FY 2022.

Department of Education

The **Fund for the Improvement of Postsecondary Education (FIPSE)** would receive \$560 million to support two new grant programs. The **Retention and Completion Grant program** would receive \$110 million to provide competitive grants to states and systems of higher education to implement state-level retention and completion reforms. The **Research Infrastructure Investments for HBCUs, TCUs, and MSIs program** would receive \$450 million to support both planning and implementation grants to promote investments in “research infrastructure, including physical infrastructure and human capital development.”

The request also includes a new Higher Education Act (HEA) pooled evaluation authority to improve data collection and conduct rigorous research and evaluations of ED’s postsecondary programs.

Education Research

The FY 2023 budget request would provide \$662.5 million for the **Institute of Education Sciences (IES)**. While the request narrative highlights this proposal would include a \$20 million increase in IES spending on K-12 assessment, in actuality, this would be a reduction in funding when compared to FY 2022 enacted levels. The final FY 2022 spending package also included an accounting shift of \$67 million for IES for program administration, which is not reflected in this budget request. Of note, the request recommends \$2 million to support joint work with the National Science Foundation for the agencies’ joint AI Institute on learning. The request also references the Biden Administration’s support for the reauthorization of the IES authorizing legislation, the *Education Sciences Reform Act (ESRA)*, with Administration priorities such as an expansion of focus on the diversity of learners and removal of required topics and number of R&D centers included.

Source: ED’s FY 2023 Budget Summary is available at <https://www2.ed.gov/about/overview/budget/budget23/summary/23summary.pdf> and ED budget justifications and other material can be found at <https://www2.ed.gov/about/overview/budget/budget23/index.html?src=ct>.

U.S. Department of Education (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
Elementary and Secondary Education*			
Promise Neighborhoods	85,000	96,000	11,000 (12.9%)
Education Innovation and Research	234,000	514,000	280,000 (119.7%)
IDEA Personnel Preparation	95,000	250,000	155,000 (163.2%)
CTE National programs	7,421	215,421	208,000 (2802.9%)
Student Financial Assistance*			

Department of Education

Pell Grant ⁺	6,895	8,670	1,775 (25.7%)
SEOG	895,000	880,000	-15,000 (1.7%)
Federal Work-Study	1,210,000	1,190,000	-20,000 (1.7%)
Higher Education*			
Title V Aid for Developing HSIs [±]	182,854	236,732	53,878 (29.5%)
Promoting Post-Baccalaureate Opportunities for Hispanic Americans	19,661	28,845	9,184 (46.7%)
Strengthening Institutions	110,070	209,007	98,937 (89.9%)
Strengthening Historically Black Colleges (HBCUs)	362,823	402,619	39,796 (11%)
Strengthening Asian American- and Native American Pacific Islander-serving Institutions (AANAPISI)	10,936	20,120	9,184 (84.0%)
Strengthening Native American-Serving Nontribal Institutions	7,834	12,120	4,286 (54.7%)
Title VI International Education and Foreign Language Studies	81,664	78,164	-3,500 (4.3%)
TRIO Programs	1,137,000	1,297,761	160,761 (14.1%)
GEAR UP	378,000	408,000	30,000 (7.9%)
GAANN	23,547	23,547	--
Teacher Quality Partnerships	59,092	132,092	73,000 (123.5%)
Augustus F. Hawkins Centers of Excellence	8,000	20,000	12,000 (150%)
Child Care Access Means Parents in Schools	65,000	95,000	30,000 (46.2%)

Institute of Education Sciences

	737,021	662,516	-74,505 (10.1%)
Research, Development and Dissemination	204,877	197,877	-7,000 (3.4%)
Research in Special Education	60,225	58,500	-1,725 (2.9%)
Regional Education Laboratories	58,733	57,022	-1,711 (2.9%)
Statewide Longitudinal Data Systems	33,500	33,500	--

[†] Categories included for ease of reading the chart.

[‡] The Pell Grant is listed as the total maximum grant award an individual could receive, including mandatory and discretionary funding. It is *not* listed in thousands of dollars.

The amounts shown for FY 2022 enacted are taken from the Consolidated Appropriations Act, 2022 (P.L. No. 117-103) and related explanatory statements.

The President's FY 2023 budget request would fund DOE at a level of \$48.2 billion, a \$3.3 billion or 7.5 percent increase compared to FY 2022 appropriations.

Quick Take: The budget request proposes increases to all DOE fundamental and applied energy programs. The highest priority is on the development, deployment, and demonstration of clean energy technologies with a proposed increase of \$1 billion in applied research and development compared to FY 2022 appropriations, as well as the creation of new offices—including Grid Deployment and Manufacturing and Energy Supply Chains—to help manage demonstration projects funded through the bipartisan infrastructure bill. These efforts support the Biden Administration's goal of achieving net zero emissions for the electricity sector by 2035 and economy-wide by 2050. The budget request would also provide \$7.8 billion for the Office of Science, an increase of \$324 million above FY 2022 appropriations, with the highest priority expanding climate and earth systems science research and the launch of new Energy Earthshot Research Centers. Within the National Nuclear Security Administration (NNSA), the Stockpile Research, Technology, and Engineering program, which funds major university programs, would grow by \$52 million compared to FY 2022 appropriations.

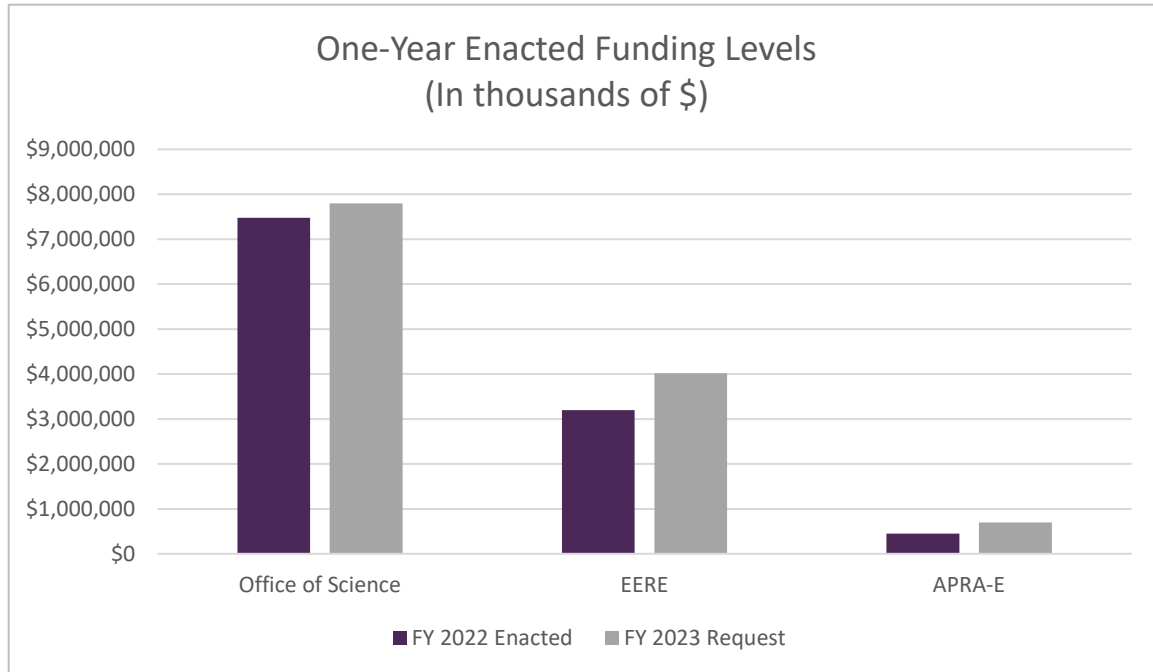
Major Cuts/Eliminations: There are no major cuts proposed. However, the budget request for the Office of Science underfunds the construction of new world-class science user facilities putting at risk cost and schedule and the ability to stay ahead of international competition. For the first time in two decades there are no new infrastructure projects proposed and some ongoing ones have been delayed or significantly scaled back.

New Initiatives/Priorities: The budget request proposes \$50 million for new Energy Earthshot Research Centers, which would fund multi-institutional, multi-disciplinary teams to advance research challenges associated with hydrogen, long-duration storage, carbon negative technologies, and any future Energy Earthshots. DOE also plans to launch the FAIR Initiative to fund research and support faculty at Minority Serving Institutions in clean energy, climate, and other Office of Science related fields. A new Accelerate Initiative would support technology development and deployment, as well train a STEM workforce, in emerging technologies. The budget request would also provide \$14 million to fund a new Clean Energy Manufacturing Innovation Institute and additional funding to expand Industrial Assessment Center activities. ARPA-E would be funded at \$700 million to fund new programs in climate change adaptation, mitigation, and resilience that would have been funded by ARPA-C. To help manage \$62 billion in funding from the infrastructure bill, DOE would expand the new Office of Clean Energy Demonstrations and establish three new offices for Grid Deployment, Manufacturing and Energy Supply Chains, and State and Community Energy Programs. To support domestic manufacturing and U.S. industry, DOE proposes a new \$200 million Solar Manufacturing Accelerator to support domestic manufacturers and \$1 billion in mandatory funds (outside of annual appropriations) to launch a Global Clean Energy Manufacturing initiative that would build resilient supply chains for climate and clean energy equipment in partnership with allied countries and grow U.S. market share.

The Bottom Line

DOE plans to significantly increase research and development funding to support Energy Earthshots and the development and deployment of clean energy technologies. DOE also plans to continue growing major investments in emerging technologies including quantum information science, Artificial Intelligence, microelectronics, and biotechnology. DOE is committed to growing research capacity at Minority Serving Institutions and increasing STEM participation from under-represented groups.

Source: Preliminary details on DOE's FY 2023 budget request are available at [DOE Fiscal Year \(FY\) 2023 Congressional Budget Request \(energy.gov\)](https://www.energy.gov/DOE-FY2023-Congressional-Budget-Request).



Department of Energy (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
DOE, Total	44,855,624	48,200,000	3,344,376 (7.5%)
Science	7,475,000	7,799,211	324,211 (4.3%)
Advanced Scientific Computing Research	1,035,000	1,068,741	33,741 (3.3%)
Basic Energy Sciences	2,308,000	2,420,439	112,439 (4.9%)
Biological and Environmental Research	810,000	903,685	93,685 (11.6%)
Fusion Energy Sciences	713,000	723,222	10,222 (1.4%)
High Energy Physics	1,078,000	1,122,020	44,020 (4.1%)

Department of Energy



Nuclear Physics	728,000	739,196	11,196 (1.5%)
Isotope R&D and Production	82,000	97,451	15,451 (18.8%)
Accelerator R&D and Production	18,000	27,436	9,436 (52.4%)
Workforce Development for Teachers and Scientists	35,000	41,300	6,300 (18.0%)
Science Laboratories Infrastructure	291,000	255,000	-36,000 (12.4%)
ARPA-E	450,000	700,150	250,150 (55.6%)
EERE	3,200,000	4,018,885	818,885 (25.6%)
Hydrogen and Fuel Cell Technologies	157,000	186,000	29,000 (18.5%)
Bioenergy Technologies	262,000	340,000	78,000 (29.8%)
Solar Energy Technologies	290,000	534,575	244,575 (84.3%)
Wind Energy Technologies	114,000	345,390	231,390 (203.0%)
Geothermal Technologies	109,500	202,000	92,500 (84.5%)
Water Power Technologies	162,000	190,500	28,500 (17.6%)
Vehicle Technologies	420,000	602,731	182,731 (43.5%)
Building Technologies	307,500	392,000	84,500 (27.5%)
Advanced Manufacturing Technologies	416,000	582,500	166,500 (40.0%)
Fossil Energy and Carbon Management	825,000	893,160	68,160 (8.3%)
Nuclear Energy	1,654,800	1,675,060	20,260 (1.2%)

Department of Energy



Electricity	277,000	297,386	20,386 (7.4%)
Cybersecurity, Energy Security, and Emergency Response	185,804	202,143	16,339 (8.8%)
Clean Energy Demonstration	20,000	214,052	194,052 (970.3%)
Grid Deployment*		90,211	90,211 (N/A)
Manufacturing and Energy Supply Chains*		27,424	27,424 (N/A)
National Nuclear Security Administration	20,656,000	21,410,400	754,400 (3.7%)
Weapons Activities	15,920,000	16,486,298	566,298 (3.6%)
Defense Nuclear Non-proliferation	2,354,000	2,346,257	-7,743 (0.3%)

*The Offices of Grid Deployment and Manufacturing and Energy Supply Chains are new in the FY 2023 budget request to support the management and execution of funding from the bipartisan infrastructure bill.

Environmental Protection Agency



At the time of this writing, the EPA FY 23 budget justification was not available. Below reflects the information that is available in the EPA's budget in brief.

President Biden's FY 2023 budget request includes \$11.9 billion for EPA, which constitutes an increase of \$2.3 billion or 24.2 percent increase relative to the FY 2022 enacted level.

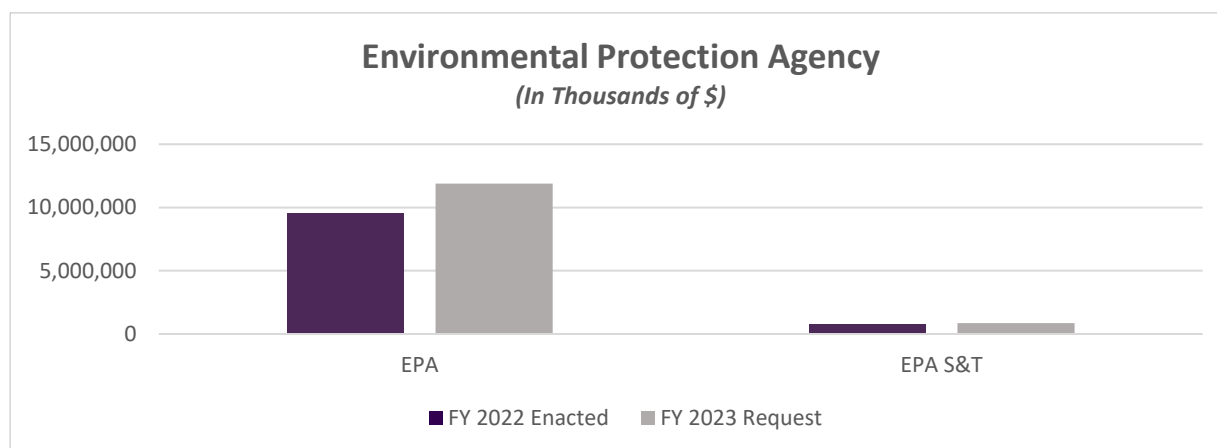
Quick Take: The Biden Administration's FY 2023 budget request for EPA would represent a significant increase that would enhance EPA's investments in research, with funding for the Science and Technology (S&T) account increased by \$113.5 million to \$864.2 million, a 15.1 percent boost relative to FY 2022 enacted levels.

Major Cuts/Eliminations: Just like in FY 2022, the FY 2023 request would eliminate support for the Water Quality Research and Support Grants. The budget request notes that the objective of this congressionally directed program, which was funded at \$8.5 million in FY 2022, is duplicative since the research supported could take place under other extramural funding mechanisms like the Science to Achieve Results (STAR) program, which obtains funding through appropriations under the S&T account.

New Initiatives/Priorities: The proposed EPA budget advances the priorities included in the FY 2022-2026 EPA Strategic Plan, which empower Tribes, states, and localities to address climate change and environmental justice (EJ). Consistent with these priorities, nearly half (e.g., \$5.7 billion) of the FY 2023 budget proposal would be allocated towards upgrading water infrastructure and addressing air quality or other environmental quality issues in communities to implement the Drinking Water and Wastewater Infrastructure Act (DWWIA) and the Bipartisan Infrastructure Investment and Jobs Act. Proposed increases would also support a 13.3 percent increase in EPA personnel nationwide.

The Bottom Line

The FY 2022 budget request demonstrates EPA's critical role in implementing the Biden Administration policy agenda, which places science and equity at the center of its climate, environmental, and economic initiatives. Despite proposed increases in EPA research, extramural research programs are likely to remain small and highly targeted to EPA's regulatory mission. Although Congress is not likely to adopt this budget as proposed, this ambitious request lays a strong foundation from which to rebuild the agency after multiple years of disinvestment in environmental protection programs.





Proposed Reductions and Terminations

Beyond the termination of the Water Quality Research and Support Grants mentioned above, there are few reductions and terminations proposed in this budget request. Nonetheless, the funding increases proposed for the S&T accounts are on average lower (15.1 percent) than the overall increase across the entire EPA budget (24.2 percent) relative to the FY 2022 enacted levels. This is attributable to the Biden Administration's prioritization of implementation activities, including through investments in EPA capacity, regulatory enforcement, and compliance, as well as in infrastructure to benefit communities, rather than a de-prioritization of scientific research at the agency.

New and Signature Initiatives

The FY 2023 budget request proposes to keep EPA central to the U.S. strategy to address climate change. While the FY 2022 budget categorized over \$1.8 billion in funding as "climate change" spending, the FY 2023 request avoids labeling programs in this way. Nonetheless, the request proposes support for programs that would reduce greenhouse gas (GHG) emissions, build resilience to climate change related impacts, and enable communities to respond to climate change. Several of the EPA's signature initiatives included in the FY 2022 omnibus are also included in this request with significant proposed increases, including programs to phase down the use of hydrofluorocarbons (HFCs), reduce GHG emissions from diesel vehicles, and develop and enforce new emissions standards and guidelines for vehicles as well as the oil and gas sector. Proposals notable to the research community include:

- \$132.9 million for air, climate and energy research, a 39.3 percent increase relative to FY 2022 enacted levels. This program would support research to improve wildfire readiness, as well as research "to combat the global issue of climate change and its impacts on human health and ecosystems." Importantly, this research program received the greatest increase of those supported out of the S&T account.
- \$135.4 million for new competitive grant programs to address greenhouse gas emissions in EJ communities. This includes support of efforts to reduce HFCs and would also support EPA's work with the National Aeronautics and Space Administration (NASA) to prototype a greenhouse gas monitoring and information system to integrate data from a variety of sources with a goal of making data more accessible and usable to federal, state, and local governments, researchers, the public, and others.

As in FY 2022 and consistent with the EPA's FY 2022-2026 Strategic Plan, the FY 2023 budget request provides strong support for EJ and proposes the establishment of a new National Program Manager to oversee EJ programs and external civil rights compliance across the agency. The budget supports the implementation of the Biden Administration's Justice40 Initiative – which aims to target 40 percent of the benefits of investments in climate infrastructure to communities experiencing environmental injustice – and incorporates EJ into many programs across the agency's portfolio. To this end, the FY 2023 PBR includes more than \$1.45 billion in EJ focused investments, an increase of over \$514 million relative to the FY 2022 budget request and an order of magnitude higher than the \$100 million in dedicated funds enacted in FY 2022. These initiatives are not research focused, although they may involve universities or researchers in partnership, should there be capacity development, research, or data components to which they can contribute. Of these funds, those of most interest to the research community include:

- \$300.8 million to expand support for community-based organizations, indigenous organizations, states, local governments, territorial governments, and Tribes to identify and address EJ issues through multi-partner collaborations;
- \$100 million to develop and implement a community air quality monitoring and notification program intended to produce real-time data to communities and enforcement officials so that locations burdened most significantly by environmental exposures can be prioritized as a part of the EPA's regulatory agenda.



Ongoing Areas of Interest

The Administration referenced the **STAR Program**, EPA’s primary funding mechanism for extramural research and development, in the budget request; however, it did not stipulate a funding level. Congress is likely to define the funding level for this program this year as it has in the past. FY 2022 enacted appropriations include \$28.6 million for the STAR program in the S&T Account.

The budget request includes several provisions relevant to protecting public health, including \$126 million for research to inform the regulation of **per- and polyfluoroalkyl substances (PFAS)** and \$124 million to build capacity in managing chemical safety and developing protective regulations under the **Toxic Substances Control Act**. The budget request would also provide \$454.6 million for the **Superfund Remedial Program**, a decrease of \$140.1 million compared to FY 2022 enacted levels, to “clean up some of the nation’s most contaminated land, reduce emissions of toxic substances and greenhouse gases from existing and abandoned infrastructure, and respond to environmental emergencies, oil spills, and natural disasters.”

The budget request proposes \$4.4 billion total for programs related to **water infrastructure**, including \$2.77 billion for the Clean Water State Revolving Funds (CWSRF) and Drinking Water State Revolving Funds (DWSRF), as well as \$80.3 million for the *Water Infrastructure Finance and Innovation Act* (WIFIA) program. These programs provide federal credit assistance to finance eligible water and wastewater projects and are intended to support upgrades to aging infrastructure and investments in new technologies. Although not specified in the request, current EPA guidelines stipulate that up to 2 percent of funds from the state CWSRF capitalization grants may be used to hire nonprofit organizations, including universities, to assist with implementation including through community outreach, technical evaluation of wastewater solutions, preparation of applications, drafting of preliminary engineering reports.

Source: EPA’s FY 2023 Budget in Brief is available at <https://www.epa.gov/system/files/documents/2022-03/fy-2023-epa-bib.pdf>.

U.S. Environmental Protection Agency

(in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
EPA, Total	9,559,485	11,880,841	2,321,356 (24.3%)
Science and Technology (S&T)	750,174	864,155	113,981 (15.2%)

Department of Health and Human Services



The FY 2023 budget request would fund the Department of Health and Human Services (HHS) at \$127.3 billion in discretionary budget authority, and \$1.7 trillion in mandatory budget authority. Over 50 percent of the HHS budget authority under the President's budget request would provide funding for the Medicare program, with another 33 percent for the Medicaid program. Approximately eight percent of the FY 2023 budget request would provide funding for discretionary programs.

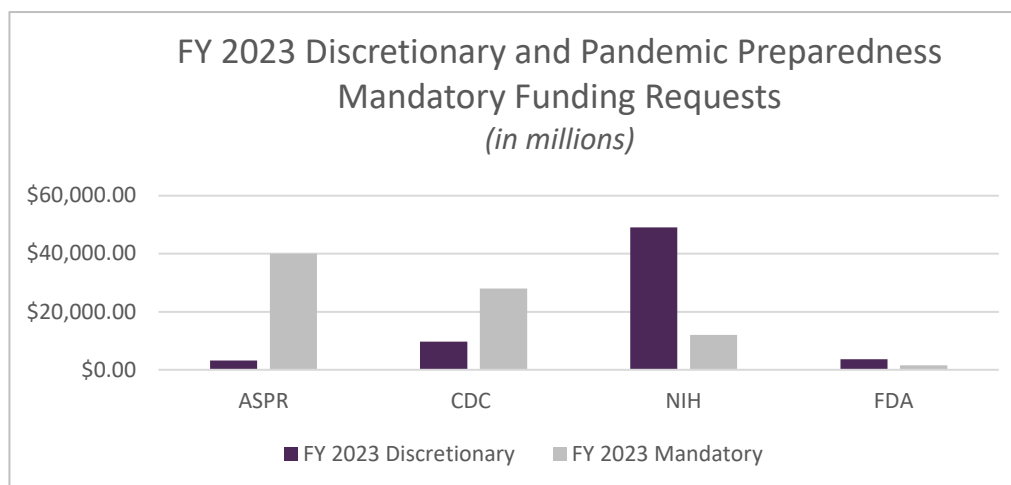
Quick Take: The HHS budget seeks to shift the Administration's priorities to addressing the lessons learned from the COVID-19 pandemic and calling on agencies to prepare for future pandemics. The budget also targets investments in rebuilding the nation's public health infrastructure, eradicating HIV/AIDS, advancing cancer research, identifying underlying causes of maternal and infant mortality, and improving overall behavioral and mental health research and services. Additionally, the proposal includes a deficit-neutral reserve fund to account for revenue increases from future policy changes to tax policy and the price of prescription drugs.

Major Cuts/Eliminations: The Biden Administration's proposal does not make major reductions or eliminate vital programs in HHS.

New Initiatives/Priorities: The Administration proposes providing agencies such as the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), the Office of the Assistant Secretary for Preparedness and Response (ASPR), and the National Institutes of Health (NIH) with more predictable, mandatory funding to carry out cross-agency efforts to prepare for future pandemics (see graphic below). The Administration also requests that Congress authorize mandatory funding for the Indian Health Service (IHS). Additionally, the White House is proposing reforms to Medicare and Medicaid to improve access to behavioral health and HIV prevention services. As part of President Biden's renewed focus on tackling the behavioral health crisis, HHS would provide significant investments in discretionary funding for behavioral health programs.

The Bottom Line

The budget request proposes continued investments in key areas, such as expanding public health infrastructure, preparing for future pandemics, combatting substance use and opioid use disorders, improving maternal health outcomes, addressing behavioral and mental health crises, and eliminating health disparities and inequities. However, the overall total for HHS is less ambitious than the Biden Administration's first budget request, and more partisan proposals such as increased investments in gun violence research and Medicare reforms may fail to garner broad support.



Department of Health and Human Services



National Institutes of Health



The budget request would provide \$49 billion in FY 2023 discretionary funding for the agency's base budget, an increase of \$4 billion, or 9.1 percent, above the FY 2022 enacted level. Of this amount, \$5 billion (\$4 billion in new funding) is included for the Advanced Research Projects Agency for Health (ARPA-H), a new agency which will "catalyze health breakthroughs that cannot readily be accomplished through traditional research or commercial activity." In addition to the \$49 billion in discretionary funding, the budget requests \$12.1 billion in mandatory funds for pandemic preparedness activities.

Quick Take: In a significant departure from the bold funding level proposed for the NIH last year, the Biden Administration is essentially proposing flat funding for the NIH base budget in FY 2023. The entirety of the proposed \$4 billion increase for the NIH would be directed towards ARPA-H, the Administration's signature health research initiative that was established in the FY 2022 appropriations package.

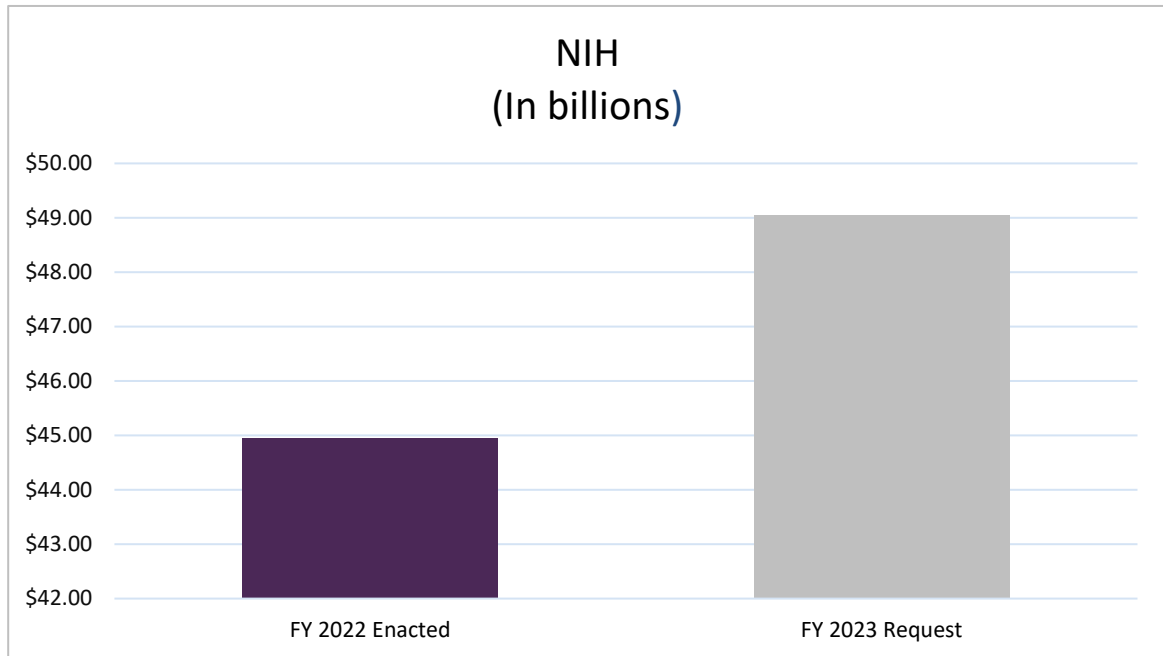
Major Cuts/Eliminations: While there are no major cuts or eliminations to programs at NIH, the near flat funding for the agency results in decreases for many Institutes and Centers after accounting for biomedical research and development inflation.

New Initiatives/Priorities: The entirety of the proposed increase for NIH, \$4 billion, would be directed towards ARPA-H, a new agency that will use nontraditional research and development (R&D) approaches to invest in highly innovative science with the potential for transformative breakthroughs. If successful, ARPA-H has the potential to reshape the nation's biomedical research enterprise. The budget request also proposes mandatory funds to support pandemic preparedness efforts across the Department of Health and Human Services (HHS), including \$12.1 billion for such activities at NIH.

The Bottom Line

The Biden Administration's proposal of \$49 billion, essentially flat funding for the agency's base budget, is disappointing relative to its ambitious FY 2022 budget proposal and final FY 2022 congressional appropriations. NIH enjoys deep bipartisan support and Congress provided the agency with a seventh consecutive funding increase in FY 2022. The Administration's FY 2023 proposal likely will not be accepted by Congress, but appropriators will face the difficult task of balancing investment in the NIH's base budget with funding for ARPA-H. In addition, ARPA-H's location (inside versus outside the NIH) will impact FY 2023 appropriations for both agencies, but the final location of the new agency is still to be determined.

Department of Health and Human Services



Note: The FY 2022 enacted funding level for NIH does not include \$1 billion provided for ARPA-H. The FY 2023 request for NIH includes both base NIH funding and ARPA-H funding.

New and Signature Initiatives

The FY 2023 budget request proposes to fund the NIH base discretionary budget at \$49 billion in FY 2023, an increase of \$4 billion over FY 2022 enacted levels. However, unlike the final FY 2022 spending package which allocated ARPA-H funding separately from NIH funding, the Administration's budget proposal includes \$5 billion in ARPA-H funding within the total funding level recommended for NIH. For ARPA-H, this is an increase of \$4 billion over FY 2022 enacted levels and this increase amounts to the entire proposed increase for the NIH's base budget. ARPA-H, the Biden Administration's signature health research initiative, was established in the FY 2022 omnibus appropriations package and is aimed at "catalyzing health breakthroughs that cannot readily be accomplished through traditional research or commercial activity." At the time of this analysis, ARPA-H remains under the jurisdiction of HHS but could be transferred to the NIH under the Secretary's transfer authority as included in the FY 2022 omnibus.

In addition to significant growth in ARPA-H funding, other FY 2023 research priorities include substantial investments in pandemic preparedness and biodefense across public health agencies within HHS, including \$12.1 billion of mandatory funds for NIH-supported research on vaccine development, diagnostics, and therapeutics. The \$12.1 billion would support the following activities at the NIH, largely at the National Institute of Allergy and Infectious Diseases (NIAID):

- \$4 billion for preclinical research and development of prototype vaccines and therapeutics against high profile viral families;
- \$2.4 billion for expansion of laboratory capacity and pilot current Good Manufacturing Practice (cGMP) manufacturing for Phase 1 and 2 clinical studies;
- \$2 billion for development and clinical evaluation of vaccines and therapeutics;
- \$1.7 billion to support clinical trial networks infrastructure;
- \$1 billion to support intramural and extramural biosafety level 3 and 4 laboratories; and

Department of Health and Human Services



- \$1 billion for the Rapid Acceleration of Diagnostics (RADx) Tech (RADx-Tech) program to continue to develop innovations in diagnostics and surveillance technologies.

The budget also requests includes \$97 million for the trans-NIH Office of Nutrition Research, an increase of \$96 million over FY 2022 levels, and reflects the increased emphasis NIH is placing on precision nutrition research across the agency.

Ongoing Areas of Interest

Continuing areas of priority investment include support for research on health disparities and inequities and the Administration includes an increase of \$350 million above the FY 2022 enacted level for such research at the NIH, including \$210 million for the National Institute on Minority Health and Health Disparities (NIMHD). In addition, the Administration once again proposes \$100 million in new funding for NIH's climate change and human health initiative which is designed to support research on the human health impacts of the changing climate.

The Administration continues to emphasize research combatting overdose and addiction and includes \$2.6 billion in funding for NIH-supported research on opioids, stimulants, and pain research. Of this amount, \$811 million would be allocated to the ongoing Helping to End Addiction Long-Term (HEAL) Initiative.

The budget request includes \$260 million, an increase of \$15 million above the FY 2022 enacted level, for research related to developing a universal influenza vaccine. The Administration also requests \$25 million for firearm research at NIH, \$12.5 million above FY2022 enacted levels.

Identifying interventions and treatments for mental illnesses has become a top priority for the agency during COVID-19. The budget requests \$25 million for the National Institute of Mental Health (NIMH) to expand research on the impact of COVID-19 pandemic on mental health, a \$5 million increase over FY2022 enacted levels. In addition, the budget requests \$5 million for studies on the impact of social media on mental health and \$5 million to inform mental health treatment approaches.

The Administration also requests \$70 million, \$50 million above FY2022 enacted levels, to continue the Community Engagement Alliance (CEAL) Against COVID-19 Disparities program.

The Biden Administration would retain the investigator salary cap at Executive Level II.

Sources: The FY 2023 HHS Budget in Brief is available at <https://www.hhs.gov/sites/default/files/fy-2023-budget-in-brief.pdf>. The FY 2023 HHS Operating Plan is available at <https://www.hhs.gov/sites/default/files/fy2023-qdm-operating-plan.pdf>. NIH's FY 2023 Congressional Justification is available at <https://officeofbudget.od.nih.gov/pdfs/FY23/br/Overview%20of%20FY%202023%20Presidents%20Budget.pdf>

Department of Health and Human Services



National Institutes of Health (in thousands)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
NIH, Total	44,959,000	49,039,748	4,080,748 (9.1%)
National Cancer Institute (NCI)	6,912,522	6,713,851	-198,671 (2.8%)
National Heart, Lung, and Blood Institute (NHLBI)	3,808,494	3,822,961	14,467 (0.4%)
National Institute of Dental and Craniofacial Research (NIDCR)	501,231	513,191	11,960 (2.4%)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)	2,353,926	2,347,530	-6,396 (0.3%)
National Institute of Neurological Disorders and Stroke (NINDS)	2,611,370	2,768,043	156,673 (6.0%)
National Institute of Allergy and Infectious Diseases (NIAID)	6,322,728	6,268,313	-54,415 (0.9%)
National Institute of General Medical Sciences (NIGMS)	3,092,373	3,097,557	5,184 (0.2%)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)	1,683,009	1,674,941	-8,068 (0.5%)
National Eye Institute (NEI)	863,918	853,355	-10,563 (1.2%)
National Institute of Environmental Health Sciences (NIEHS)	842,169	932,056	89,887 (10.7%)
National Institute on Aging (NIA)	4,219,936	4,011,413	-208,523 (4.9%)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)	655,699	676,254	20,555 (3.1%)

Department of Health and Human Services



National Institutes of Health (in thousands)

National Institute on Deafness and Other Communications Disorders (NIDCD)	514,885	508,704	-6,181 (1.2%)
National Institute of Mental Health (NIMH)	2,216,976	2,210,828	-6,148 (0.3%)
National Institute on Drug Abuse (NIDA)	1,595,474	1,843,326	247,852 (15.5%)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)	573,651	566,725	-6,926 (1.2%)
National Institute on Nursing Research (NINR)	180,862	198,670	17,808 (9.8%)
National Human Genome Research Institute (NHGRI)	639,062	629,154	-9,908 (1.6%)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)	424,590	419,493	-5,097 (1.2%)
National Institute on Minority Health and Health Disparities (NIMHD)	459,056	659,817	200,761 (43.7%)
National Center for Complementary and Integrative Health (NCCIH)	159,365	183,368	24,003 (15.1%)
National Center for Advancing Translational Sciences (NCATS)	882,265	873,654	-8,611 (1.0%)
John E. Fogarty International Center (FIC)	86,880	95,801	8,921 (10.3%)
National Library of Medicine (NLM)	479,439	471,998	-7,441 (1.6%)
Office of the Director (OD)	2,616,520	2,302,065	-314,455 (12.0%)
Common Fund	657,401	645,939	-11,462 (1.74%)

Department of Health and Human Services



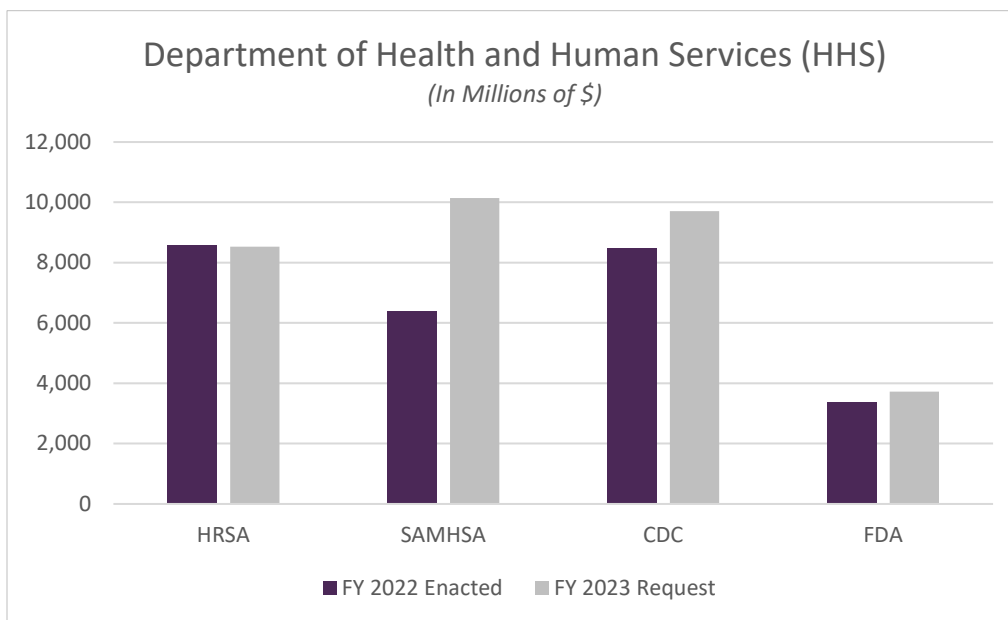
National Institutes of Health (in thousands)

Building & Facilities (Intramural)	250,000	300,000	50,000 (0.2%)
Advanced Research Projects Agency – Health (ARPA-H)	1,000,000*	5,000,000	4,000,000 (400%)
Pandemic Preparedness**	--	12,050,000	12,050,000 --

*Note that \$1 billion provided for ARPA-H in the omnibus was not included in the total amount provided to NIH.

**Note that \$12.1 billion proposed for pandemic preparedness would be included as mandatory funding and is not included in the agency's base discretionary budget.

Department of Health and Human Services



Health Resources and Services Administration (HRSA)

The Biden Administration's FY 2023 budget request would provide \$13.3 billion for the **Health Resources and Services Administration (HRSA)**. Overall, the agency would receive a \$41 million increase over FY 2022 enacted levels, with \$8.5 billion in discretionary budget authority and \$4.8 billion coming from mandatory funds and other sources. The proposal would provide HRSA with \$5.7 billion for **health centers**, which includes \$3.9 billion in mandatory funding, and \$2.1 billion in total funding for HRSA's **workforce programs**. The largest allotment would go to **behavioral health workforce development programs** at \$397 million, a \$235 million increase above FY 2022 levels. The **National Health Service Corps** and **nursing workforce development programs** would receive modest increases in funding at \$502 million and \$295 million, respectively. The **Maternal and Child Health Block Grant** would receive an increase of \$954 million, \$206 million over FY 2022 levels. With funding through **Special Projects of Regional and National Significance (SPRANS)** awards, the Administration is placing an emphasis on maternal mortality and morbidity, as well as issues relating to the COVID-19 pandemic.

The budget proposal builds on the Administration's **National HIV/AIDS Strategy for 2022-2025**, which has a goal of reducing new HIV infections nationwide by 75 percent by 2025, and by at least 90 percent by 2030. For FY 2023, the Administration is seeking to coordinate funding from HRSA, the Centers for Disease Control and Prevention (CDC), the Indian Health Service (IHS), and NIH to implement the strategy. The Administration's proposal would also provide \$2.7 billion for the **Ryan White HIV/AIDS Program**, \$160 million over FY 2022 enacted levels.

The budget would provide \$374 million for **Rural Health programs**, \$43 million above FY 2022 enacted levels. The **Rural Communities Opioid Response Program (RCORP)** would receive \$165 million, a \$30 million increase over FY 2022 levels.

Department of Health and Human Services



Food and Drug Administration (FDA)

The **Food and Drug Administration (FDA)** would receive nearly \$8.4 billion for FY 2023 under the President's budget request, which includes \$3.7 in discretionary budget authority, \$3 billion in user fees, and \$1.6 billion in new mandatory funding for pandemic preparedness. According to the Biden Administration, this funding would primarily be used for improving the agency's regulatory capacity, information technology, and laboratory infrastructure. The funding would also allow the agency to strengthen the nation's supply chain for personal protective equipment (PPE) and improve FDA's analytics and predictive modeling capabilities.

Guided by the enactment of the *Food Safety Modernization Act*, the budget builds on FDA's effort to **prevent foodborne illness outbreaks** and would provide \$1.6 billion for related programs, an increase of \$136 million over FY 2022 enacted levels. The proposal would provide \$4.2 billion for **medical product safety**, an increase of \$253 million above FY 2022 enacted levels. The proposed total includes \$2 billion in budget authority and \$2.2 billion in user fees for FDA to improve pre-market animal drug review capacity, medical device cybersecurity, drug safety surveillance; provide funding for the Resilient Supply Chain and Shortages Program; and implement strategies in the **FDA Predictive Toxicology Roadmap**. The proposal would also provide \$20 million for the Oncology Center of Excellence to support the President's **Cancer Moonshot Initiative**.

Substance Abuse and Mental Health Services (SAMHSA)

The FY 2023 budget request proposes funding the **Substance Abuse and Mental Health Services Administration (SAMHSA)** at \$10.1 billion, nearly \$4 billion above FY 2022 enacted levels. This includes significant increases in supporting **Behavior Health Crisis Services**, increasing access to children's mental health services, and expanding access to community mental health services. The budget request would also provide \$2 billion for the **State Opioid Response (SOR)** grant programs, an increase of \$475 million over FY 2022 enacted levels. Within this total, SAMHSA would direct \$75 million to address opioid substance use needs in tribal communities. In addition, the budget request would provide \$5.9 billion for **substance use prevention and treatment activities**, an increase of \$1.7 billion over FY 2022 levels. The **Substance Use Prevention and Treatment Block Grant** would receive \$3 billion, a \$1.1 billion increase over FY 2022 levels. Additionally, the **Certified Community Behavioral Health Clinics Expansion Grant program** would receive \$533 million, an increase of \$238 million over FY 2022 levels, to ensure children and adults remain able to access comprehensive behavioral healthcare services. In line with the Biden Administration's effort to address youth mental health, the FY 2023 budget request would provide \$244 million for **Project AWARE**, an increase of \$123 million above FY 2022 enacted levels. Project AWARE funding supports training for teachers, parents, first responders, and other adults who interact with youth to recognize and respond to the signs of mental health and substance use issues. The budget request also includes \$38 million for the **Infant and Early Childhood Mental Health grant program** to expand access to evidence-based and culturally appropriate early childhood mental health services.

Department of Health and Human Services



Centers for Disease Control and Prevention (CDC)

The FY 2023 budget request would fund the **Centers for Disease Control and Prevention (CDC)** at \$9.7 billion in discretionary funding, an increase of roughly \$2.1 billion compared to FY 2022 enacted discretionary levels. The request includes \$36.7 billion in mandatory funding to establish a **Vaccines for Adults program**, as well as mandatory funding to support President Biden's plan to transform U.S. capabilities to prepare for and respond rapidly and effectively to future pandemics and other high-consequence biological threats. To complement to the successful Vaccines for Children program, the Vaccines for Adults program would increase access to vaccines for uninsured patients at no cost and promote infrastructure for broad access to routine and outbreak vaccines. The budget also proposes expansion of the children's program to include all children under age 19 enrolled in the Children's Health Insurance Program (CHIP).

The budget would provide \$600 million in funding to support **public health infrastructure activities** and capacity investments within states, territories, localities, and at CDC; \$50 million to sustain investments in the **Center for Forecasting and Outbreak Analytics**, which was established in the *American Rescue Plan Act of 2021* (ARP); and \$200 million to support the agency's **Public Health Data Modernization Initiative**. The budget request includes \$994 million for the CDC's discretionary **Immunization and Respiratory Diseases Program** to help transition to a sustainable program to support COVID-19 vaccination in the future, continue research on long COVID-19 conditions, and enhance support for human papilloma virus (HPV) vaccination efforts in alignment with the Biden Administration's Cancer Moonshot Initiative priorities. CDC's **emerging and zoonotic infectious diseases activities** would receive \$703 million to address the ongoing risk of antibiotic-resistant bacteria, as well as funding to address the expanded and modernized public health and migrations systems to protect the United States during future international outbreaks and pandemics.

Public health initiatives aimed at reducing violence across the U.S. would receive significantly increased funding. The budget request includes \$1.3 billion, an increase of \$568 million above FY 2022 enacted levels, for **injury prevention and control programs**. In addition, the budget request would provide \$250 million for the **Community Violence Intervention Initiative** to support the implementation and monitoring of proven, evidence-based strategies to address community violence, including strategies in hospital settings. Additionally, the FY 2023 budget request would provide \$35 million to continue funding for **firearm injury and mortality prevention research activities**. In particular, CDC would build upon currently funded research and begin implementation of evidence-informed strategies through a new grant program focused on preventing firearm injuries and deaths in high-risk urban and rural communities.

Combatting the drug overdose epidemic in America continues to be a priority for the CDC. The FY 2023 budget request would include \$713 million for CDC's **opioid overdose prevention and surveillance efforts**, an increase of \$223 million over FY 2022 enacted levels.

In addition, the FY 2023 budget request would expand investments in efforts dedicated to **improving maternal health**. The budget request includes \$164 million, an increase of \$81 million above FY 2022 enacted levels, for community engagement; enhancing reviews and surveillance capabilities to eliminate maternal mortality; increased funding for state, local, and Tribal support; and increased funding for data collection initiatives, among other items.

Department of Health and Human Services



Centers for Medicare and Medicaid Services (CMS)

For FY 2023, the **Centers for Medicare and Medicaid Services (CMS)** is estimated to spend \$1.4 trillion in mandatory and discretionary funds, an increase of \$53 billion over FY 2022 enacted levels. Approximately 60 percent of the funds spent by CMS are for the Medicare program, with 38 percent for Medicaid programs.

In the budget request, the Administration proposes eliminating the 190-day lifetime limit on psychiatric hospital services. Under current law, once an individual receives Medicare benefits for 190 days of care in a psychiatric hospital during their lifetime, no further benefits are available to the beneficiary. The Administration also recommends that Medicare Part B cover up to three behavioral health visits per year without cost-sharing. Currently, beneficiaries must pay the applicable deductible and coinsurance amount. The proposal seeks to broaden the types of practitioners that can bill and receive payment under Medicare to include licensed professional counselors and marriage and family therapists. The budget proposal also seeks to align rules for mental health parity in Medicare with commercial insurance plans. Under current law, private health plans that offer mental health and substance use disorder benefits must do so at the same level as medical and surgical benefits. Currently, vaccine coverage is available to Medicare beneficiaries through Parts B and D, though the proposal seeks to consolidate vaccine coverage under Medicare into Part B. The Administration is also calling for Medicare Advantage (MA) plans to provide vaccine coverage at no greater cost-sharing than is charged under Original Medicare. The Administration also proposes a temporary extension of telehealth coverage under Medicare beyond the COVID-19 Public Health Emergency to study its efficacy and impact on access to care. As with most items included in the budget request, Congress will determine which of these proposed changes are realized.

Agency for Healthcare Research and Quality (AHRQ)

The FY 2023 budget request would provide the **Agency for Healthcare Research and Quality (AHRQ)** with \$527 million, an increase of \$71 million over FY 2022 enacted levels. The request would support new Long COVID research and diagnostic safety research, the development of an all payer claims database, and activities to evaluate the effects of telehealth on healthcare delivery and health outcomes. AHRQ's **health services research, data, and dissemination portfolio** would receive \$133 million, an increase of \$35 million over FY 2022 enacted levels. This includes \$62 million for **investigator-initiated general research grants** and grants to ensure diversity within the health services research community, \$10 million for **primary care research**, and \$10 million to support **opioid and polysubstance research grants**. The budget request would provide \$19 million within AHRQ's **Center for Evidence and Practice Improvement** to establish a new initiative aimed at advancing and disseminating healthcare approaches for those living with Long COVID. In addition, the budget request would provide \$7 million to fund AHRQ's contribution to the HHS-wide **Improving Maternal Health Initiative**. The initiative would focus on expanding state capacity to link local and federal healthcare, vital statistics, social service data, and using predictive analytics to improve maternal health and health outcomes. The budget request proposes \$10 million for the establishment of five new **Diagnostic Safety Centers of Excellence**, with three centers specifically focused on cancer, heart disease, and infectious disease. The budget request would also provide \$2 million to establish two **Centers of Excellence in Telehealth Implementation**.

Department of Health and Human Services



Administration for Community Living (ACL)

Under the budget proposal, the **Administration for Community Living (ACL)** would receive \$3.1 billion for FY 2023, an increase of \$668 million above FY 2022 enacted levels. Within ACL, programs providing **Home and Community-Based Supportive Services and nutrition services** would receive \$500 million and \$1.3 billion respectively, the largest program increases at ACL. The budget request proposes \$30 million for ACL's **Alzheimer's Disease Program**, which provides funding for home- and community-based services to states for individuals living with dementia. In addition, the **National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)** would receive \$119 million, a \$2 million increase over FY 2022 enacted levels.

Administration for Children and Families (ACF)

The budget request would provide \$73.8 billion for the **Administration for Children and Families (ACF)**, with \$40.5 billion coming from mandatory funds. Over half of the funding for ACF would be allocated to **Temporary Assistance to Needy Families (TANF), Head Start, and Foster Care programs**. Under the proposal, **early childhood programs** would receive \$20 billion, a \$2.7 billion increase over FY 2022 enacted levels, and **Head Start** programs would receive \$12.2 billion, a \$1.1 billion increase over FY 2022 enacted levels. **Child welfare programs** would also receive \$446 million, a \$110 million increase over FY 2022 enacted levels. **Refugee programs** would receive less funding, totaling \$6.3 billion compared to \$8.9 billion in FY 2022. Within this amount, funding for unaccompanied children would receive \$4.9 billion, \$3.1 billion below FY 2022 enacted levels.

Office of the Secretary

Located within the **Office of the Secretary**, the **Office of Minority Health (OMH)** would receive \$86 million, a \$21 million increase over FY 2022 enacted levels. In FY 2023, OMH plans to increase focus on areas with high rates of adverse maternal health outcomes or with significant racial or ethnic disparities in maternal health outcomes. The **Office of Women's Health (OWH)** would receive \$42 million, a nearly \$4 million increase above FY 2022 levels. OWH's stated FY 2023 priorities include an increase focus on prevention and treatment of eating disorders, violence, and substance use disorders. The budget request would provide the **Office of the Assistant Secretary for Preparedness and Response (ASPR)** with a total of \$3.2 billion in discretionary funding, an increase of 400 million or 14.2 percent over FY 2022 enacted levels. The **Public Health and Social Services Emergency Fund (PHSSEF)** would receive \$3.8 billion in discretionary funding, a \$483 million increase above FY 2022 enacted levels. In addition, the budget request would provide ASPR with \$40 billion in mandatory funding as part of an HHS-led initiative to **prepare for future pandemics and biological threats**. For FY 2023, the Administration is calling on ASPR to invest in advanced research and development of vaccines, therapeutics, and diagnostics for high-risk viruses. The Administration is also seeking to boost domestic manufacturing capacity for medical countermeasures, modernize the pandemic stockpile, and expand the public health workforce.

Department of Health and Human Services



Department of Health and Human Services (in millions of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
Health Resources and Services Administration (HRSA)*	8,575	8,526	-49 (0.6%)
Title VII	519	715	196 (37.8%)
Title VIII	280	295	15 (5.4%)
Substance Abuse and Mental Health Services Administration (SAMHSA)	6,400	10,137	3,737 (58.4%)
Mental Health Services	2,081	4,628	2,547 (122.4%)
Substance Abuse Treatment	3,955	5,574	1,619 (40.9%)
Substance Abuse Prevention	218	312	94 (43.1%)
Agency for Healthcare Research and Quality (AHRQ)	350	376	26 (7.4%)
Centers for Disease Control and Prevention (CDC)	8,457	9,706	1,249 (14.8%)
Chronic Disease Prevention and Health Promotion	1,339	1,612	273 (20.4%)
National Institute for Occupational Safety and Health (NIOSH)	345	345	--
Environmental Health	228	402	174 (76.3%)
Pandemic Preparedness**	--	28,000	--

Department of Health and Human Services



Administration on Community Living (ACL)	2,318	2,986	668 (28.8%)
National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)	116	119	3 (2.6%)
Administration for Children and Families (ACF)	32,412	33,283	871 (2.7%)
Office of the National Coordinator for Health IT (ONC)	64	104	40 (62.5%)
Biomedical Advanced Research and Development Authority (BARDA)	745	828	83 (11.1%)
Food and Drug Administration (FDA), Direct Appropriation	3,365	3,722	357 (10.6%)
Pandemic Preparedness**	--	1,630	--
Assistant Secretary for Preparedness and Response (ASPR)	2,820	3,220	400 (14.2%)
Pandemic Preparedness**	--	40,019	--

Note: Unless otherwise listed, all funding amounts above are discretionary funding

* Note that the FY 2022 enacted level for HRSA includes \$1.1 billion in Congressionally Directed Spending projects which is not included in the budget request, appearing as a proposed cut to HRSA.

** The budget request proposes nearly \$70 billion for pandemic preparedness as mandatory funding at CDC, FDA, and ASPR, and is not included in those agencies' base discretionary budgets.

Sources: The FY 2023 HHS Budget in Brief is available at <https://www.hhs.gov/sites/default/files/fy-2023-budget-in-brief.pdf>.



The president's FY 2023 budget request would provide approximately \$56.7 billion in net discretionary funding for DHS, which is \$2.4 billion below the non-defense enacted level outlined in the FY 2022 omnibus.

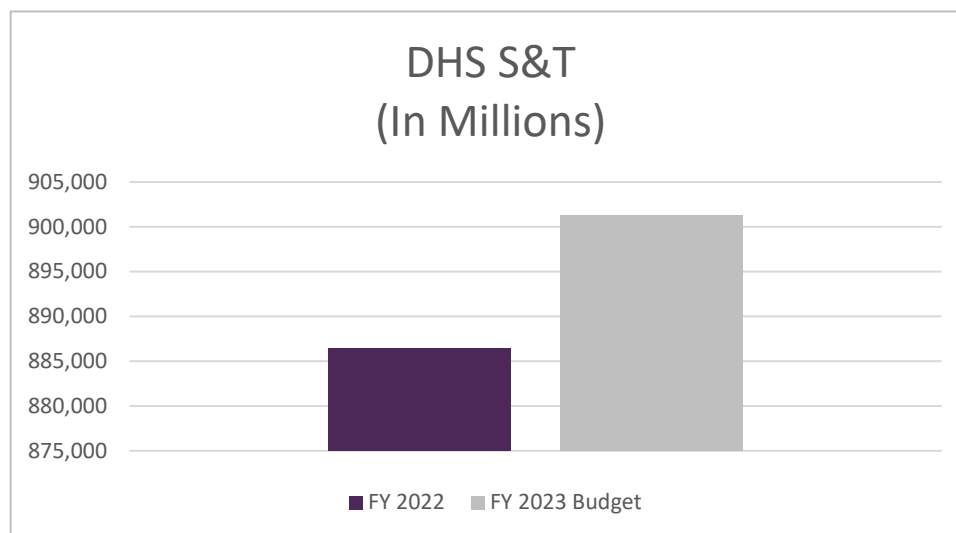
Quick Take: The FY 2023 ask would continue to bolster Biden Administration strategic thrusts, like cybersecurity, climate change, immigration reform, and research and development. Specific research priorities would be largely consistent with the FY 2022 request.

Major Cuts/Eliminations: The budget request proposes funding the Office of University Programs (OUP) at \$51 million, consistent with the level requested by the Administration for FY 2022, but notably 22.1 percent below the FY 2022 enacted levels.

New Initiatives/Priorities: Despite proposed cuts to OUP, DHS would seek to provide over \$901 million to the Science and Technology Directorate (S&T), which would be a 1.7 percent increase over the enacted level and one of the highest funding marks in years for the office. A large portion of the S&T increase would support the modernization of research and development infrastructure and would allow DHS to construct the Detection Sciences Testing and Applied Research Center for explosive testing and evaluation in Atlantic City, NJ.

The Bottom Line

Unlike previous years, the Administration's budget request provides significant regard for the independent science and research programs within the DHS Science and Technology Directorate (S&T) that often attract university and private sector partnerships to develop solutions for the Homeland Security enterprise. Notably, the request includes robust support for the university-based Centers of Excellence Program, bucking a trend of proposed cuts to the initiative going back to the Obama Administration. The request also signifies the Department's continued prioritization of investments in near-term solutions over fundamental research, as several proposed initiatives are at high Technology Readiness Levels (TRLs). It remains to be seen if Congress will support the Administration's plans to bolster DHS research initiatives among other competing priorities as they debate one of the most politically-divisive annual appropriations measures.





Proposed Reductions and Terminations

Border Security

Programs under the Border Security Thrust Area would be cut by 31.9 percent below FY 2021 enacted level – the most recent funding level in the budget documentation. This is the largest proposed decrease of any research thrust.

New and Signature Initiatives

Centers of Excellence

The budget request proposed \$51 million for OUP, which supports the Department’s Centers of Excellence (COEs) and Minority-Serving Institutions (MSI) program. This would be \$14.5 million below the FY 2022 enacted level and the same amount as the Administration’s FY 2022 request. The request would notably propose funding for current COEs and relocate funding from COEs that are set to expire – the Borders, Trade, and Immigration (BTI) Institution and Arctic Domain Awareness Center (ADAC) – to compete two new centers. Topics for the new COEs are currently unknown but will be decided by DHS based on established needs with insight from the Department’s components. The current plan is to facilitate at least one “work-plan development workshop” in the fourth Quarter of FY 2023. This is the next step in establishing a new COE after a Notice of Funding Opportunity is released. This may indicate that DHS plans to compete at least one of the new COEs before then. Also of note, the budget does not mention anything about the language in the FY 2022 omnibus bill that provided an additional \$12 million for the COE program to assess the current state of border security.

Ongoing Areas of Interest

Community and Infrastructure Resilience

The request would provide nearly \$40.6 million for several community and infrastructure resilience activities that were also highlighted in the FY 2022 budget request, including the Climate Adaptation and Resilience Program, which would foster collaborative research with the Department of Energy in support of the proposed Advanced Research Projects Agency for Climate (ARPA-C). The request would fundamentally aim to ensure that research and development needs are aligned with the DHS climate change action plan and that S&T is responsive to the Cybersecurity and Infrastructure Security Agency (CISA), Federal Emergency Management Agency (FEMA), and “other partners in the climate, natural disaster, community, and infrastructure resilience and adaptation space.”

Cyber Data Analytics

The request would provide over \$47 million for cyber data analytics research and activities at S&T. According to the request, “this program engages in the improvement of computational analytics and information sharing, in order to improve cyber-physical security risk analysis across the government, Critical Infrastructure Sectors, and National Critical Functions.” Most of these investments would focus on “developing and delivering data analytics and machine learning techniques that will enhance CISA’s Threat/Hunt capabilities in the defense of federal networks and critical infrastructure.”

Department of Homeland Security



Technology Centers

Technology Centers are teams within DHS S&T that focus on immediate technological needs and processes in priority areas and assist stakeholders within the homeland security enterprise with implementation. The budget notes that in FY 2023, Technology Centers would support early-stage research and development in areas related to climate change and resilience, countering domestic extremism, and data collection among other things.

Source: DHS's FY 2023 Budget in Brief is available at <https://www.dhs.gov/publication/fy-2023-budget-brief>; the full budget request can be found at <https://www.dhs.gov/publication/congressional-budget-justification-fiscal-year-fy-2023>.

Department of Homeland Security

(in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2023 Enacted
DHS, Total	59,126,163*	56,727,256**	-2,398,907 (4.1%)
Science and Technology Directorate	886,403	901,291	14,888 (1.7%)
University Programs	65,537	51,037	-14,500 (22.1%)

*FY 2022 other non-defense discretionary appropriations

**Approximate net discretionary funding provided in the "FY 2023 Congressional Justification"

Department of Justice



At the time of this writing, a complete FY 2023 budget request for the Department of Justice (DOJ) has yet to be released, but the Administration has offered some summary materials with high level priorities. The materials note that DOJ would provide \$37.7 billion in discretionary funding for, which would be a steep \$2.5 billion or 7 percent increase above the FY 2022 enacted level.

Quick Take: Significant resources would be provided for prevailing Biden Administration priorities that seek to address school safety, criminal justice, violence against women and domestic radicalization.

Major Cuts/Eliminations: The request would seek to move away from some congressional research priorities and areas they had been competed in the past, including studies on Counter-Unmanned Aerial Systems (C-UAS) and the development of a model to reduce incarceration rates. Funding for these programs could be restored by Congress in their annual appropriations measures.

New Initiatives/Priorities: The budget request indicates increased emphasis in several areas including gender-based violence, community violence prevention, and federal criminal justice reform.

The Bottom Line

The budget calls for a notable investments in funding for the Department's Research, Evaluation, and Statistics account, which often supports university partnerships to develop best practices, technologies, and processes for the administration of justice. The overall request could run into partisan divides that could threaten compromise on a final bill, including issues like gun control, immigration enforcement, and calls for enhanced resources to investigate the events that led to the attack on the U.S. Capitol .

New and Signature Initiatives

The National Institute of Justice (NIJ), DOJ's primary research account for universities, would receive \$43 million to carry out quality research in the forensic, physical, and social sciences. This would be around a 43.3 percent increase over FY 2022. The budget prioritizes research related to school safety and domestic radicalization, which would receive \$1 million and \$10 million respectively. The budget would also provide \$2 million to support research on violence against American Indians and Alaskan Natives. As criminal justice reform continues to be a priority for the Biden Administration, the budget would direct the Federal Prison System to provide NIJ with around \$8 million to evaluate activities and programs related to the *First step Act of 2018*, which aims to reduce recidivism for formerly incarcerated persons and decrease the population of federal prisons.

The budget also recommends a historic investment of \$1 billion to support efforts related to the Violence Against Women Act (VAWA) which includes investments in legal services for victims, sexual assault services, and housing support. Of note, the request would provide significant resources to establish a new program to address emerging issues surrounding gender-based violence, like expanding community capacity, combatting online harassment, financial support, and support to transgender survivors of sexual assault.

Source: A summary of the President's budget request for DOJ is available at https://www.whitehouse.gov/wp-content/uploads/2022/03/jus_fy2023.pdf.

Department of Labor



Discretionary programs within the Department of Labor (DOL) would be funded at \$14.6 billion, up \$200 million, a 1.5% increase compared to the FY 2022 enacted level.

Quick Take: The FY 2023 budget request seeks to support DOL workforce and training opportunities, particularly for those from disadvantaged and marginalized communities. The budget requests calls for \$303 million for Registered Apprenticeships.

Major Cuts/Eliminations: No major cuts or eliminations are proposed.

New Initiatives/Priorities: The request calls for \$20 million to pilot the Civilian Climate Corps as well as new youth employment efforts. The request continues a call for DOL's Employment and Training Administration (ETA) to receive \$10 million for a new program focused on helping veterans shift to careers in clean energy.

The Bottom Line

The Biden Administration proposes DOL investments in career pathways programs, workforce development for disadvantaged groups, and increased funding for the Dislocated Workers program.

New and Signature Initiatives

The budget request proposes \$75 million for a new **National Youth Employment Program**, which will provide grants for local workforce boards to operate summer and year-round youth employment programs. Community colleges also continue to remain a priority for the Administration, with a proposed \$100 million for the **Strengthening Community Colleges Training Grants** program. The program would “be implemented in coordination with the Department of Education to build partnerships between community colleges and industry to provide effective training for in-demand jobs.” The budget request would provide \$100 million for the **Sectoral Employment through Career Training for Occupational Readiness (SECTOR) program**. This program would support a comprehensive approach to sector partnerships, including support for wraparound services and training programs focused on growing industries.

As noted above, \$303 million would be provided under the request to expand access to **Registered Apprenticeships**. The request would also fully fund Workforce Innovation and Opportunity Act (WIOA) programs at their authorized levels. Additionally, \$100 million would be provided for the **POWER+ initiative**, which is focused on communities transitioning away from fossil fuel extraction or energy production. The request also continues the Workforce Opportunities for Rural Communities grant program.

The budget request would also support the creation of an Office of Diversity and Inclusion in the Office of the Secretary of Labor. Additionally, the request would support efforts by the Office of Federal Contract Compliance Programs (OFCCP) to develop a comprehensive initiative to advance racial equity at work by identify promising practices, evidenced-based research, and innovative initiatives that can lead to more diverse, equitable, and inclusive workplaces.

Department of Labor



The request includes \$85.6 million for workforce information grants to states support data and capacity-building enhancements at the national and state levels.

Source: DOL's FY 2023 Budget Summary and Background Information is available at <https://www.dol.gov/sites/dolgov/files/general/budget/2023/FY2023BIB.pdf> and supporting budget explanatory information can be found at <https://www.dol.gov/general/budget>.

U.S Department of Labor (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
Training and Employment Services			
Adult Employment and Training Activities	870,649	899,987	29,338 (3.4%)
Youth Activities	933,130	963,837	30,707 (3.3%)
Dislocated Workers Employment and Training Activities	1,075,553	1,682,664	607,111 (56.4%)
<i>National Dislocated Workers Grants</i>	300,859	527,386	226,527 (75.3%)
Apprenticeship Program	235,000	303,000	68,000 (28.9%)
Workforce Data Quality Initiative	6,000	6,000	--
National Youth Employment Program	0	75,000	75,000 (100%)
Veterans' Clean Energy Training Program	0	10,000	10,000 (100%)
Civilian Climate Corps	0	15,000	15,000 (100%)

Humanities, Arts, and Cultural Agencies



The President's FY 2023 budget proposes increases for the grant-making humanities, arts, and cultural agencies, including the National Endowments for the Humanities and Arts, among others.

Quick Take: President Biden's FY 2023 budget proposal would provide increases for the National Endowment for the Humanities (NEH), the National Endowment for the Arts (NEA), and the Institute of Museum and Library Services (IMLS). The budget request proposes \$200.7 million for NEH, over \$20 million more than FY 2022 enacted levels; proposes \$203.6 million for NEA, a \$23 million increase over current levels; and proposes \$277 million for IMLS, a \$9 million increase over FY 2022. The President's budget request proposes \$9.5 million for the National Archives and Records Administration's grant-making entity, National Historical Publications and Records Commission (NHPRC), a \$2.8 million cut relative to current levels but only reflective of NHPRC's budget's inclusion of congressionally directed spending projects in FY 2022.

Major Cuts/Eliminations: None

New Initiatives/Priorities: For NEH, the Biden Administration will continue to focus on "advancing racial equity and support for underserved communities," including through the proposed creation of a new office for data collection on the effectiveness of programs to advance equity, the creation of a new Office of Outreach to reach underserved communities, and the establishment of a Chief Diversity Officer. The budget request also proposes continued focus on the climate crisis' impact on society through the creation of a climate resiliency program for documenting cultural resources endangered by climate impacts. The budget request also proposes creation of an environmental infrastructure program, including a new **Climate-Smart Humanities Infrastructure** program focused on humanities organizations and historic sites under climate threat, and a revised, climate-aware **Infrastructure and Capacity Building Challenge Grants** program.

For NEA, the Biden Administration will emphasize the agency's focus on rebuilding the creative community impacted by the COVID-19 pandemic, continued development of **Creative Forces: NEA Healing Arts Network**, and efforts to advance racial equity, civil rights, and equal opportunity through engagement with underserved communities and rural America.

For NEA, the budget request proposes alignment with NEA's new 2022-2026 strategic plan and the agency's goals of rebuilding the creative economy, healing the nation, advancing racial equity, access, and climate justice, and serving the arts field and agency operations. The budget request would fund a NEA Chief Diversity Officer and new outreach efforts to diversify the applicant pool.

Within NHPRC, the President's budget requests \$3 million to support grants "to preserve and digitize the records of the creation of HBCUs," up from the FY 2022 level of \$500,000.

The Bottom Line

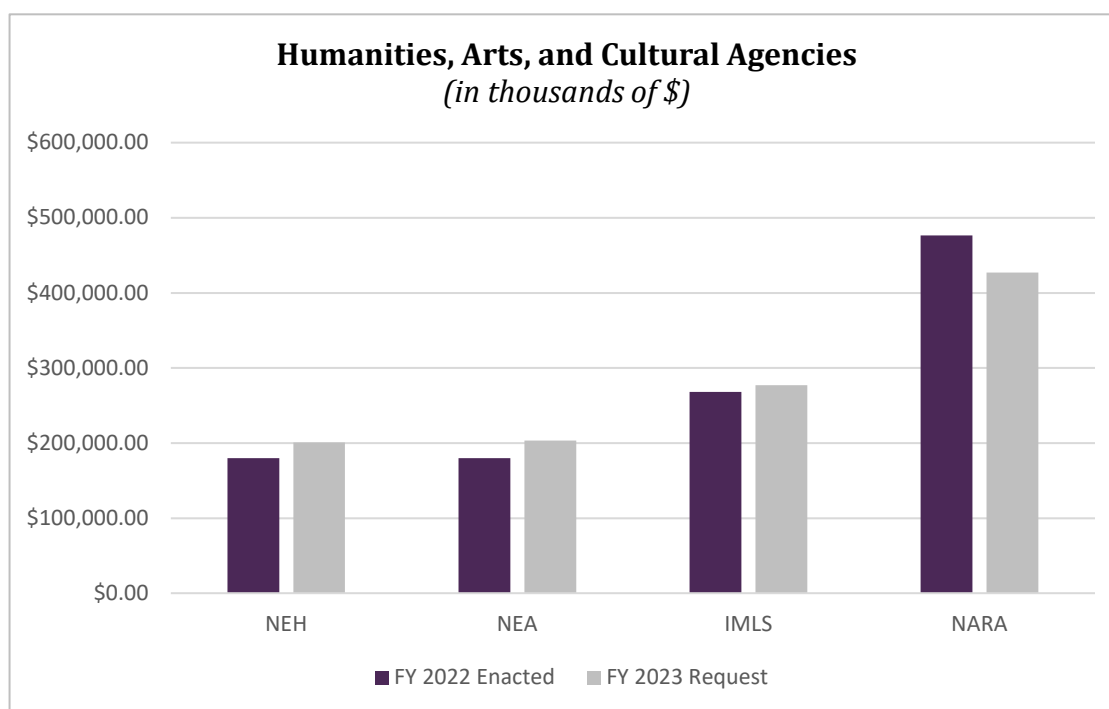
After years of threats of elimination by the previous Administration, the NEH and NEA are now in strong footing with moderate budget increases proposed with the Biden budget request. While the Endowments enjoy bipartisan support in Congress, it is uncertain that Congress will provide those levels of increase.

Humanities, Arts, and Cultural Agencies



For NEH, the Biden FY2023 budget proposes increases to all the existing divisions and offices. NEH would continue to support the **A More Perfect Union** initiative projects in preparation for the 250th anniversary of the Declaration of Independence in 2026, including new plans for a civil rights oral history project and a cultural heritage mapping project. The NEH Office of Digital Humanities proposes a new program focused “on technology and its potential negative consequences.” The NEH Education Division proposes a new program for under-resourced institutions with a streamlined grant application and review process. The NEH Division of Research will focus on expanding flexibility and award sizes for to HBCUs, Tribal Colleges, and MSIs. The budget also proposes new incentives for humanities research on the climate crisis and collaborative research with scientists.

Full details on the President’s FY 2023 budget request for IMLS have not yet been published.



Sources: NEH’s FY 2023 Budget Request is available at <https://www.neh.gov/sites/default/files/inline-files/NEH%20FY%202023%20CI.pdf>.

NEA’s FY 2023 Budget Request is available at <https://www.arts.gov/sites/default/files/NEA-FY23-Cong-Budget-and-Performance-Plan.pdf>.

NARA’s FY 2023 Budget Request is available at <https://www.archives.gov/files/about/plans-reports/performance-budget/2023-nara-congressional-justification.pdf>.

Humanities, Arts, and Cultural Agencies



Humanities, Arts, and Cultural Agencies (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
NEH, total	180,000	200,680	20,680 (11.5%)
Research Programs	15,000	17,000	2,000 (13.3%)
Education Programs	13,500	14,800	1,300 (9.6%)
Federal/State Partnerships	54,348	63,000	8,652 (15.9%)
NEA, total	180,000	203,550	23,550 (13.1%)
Grants	86,310	95,400	9,090 (10.5%)
State and Regional Partnerships	57,540	63,600	6,060 (10.5%)
IMLS, total	268,000	277,000	9,000 (3.4%)
NARA, total*	476,543	427,000	-49,543 (10.4%)
NHPRC, total	12,265	9,500	-2,765 (22.5%)

The amounts shown for FY 2022 enacted are taken from the Consolidated Appropriations Act, 2022 (P.L. No. 117-103) and related explanatory statements.

* The FY 2022 enacted levels for NARA and NHPRC include congressionally directed spending project spending.

National Aeronautics and Space Administration



NASA would be funded at \$25.9 billion, an increase of \$1.93 billion (8 percent) above the FY 2022 enacted level.

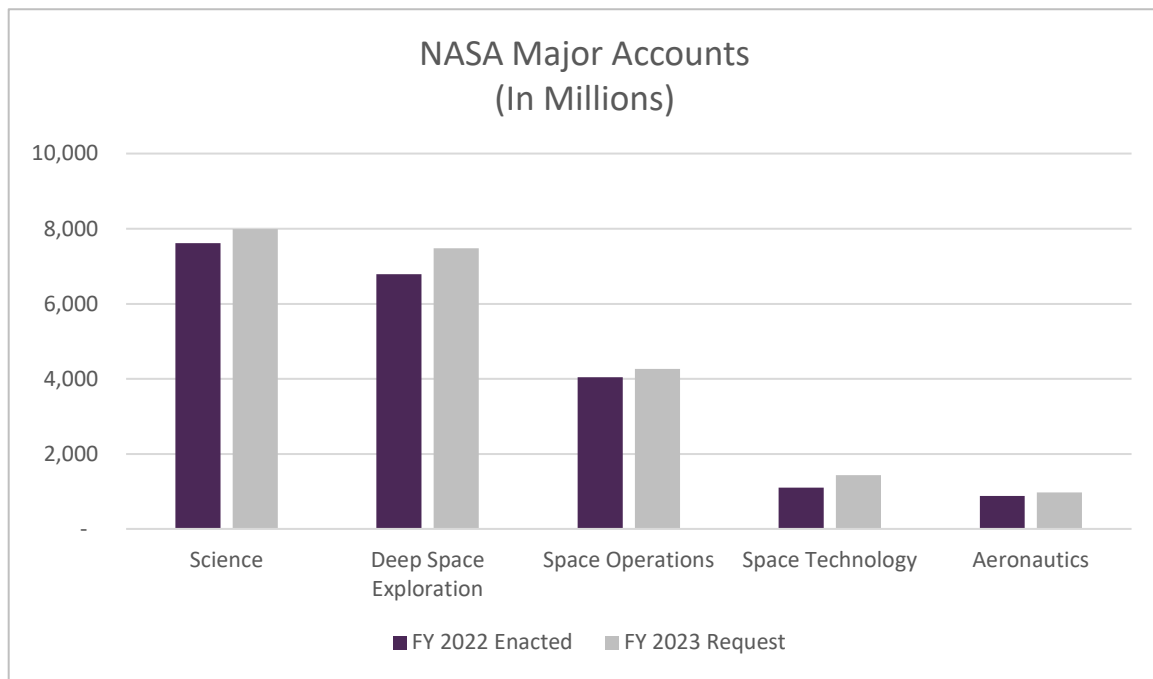
Quick Take: The Biden Administration’s FY 2023 budget for NASA is generally consistent with last year’s emphasis on climate research, applied technology development, and maturing core human exploration capabilities. The budget would provide the new Exploration Systems Development Mission Directorate (ESDMD) with the largest dollar increase (\$686.6 million) and Space Technology Mission Directorate (STMD) with the largest percentage growth (31 percent) relative to FY 2022 appropriations.

Major Cuts/Eliminations: The budget more than halves the amount for NASA’s planetary defense activities and would terminate the controversial SOFIA mission.

New Initiatives/Priorities: NASA’s human exploration activities would be re-organized in anticipation of Artemis elements approaching the end of their development phase. As in the FY 2022 request, Earth science research within the Science Mission Directorate (SMD) and STMD would see significant increases in funding.

The Bottom Line

The FY 2023 request and overall programmatic direction do not account for the lower-than-anticipated funding NASA received in the FY 2022 omnibus signed into law earlier this month. The mismatch between assumptions that informed the FY 2023 proposal, and the current fiscal reality will prompt hard choices within NASA as it determines how to prioritize major scientific missions, implement two new decadal surveys, meet the human exploration goals of Artemis, and maintain the U.S. presence in Low Earth Orbit (LEO).



National Aeronautics and Space Administration



Note on NASA's FY 2023 Budget Request

NASA, like other federal agencies, operated under a Continuing Resolution at FY 2021 levels for the first six months of FY 2022. Up until that point, proposals from House and Senate appropriators generally supported the significant increases in the FY 2022 president's budget request for NASA. Meanwhile, the agency's FY 2023 budget formulation concluded in the fall – well before Congress announced a FY 2022 spending framework that lowered overall amounts for non-defense spending – and NASA used the FY 2022 request as the starting point for FY 2023 planning. As such, the current request does not account for the lower-than-anticipated funding across NASA in the omnibus.

This situation is not unique to NASA. However, NASA faces unique challenges that undermine the assumptions in this year's request and will force the agency to make difficult decisions in how it will allocate spending in FY 2022. These decisions will further impact FY 2023 programs unless Congress decides to significantly boost spending for NASA. Long-lead items prioritized or planned to start in FY 2023 (i.e., Announcements of Opportunity for multi-year missions or missions entering development and new starts that implement recent and forthcoming decadal) may be delayed. Grant programs – able to absorb cuts easier than missions under development – might see declines in funding. The Artemis campaign, which drives broad public interest and attracts strong support in Congress, could see milestone slips or delays in funding for key elements of its architecture (i.e., the upcoming "Sustaining Human Development" lunar lander competition).

Russia's invasion of Ukraine also may impact NASA projects. Russia's commitment to the International Space Station has been called into question at a time when NASA is taking the first concrete steps in planning for a future beyond the ISS. Marshaling resources to maintain the U.S.'s presence in LEO if Russia ruptures this decades-long partnership – a highly unlikely but not impossible scenario – would be an incredibly costly and technically challenging proposition for the Administration. Further, Lori Glaze, Planetary Science Division Director, announced in an unscripted update during her briefing before the National Academies Space Science Week that the European Space Agency (ESA) had formally requested NASA's technical and presumably financial support for its ExoMars rover, a joint partnership with Russia and an early casualty of the diplomatic crisis. Less understood are the broader implications of the war on European fiscal priorities. Individual EU member commitments to boost defense spending could place tension on resources for non-defense priorities. Germany – which has committed to significantly increasing its defense spending – is the second largest financial contributor to ESA behind France and earmarked \$1.01 billion to ESA in 2022, almost as much as the next two EU member states (Italy and the UK) combined. ESA's ties to NASA include in-kind contributions from either agency on at least 27 ongoing and planned scientific missions and research, and key elements of the NASA's Artemis campaign.

Lewis-Burke's analysis of the agency's FY 2023 budget request focuses on highlighting priorities or opportunities likely to materialize due to NASA's stated commitment or its obligation to follow congressional direction.

Proposed Reductions and Terminations

The request would terminate the Astrophysics Division's **SOFIA** mission. Both Obama and Trump Administrations repeatedly and unsuccessfully attempted to cancel the mission due to concerns among the astrophysics community over its high operating costs and low scientific return. These concerns were reiterated in the Astro2020 decadal survey, which formally recommended that NASA terminate the mission. It is all but certain that SOFIA's powerful support in Congress will maintain funding for the mission in FY 2023.

National Aeronautics and Space Administration



The request would cut PSD's **Planetary Defense** budget from \$197.2 million in FY 2022 to \$87.7 million in FY 2023. This 56 percent reduction would be achieved by delaying launch of the Near-Earth Object Surveyor (NEO Surveyor) mission by two years and transferring savings in FY 2023 to "other high priority missions within Planetary Science."

New and Signature Initiatives

The budget requests \$2.41 billion for NASA's **Earth Science Division (ESD)**, an increase of \$373.9 million or 17 percent above FY 2022 and comprises nearly 93 percent of NASA's total increase to SMD. As a result, ESD is the only SMD division that would see meaningful funding growth.

The proposal would maintain ESD's development of "Designated Observables" missions recommended by the 2017 *Earth Science and Applications from Space Decadal Survey (ESAS 2017)* and affirms NASA's intention to release an Announcement of Opportunity (AO) for an **Earth System Explorer** mission in the coming months. Explorer-class missions – like their analogs in other SMD divisions – will be competed, PI-led missions that address "Targeted Observables" prioritized in ESAS 2017.

The budget also expands ESD's role within the Biden Administration's emphasis on combating climate change and wildfire research, monitoring, and mitigation through new activities in the Applied Science program and Earth Science Technology Office (ESTO) around Greenhouse Gas monitoring. The budget confirms ESD's intention to release an AO for the next Earth Venture Instrument competition later this year.

In 2021 NASA announced the reorganization of the Human Exploration and Operations Mission Directorate into the **Exploration Systems Development Mission Directorate (ESDMD)** and the **Space Operations Mission Directorate (SOMD)**. The FY 2023 request is the first that reflects this reorganization; however, the shifts are mostly transferring already established programs and the changes are currently ongoing. ESDMD is responsible for development of systems and technologies for NASA's Artemis program, which aims to return humans to the Moon and subsequently land humans on Mars. SOMD, funded at \$4.26 billion – \$224.7 million or 5.6 percent above FY 2022 – would continue to oversee activities on and transportation to/from the International Space Station and planned development of the Commercial LEO Destination program.

ESDMD would be funding at \$7.48 billion, a \$686.3 million or 10.1 percent increase above FY 2022. This would establish a new Artemis Campaign Development (ACD) account to oversee programs related to the Artemis campaign's architecture. Under ACD, NASA would establish a new program for Exploration Extravehicular Activity (xEVA) and Human Surface Mobility to develop and manage system needed for human presence on the lunar surface, including spacesuits and a new Lunar Terrain Vehicle (LTV). ESDMD would continue to oversee development of the Human Landing Systems (HLS) and the newly announced competition for a second provider of sustainable transportation services following the Artemis III mission. NASA will also establish a new Mars Campaign Development theme to begin working on long-lead technology requirements as a precursor to a crewed missions to Mars.

The request includes \$822.3 for NASA's **Mars Sample Return (MSR)** within the Planetary Science Division, an increase of \$169.1 million or 26 percent above FY 2022 enacted. MSR is likely to continue occupying a significant wedge in the Planetary Science budget given early cost growth due to changes in the complex, multi-element mission architecture. The budget request previews this, stating "increased funding needs for [MSR], which now requires a second lander, is placing pressure on the rest of the Planetary Science portfolio and may impact the balance of the portfolio in future years." Congress is likely to tolerate this cost growth, but the extent to which it will provide PSD the resources to reduce impacts elsewhere in the division remains to be seen.

National Aeronautics and Space Administration



Lastly, the budget would provide NASA's **Space Technology Mission Directorate** (STMD) \$1.44 billion, a \$338 million or 31 percent increase over FY 2022. This funding would include \$5 million to initiate an On-Orbit Servicing, Assembly and Manufacturing (OSAM) Consortium of government, academia, and industry representatives. STMD will continue to support development and research for crosscutting space technologies and capabilities, however, final FY 2022 spending levels will limit the number of initiatives STMD is able to fully support and force difficult decisions on how to allocate its funding across STMD until Congress provides FY 2023 funding.

Ongoing Areas of Interest

NASA SMD would be funded at \$7.98 billion, an increase of \$373.9 million or 4.9 percent. Existing missions across SMD would be funded at levels necessary to continue development. Decreases in funding reflect expected mission lifecycle transitions or close-outs.

The request would provide the **Astrophysics Division** with \$1.56 billion in FY 2023, a 1 percent decrease from the FY 2022 level and includes funding for continued development of the Nancy Grace Roman Space Telescope. The budget does not include funding prioritized in the *Astronomy and Astrophysics 2020 Decadal Survey's* (Astro2020) to establish a technology maturation program as a precursor to the decadal's top recommended "Great Observatories" flagship mission. Astro2020 was released in November 2021, well into NASA's budget formulation, and the Agency has stated it intends to include funding for Astro2020 decadal recommendations in its FY 2024 request. However, funding is included to continue preparations for a new **Astrophysics Probe**-class mission, another top Astro2020 recommendation for NASA to establish a competitive, PI-led, and \$1.5 billion cost capped mission line. A draft AO is still expected later this calendar year.

The **Planetary Science Division** (PSD) would receive \$3.16 billion in FY 2023, an increase of \$39.8 million or 1.3 percent above FY 2022. PSD will face significant budgetary and schedule challenges in FY 2023 and for the foreseeable future. Major missions currently under development – Jupiter Europa, Dragonfly, and MSR – are experiencing cost growth or schedule delays that have and will continue to impact PSD's larger portfolio and future competitive opportunities. The next Discovery AO, originally planned for release in FY 2023, has been delayed indefinitely. Shifting dates for a fifth New Frontiers AO now suggest a competition no earlier than Q1 of FY 2023. Compounding matters is the imminent release of the 2023 Planetary Science and Astrobiology Decadal Survey and likely recommendations that will continue the U.S. leadership in scientific exploration of the Solar System. The first budget to acknowledge its recommendations will be the FY 2024 or FY 2025 request, per NASA.

The **Heliophysics Division** (HPD) would be funded at \$760.2 million, \$17.7 million or 2 percent below the FY 2022 enacted level. HPD would begin implementation of the Interstellar Mapping and Acceleration Probe (IMAP) mission and will continue development of the Geospace Dynamics Constellation (GDC) mission. The budget would also maintain support for the Heliophysics Technology account that funds transformative technologies to enable innovative mission designs and would initiate a technology incubator program to advance promising technologies through maturation and demonstration to better enable technology integration into future science missions and would also expand the Heliophysics technology community by developing a solicitation for proposals from non-Heliophysics technologists. NASA's ability to carry out these new programs will be contingent on how HPD is able to allocate FY 2022 funding across its programs.

The budget would also create a new \$22.3 billion space weather program, in HPD, that would include the Space Weather Science and Applications (SWxSA) project, the Heliophysics Environmental and Radiation Measurement Experiment Suite (HERMES), and the Space Weather Future Missions projects. The space weather program would also support new opportunities including the multidisciplinary Space Weather Centers of Excellence, and the Space Weather Applied Research

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Challenges for research that can “remove scientific and technological roadblocks to improve space weather capabilities.”

The Administration would provide \$971.5 million for the **Aeronautics Research Mission Directorate**, a \$90 million or 10 percent increase over the FY 2022 enacted level. In FY 2023 NASA plans to begin test flights of the all-electric X-57 Maxwell aircraft and the X-59 Quiet SuperSonic Technology aircraft. NASA will continue support of its Airspace Operations and Safety program and will initiate a new project, Advanced Capabilities for Emergency Response Operations (ACERO), which will leverage NASAs Unmanned Aircraft Systems traffic management capabilities to improve aerial response to wildfires. NASA also plans to continue the annual solicitation for the University Leadership Initiative and would increase funding for the program for the development of beyond next-generation zero-emission aircraft concepts and technologies.

The budget would provide \$150.1 million, 10 percent above FY 2022 level, for the **Office of STEM Engagement (OSTEM)**, which will continue to lead NASA-wide educational efforts. Additional funding for Space Grant will allow each consortium to increase the number of student awards and other programming and NASA stated plans to expand opportunities for Space

Grant awardees to collaborate with mission directorates when their priorities and capabilities align. The EPSCoR program plans to partner with the Space Technology Mission Directorate (STMD) to extend the NASA Suborbital Flight Opportunities (SFO) program, which facilitates the rapid demonstration of new space technologies on suborbital vehicles, to EPSCoR jurisdictions. The request provides resources to the Minority University Research and Education Project (MUREP) to enable greater reach to Minority Serving Institutions (MSIs) and underrepresented minorities in geographical areas where MUREP does not have investments. The proposed budget also provides a \$3 million increase (relative to the FY 2022 request) for Next Gen STEM to enhance critical investments in K-12.

Source: NASA’s FY 2023 Budget Summary and Background Information is available at <https://www.nasa.gov/news/budget/index.html>.

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(In thousands)

	FY 2022 Enacted	FY 2023 Request	FY 2022 vs. FY 2023 Request
NASA, total	24,041,300	25,973,800	1,932,500 (8%)
Science	7,614,400	7,988,300	373,900 (5%)
Earth Science	2,064,700	2,411,500	346,800 (17%)
Planetary Science	3,120,400	3,160,200	39,800 (1%)
Astrophysics*	1,568,900	1,556,000	-12,900 (1%)
Heliophysics	777,900	760,200	-17,700 (2%)
Biological and Physical Sciences	82,500	100,400	17,900 (22%)
Aeronautics	880,700	971,500	90,800 (10%)
Space Technology	1,100,000	1,437,900	337,900 (31%)
Deep Space Exploration Systems	6,791,700	7,478,300	686,600 (10%)
Space Operations	4,041,300	4,266,300	225,000 (6%)
STEM Engagement	137,000	150,100	13,100 (10%)
Space Grant	54,000	57,000	2,500 (5%)
EPSCoR	26,000	26,000	-
Minority University Research and Education Program (MUREP)	43,000	48,100	5,100 (12%)
Safety, Security, & Mission Services	3,020,600	3,049,200	28,600 (1%)
Construction and Environmental Compliance and Restoration	410,300	390,00	-20,000 (5%)
Office of Inspector General	45,300	46,000	700 (2%)

*The FY 2023 President's Budget Request transferred funding for the James Webb Space Telescope into the Astrophysics Division. The table's FY 2022 enacted amount reflects the \$175.4 million Congress provided for JWST but includes it within APD for ease of comparison

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NSF would be funded at \$10.49 billion in FY 2023, an 18.7 percent or \$1.65 billion increase above the FY 2022 enacted level.

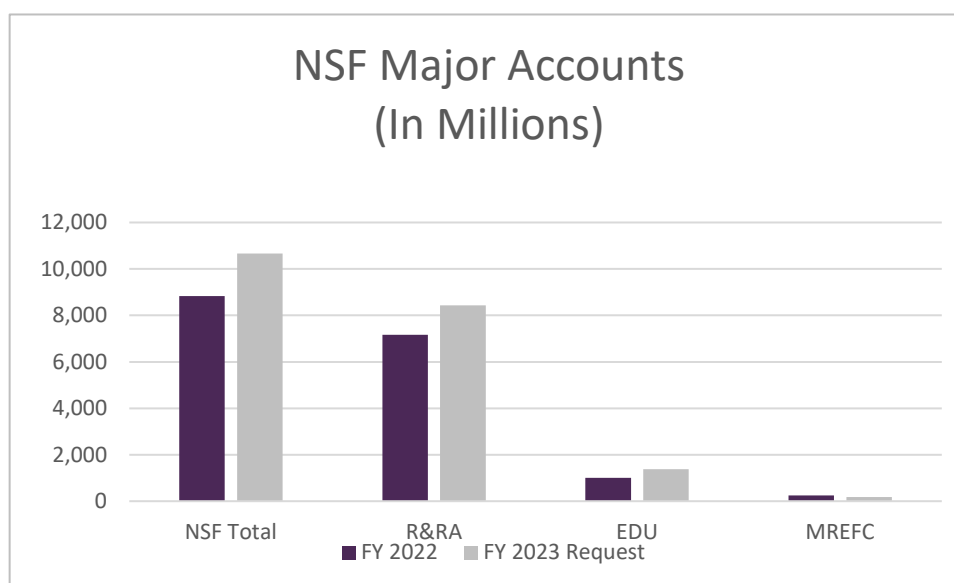
Quick Take: The Biden Administration again proposes major increases across NSF for FY 2023, including in Administration research and education priority areas as well as core NSF programs. Overall Research and Related Activities would grow by 18 percent from the FY 2022 estimated level, while Education and Human Resources (EHR) would grow by 39 percent (20 percent if one accounts for the consolidation of all funding for the Graduate Research Fellowship Program to EHR in FY 2022).

New Initiatives/Priorities: The request proposes funding to fully stand up the new Directorate for Technology, Innovation, and Partnerships (TIP), which aims to advance science and engineering research and innovation, accelerate the translation of basic research, solve national and societal problems, and support education pathways. Both the existing directorates of NSF and TIP would fund activities in priority areas such as climate and energy, advanced wireless research, biotechnology, microelectronics and semiconductors, advanced manufacturing, AI, and quantum. Broadening participation programs would also see major growth and NSF would launch a new initiative aimed at building research capacity at emerging research institutions. The budget request proposes to rename the Directorate for Education and Human Resources (EHR) to the Directorate for STEM Education (EDU) and rename the Division of Human Resource Development (HRD) within EDU to the Division of Equity for Excellence in STEM (EES) to better reflect the Directorate's work.

Major Cuts/Eliminations: With such large growth proposed to the agency, there are no major cuts or eliminations outlined in the request. However, many of the Big Ideas for Future Investment would see declining funding as NSF shifts resources to newer priority areas.

The Bottom Line

The budget request's emphasis on TIP, climate, clean energy, and equity aligns with congressional priorities and congressional interest in boosting NSF's role in competitiveness. However, it remains to be seen if appropriators will have the resources to deliver such major increases to NSF's budget. If not, tougher choices may again need to be made on how much to grow TIP and other priority areas versus protecting core programs.



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Proposed Reductions and Terminations

Big Ideas for Future Investment

The FY 2023 budget request continues NSF support for the Big Ideas that were first introduced by Director France Córdoba in May 2016. Most Big Ideas would see declining funding apart from those connected to NSF priorities above, such as NSF INCLUDES and Mid-Scale Research Infrastructure. Harnessing the Data Revolution (HDR) would be funded at \$182 million (5 percent below FY 2021 funding), Navigating the New Arctic (NNA) at \$35 million (down 12 percent), the Future of Work at the Human-Technology Frontier (FW-HTF) at \$176 million (up 2 percent), Understanding the Rules of Life: Predicting Phenotype at \$94 million (URoL, down 18 percent), Windows on the Universe (WOU) at \$62 million (down 17 percent), and Growing Convergence Research (GCR) essentially flat at \$16 million. Most funding for the research topic Big Ideas would go to already awarded projects. However, NSF plans to hold open the FY 2022 NNA solicitation for additional proposals in FY 2023, WOU's meta-program approach will continue along with potential targeted solicitations to address specific opportunities, and FW-HTF may support larger teams for convergent efforts and partnerships leveraging prior investments. NSF plans to support three to seven new research collaborations under GCR.

New and Signature Initiatives

Directorate for Technology, Innovation, and Partnerships (TIP)

Following the formal launch of the new Directorate for Technology, Innovation, and Partnerships (TIP) on March 16, 2022, the FY 2023 budget request would fund TIP at \$879.9 million, an increase of 138 percent above the FY 2021 level. TIP aims to advance science and engineering research and innovation, accelerate the translation of basic research, solve national and societal problems, and support education pathways. NSF plans that TIP will operate in partnership with other NSF Directorates to accelerate the transition to market for innovations across all NSF areas of investment. TIP will catalyze partnerships with academia, industry, the federal government, foundations, and other stakeholders to ensure U.S. leadership in critical technologies and societal challenges.

TIP will focus on emerging technologies and industries including advanced materials, artificial intelligence (AI), biotechnology, clean energy technology, future manufacturing, next-generation networks and systems, microelectronics and semiconductors, and quantum. Utilizing research in these technology areas, TIP will address societal and economic challenges such as climate change, equity, bioeconomy, and supply-chain resilience. A major new program supported through TIP is the **Regional Innovation Engines (NSF Engines)**, which aim to catalyze "regional-scale innovation ecosystems throughout the U.S." The request would provide \$200 million in FY 2023 to support NSF Engines with NSF planning to make 10 awards between \$145 million to \$160 million over eight to ten years.

TIP would be composed of three Divisions: Technology Frontiers (TF), Innovation and Technology Ecosystems (ITE), and Translational Impact (TI), plus the Strategic Partnership Office (SPO). In addition to the NSF Engines mentioned above, TIP would provide \$50.9 million for seed funding to incentivize the scale-up of public and private partnerships; \$40 million for the assessments of emerging technologies and industries focused on U.S. competitiveness; \$25 million to support Entrepreneurial Fellowships; and \$20 million to support new Technology and Innovation Internships for Experiential Learning (TIIEEL). NSF proposes \$51 million for the SPO to support partnerships across NSF with other agencies, industry, foundations, or others. TIP includes lab-to-market programs previously housed in the Directorate for Engineering (ENG), such as Partnerships for Innovation (PFI), Innovation-Corps (I-Corps), Small Business Innovation Research (SBIR), and Small Business Technology Transfer (STTR) programs. PFI (up 34 percent) and SBIR/STTR (up 22 percent) would see major growth over their FY 2021 funding levels, while I-Corps would be flat funded. The Convergence Accelerator program, previously housed in the Office of Integrative Activities, would be funded at \$70 million, an increase of 38 percent above the FY 2021 level. NSF plans to launch a new regional-scale convergence accelerator platform to support cohorts of convergence accelerator teams on challenges in

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agriculture, energy, transportation, and other specific areas. Note that the Industry-University Cooperative Research Centers (IUCRC) program remains in the Directorate for Engineering under the Engineering Education and Centers Division.

Additional information on TIP is available at https://www.nsf.gov/about/budget/fy2023/pdf/75_fy2023.pdf.

Administration Priorities

The NSF budget request highlights six themes that support the Administration's priorities that include: Climate and Clean Energy; Equity for Underserved Communities; Emerging Industries; Research Infrastructure; Discovery Engine: NSF's Research Portfolio; and Organizational Excellence. More details on these priority areas are set out below.

Climate and Clean Energy: For FY 2023 NSF would significantly increase funding for Climate and Clean Energy activities across the agency as described below:

- **Clean Energy Technology (CET):** NSF proposes to support Clean Energy Technology at \$500 million in FY 2023, an increase of 31 percent above the FY 2021 level. NSF supports a broad range of CET activities; participating directorates include the Directorate for Engineering (ENG), which has the largest share of investments, the Directorate for Mathematical and Physical Sciences (MPS), the Directorate for Biological Sciences (BIO), the Directorate for Computer and Information Science and Engineering (CISE), and the new TIP Directorate. Future investments would focus on Fundamental and Convergent Research, Infrastructure, innovation and Translation, and Education and Workforce Development.
- **US Global Change Research Program (USGCRP):** NSF proposes a large increase in funding for USGCRP for FY 2023 to significantly boost its investments in research connected to understanding climate change and its impacts. Overall, NSF research relating to the interagency USGCRP would grow by 61 percent from the FY 2021 level to \$913.4 million in FY 2023. The largest investments would continue to be led by the Geosciences Directorate (GEO), which would direct \$515.37 million to the effort. Also participating are the Directorates for Biosciences (\$237.15 million); the Office of Polar Programs (\$56.11 million); Directorate for Computer and Information Science and Engineering (\$40 million); Math and Physical Sciences (\$34.63 million); and Social, Behavioral, and Economic Sciences (\$25 million). For FY 2023, NSF proposes to establish several new activities to support efforts related to climate change including:
 - **Regional climate impact integration hubs**, focused on climate innovation, mitigation, adaptation, and equity;
 - **National Discovery Cloud (NDC) for Climate** that would include input from NSF-funded advanced computing resources and other NSF facilities;
 - **A new GEO investment that would support large-scale interdisciplinary work** on climate change, including a focus on forecasting/climate modeling at scales needed for decisionmakers; and
 - **Open Science Initiative for data infrastructure.**

Equity for Underserved Communities: For FY 2023 NSF would continue to build and grow its support for equity investments across the organization. NSF plans to be "more intentional in how we engage Minority Serving Institutions (MSIs)" in programs. NSF also plans to expand support for individuals and institutions in EPSCoR jurisdictions to ensure geographic diversity. NSF plans for FY 2023 include increased support for existing programs focused on broadening participation of individuals underrepresented in STEM as well as the creation of new programs and funding mechanisms.

- **NEW Program – Growing Research Access for Nationally Transformative Equity and Diversity (GRANTED):** NSF would provide \$50 million to create a new initiative that aims to improve "research support and service capacity at emerging and underserved research institutions." GRANTED will initially focus on MSIs and would support administration and post-award management along with support for competitive proposal development through various NSF funding mechanisms.
- **Major growth to existing program focused on broadening participation:** NSF would increase funding for programs focused on broadening participation across the agency to \$667.4 million, an increase of 53 percent above FY 2021

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levels. Note the total FY 2022 level for broadening participation programs is not yet known, but individual programs did have enacted levels in FY 2022 appropriations. Changes in proposed funding below are all relative to FY 2022 enacted funding unless otherwise noted. Existing programs include the NSF INCLUDES program (up 135 percent), Advancement of Women in Academic Science and Engineering Careers (ADVANCE, up 11 percent over the FY 2022 enacted level), Centers for Research Excellence in Science and Technology (up 64 percent), Alliances for Graduate Education in the Professoriate (AGEP, up 16 percent over FY 2021 funding)¹, Louis Stokes Alliances for Minority Participation (LSAMP, up 37 percent), Tribal Colleges and Universities Undergraduate Program (TCUP, up 31 percent), Historically Black Colleges and Universities Undergraduate Program (HBCU-UP, 28 percent), and the Improving Undergraduate STEM Education: Hispanic Serving Institutions program (IUSE:HSI, up 25 percent). Individual research directorates would continue recent efforts focused on broadening participation.

- **NSF EPSCOR** would grow 23 percent over FY 2021 funding levels to \$247 million. AGEP funding reflects the combined funding for AGEP and AGEP Graduate Research Supplements compared to the funding for both programs in FY 2021. AGEP itself would grow 65 percent over the FY 2022 enacted level and 75 percent over the FY 2021 level, but AGEP GRS would be cut 43 percent below the FY 2021 level.

Emerging Industries: NSF would continue prioritization of “Emerging Industries” across both TIP and existing NSF directorates, and in collaboration with the EPSCoR program. Support for these technologies aim to enhance national competitiveness, maintain global leadership, expand the geography of innovation, and improve quality of life. NSF plans for Emerging Industries include:

- **Advanced Wireless Research:** NSF proposes \$168.6 million for Advanced Wireless activities in FY 2023, a 29 percent increase over the FY 2021 level. The main increases in funding would be from the CISE and TIP Directorates. NSF would continue support for public-private partnerships through program such as Resilient and Intelligent Next-Generation Systems (RINGS) and Platforms for Advanced Wireless Research (PAWR), as well as support fundamental wireless research, advanced research testing platforms, and education and workforce development. For FY 2023, NSF will additionally support research on under water advanced sensing and communication technologies and the new Convergence Accelerator track funded in partnership with the Department of Defense (DOD) on 5G security that is currently under competition.
- **Biotechnology:** Funding for Biotechnology would increase by 13.6 percent over FY 2021 levels to a total of \$382.3 million in FY 2023. NSF Biotechnology includes: “data, tools, research infrastructure, workforce capacity, and innovation that enable the discovery, utilization, and reprogramming of living organisms, their constituent components, and their biologically related processes.” The funding would be predominantly through BIO and ENG, while MPS would decrease its support by 43 percent and TIP would majorly expand its investments by 483 percent. FY 2023 investments would include a **new first ever Center for Analysis and Synthesis in molecular and cellular biosciences**, which will focus on a comprehensive understanding of cell biology. NSF would also expand regional innovation activities through TIP and continue support of fundamental research, education and workforce development in BIO, ENG, and MPS.
- **Microelectronics and Semiconductors:** NSF would provide \$145.69 million for semiconductors and microelectronics in FY 2023, an increase of 11.1 percent above FY 2021. Most of this increase would come from the new TIP Directorate, which would receive \$50.23 million, an increase of 293 percent above FY 2021 comparable levels. However, MPS funding for microelectronics and semiconductors would be reduced by 54.6 percent. NSF plans a **new initiative on the Future of Semiconductors (FuSe)** that would include research on new materials, fabrication and manufacturing, electronics, and computer systems. FY 2023 investments would also continue support of fundamental research, education and workforce development, methods for integrating devices into diverse platforms, and investments to translate benchtop microelectronics and semiconductors research to fabrication and manufacturing.

¹ For comparison purposes, the budget request reassigns FY 2021 funding to TIP for programs that would be transferred to TIP in FY 2022. In this document, any reference to TIP growth refers to comparing to prior year activities in TIP’s purview that were previously executed by other parts of NSF.

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- **Artificial Intelligence (AI):** NSF would provide a slight increase of 4.6 percent above the FY 2021 level for AI research and education efforts across the agency. This would enable NSF to continue support for fundamental research e.g. through the National AI Research Institutes program, and the NSF Big Ideas (Harnessing the Data Revolution (HDR) and Future of Work at the Human-Technology Frontier (FW-HTF)). The increase will fund new AI institutes currently under competition, which are slated to be funded in FY 2023. For education and workforce development, NSF will continue the NSF Research Traineeships special focus on AI and other emerging industries as well as existing efforts related to focus on cybersecurity training, AI education, and efforts to broaden access to computer science education. NSF would also continue to support access to data and advanced computing research infrastructure and is prepared to support development and design investments related to the recommendations of the National AI Research Resource Task Force.
- **Quantum Information Science (QIS):** Funding for QIS would receive a slight increase of 2.3 percent over the FY 2021 level to \$261 million in FY 2023. NSF would continue to support current activities in foundational QIS, quantum networks and communications, quantum sensing and metrology, future applications, risk mitigation, and supporting technology. Going forward, NSF will focus on broadening participation in QIS.
- **Advanced Manufacturing:** Funding for Advanced Manufacturing would decrease by 6.8 percent below FY 2021 to \$421.51 million in FY 2023. This investment would continue to support Advanced Manufacturing Research, Future Manufacturing Research, Workforce Development, and Transition to Practice.

Research Infrastructure (RI): NSF will continue to support RI through a range of funding mechanisms to ensure ongoing operations and maintenance (O&M) and to ensure research infrastructure remains at the cutting edge. In FY 2023, Mid-scale Research Infrastructure (Midscale RI) would be supported at \$126.25 million in FY 2023, an increase of 1.9 percent above the FY 2021 level. Almost all the growth would be to the smaller Mid-Scale RI-1 program, which would grow 54 percent over FY 2021 levels to \$50 million, while the larger Mid-Scale RI-2 program would see 3 percent growth to \$76.25 million. Funding would support Midscale RI-1 projects from the competition due to be released this fall as well as Midscale RI-2 projects currently under competition from the FY 2021 solicitation. In addition to funding for Midscale RI-2, the Major Research Equipment and Facilities Construction (MREFC) account would continue funding for four projects—the Antarctic Infrastructure Recapitalization program, the two detector upgrades to operate at the High Luminosity-Large Hadron Collider Upgrade (HL-LHC), the Vera C. Rubin Observatory, and the Regional Class Research Vessels (RCRV). For smaller infrastructure, the Major Research Instrumentation (MRI) program would be supported at \$75 million, a small decrease of 1.4 percent below the FY 2021 funding level. No major funding is included for the projects recommended by the 2022 astronomy and astrophysics decadal survey, but NSF notes that it expects to prioritize pre-MREFC design and development investments within its research infrastructure portfolio.

Discovery Engine: NSF's Research Portfolio: NSF will continue support for groundbreaking research, collaborative activities, and STEM education across its portfolio to help “improve quality of life, enhance national security, and fuel American leadership in a wide range of technological and industrial sectors.” The FY 2023 budget request will strengthen established NSF programs such as competitive awards, fellowship programs, and Graduate Research Fellowship Program (GRFP) fellows. In addition, NSF would create a **new Global Centers program** that would support interdisciplinary and international teams focused on use-inspired research and education. In FY 2023, the Global Centers program is expected to support climate and clean energy activities.

Organizational Excellence: The FY 2023 budget request for Agency Operations and Award Management (AOAM) would provide \$473.2 million, an increase of 18 percent above the FY 2022 level. The request notes this is a “course correction” and will enable NSF to stand up TIP.

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Ongoing Areas of Interest

Cybersecurity

The Secure and Trustworthy Cyberspace (SaTC) initiative would be supported at \$159 million in FY 2023, 14 percent above the FY 2021 level. Numerous activities are outlined for FY 2023:

- NSF expects to issue a revised SaTC solicitation for FY 2023 to align with the 2019 Federal Cybersecurity Research and Development Strategic Plan.
- NSF is working with the White House Office of Science and Technology Policy (OSTP), National Institute of Standards and Technology (NIST), and the United Kingdom to launch an international and interagency prize challenge initiative on privacy enhancing technologies (PETs). This initiative builds on the May 2021 NSF-NIST workshop that explored public use of privacy-sensitive government data.
- NSF is considering new funding initiatives to build off the May 2021 joint NSF-National Institutes of Health workshop on security, privacy, and ethics related to biomedical and health research.
- NSF will continue funding research that is responsive to the February 2022 Dear Colleague Letter on information integrity, misinformation/disinformation, and trust in communications.

Funding for the Cybercorps Scholarships for Service (SFS) program would increase 19 percent above the FY 2022 enacted level to \$75 million. SFS would prioritize K-12 education investments, building interest in cybersecurity careers, and translating advances in SaTC research to new educational materials for all levels from K-12 to graduate school. NSF also plans to broaden participation in SFS and better understand and address barriers to equity in the SFS program.

Science, Technology, Engineering, and Mathematics (STEM) Education Research

Overall NSF would prioritize STEM education research and development programs, especially those focused on core research, K-12 education, and advancements in education technology. EDU Core Research programs across divisions would see 33 percent growth over FY 2021 levels to a combined \$102 million. Discovery Research preK-12 (DRK-12) would grow 5 percent while Advancing Informal STEM Learning (AISL) would grow 19 percent over FY 2021 spending and 15 percent over the FY 2022 enacted level. EDU plans to majorly ramp up investments in new AI institutes for education currently under competition, bringing funding to \$20 million (up 157 percent). One exception to the proposed growth for K-12 and informal STEM research programs is Computer Science for All (CSforAll), which would be flat funded at \$10 million.

Undergraduate Education

Undergraduate education investments would see more mixed funding as the NSF-wide Improving Undergraduate STEM Education (IUSE) initiative would be funded at \$109 million (up 9 percent over FY 2021 levels), with the specific IUSE/EDU program funding at \$96 million (up 6 percent). NSF notes that IUSE had been extended only through FY 2022, but NSF now expects to continue IUSE as a key component of its long-term undergraduate education strategy. Advanced Technological Education (ATE) would be decreased 2 percent to \$75 million and the Robert Noyce Teacher Scholarship Program would be decreased 1 percent to \$67 million. The Research Experiences for Undergraduates (REU) sites would be increased 6 percent to \$67 million while REU supplements would be decreased 23% to \$17 million.

Programs funded by H-1B Nonimmigrant Petitioner Fees

NSF revenue from H-1B fees is projected to be \$159 million, 8 percent above FY 2021 revenue. As required by law, approximately 75 percent of these funds will go to support the Scholarships in STEM program (S-STEM) program and 25 percent of the funds will be used to support the Innovative Technology Experiences for Students and Teachers (ITEST) program. NSF plans to fund approximately 90 S-STEM awards in FY 2023, with continued emphasis on community colleges,

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especially Hispanic serving community colleges, and enhancing knowledge about scaling STEM degree attainment. The expected revenue level would fund 24-33 ITEST awards in FY 2023.

Graduate Education

NSF Research Traineeships (NRT) would grow 8 percent over the FY 2021 level to \$62 million. NSF expects to fund 16-19 traineeships with a focus on emerging technologies and other NSF priority areas and award up to \$4 million for research on graduate education through the Innovations in Graduate Education (IGE) program. The Graduate Research Fellowships Program (GRFP) would grow 25 percent to \$356 million, entirely funded out of EDU as NSF plans to consolidate all funding under EDU in FY 2022. Funding would support 2,750 new fellows, up from 2,005 in FY 2021 with an increased stipend of \$37,000, up from the previous stipend of \$34,000. NSF plans to continue its recent practice of emphasizing AI and other NSF research priorities in the GRFP solicitation while welcoming applicants from all science and engineering fields that NSF supports.

Spectrum Innovation Initiative

The Spectrum Innovation Initiative (SII) would be flat funded at \$17 million in FY 2023, the same as the FY 2022 expected and FY 2021 actual funding. Funding would continue to support the National Radio Dynamic Zone, the National Center for Wireless Spectrum Research, and foundational research and education activities.

Strengthening American Infrastructure

The Social, Behavioral, and Economic Sciences (SBE) Directorate plans to continue this effort, begun in FY 2020, at \$8 million in FY 2023, a 30 percent increase over FY 2021 funding. The program aims to connect social scientists with infrastructure efforts to enable better infrastructure planning with full consideration of how people will use that infrastructure.

Coastlines and People (CoPe)

The Geosciences Directorate (GEO) would fund CoPe at \$23 million, 22 percent below the FY 2021 level, which included \$15 million previously planned to be spent in FY 2020. SBE additionally plans to support CoPe, bringing total funding for the program to \$28 million, 14 percent below the FY 2021 level. CoPe will continue its focus on coastline hazards, environmental variability, and earth system prediction. The budget request does not mention if NSF plans to fund another round of CoPe hubs.

Additional Programs of Interest (all comparisons are to FY 2021 levels)

- **Biological Integration Institutes (BII):** Up 148 percent to \$49.5 million. The increase will support five new awards.
- **Engineering Research Centers (ERC):** Up 27.1 percent to \$71.5 million. The increase will support four new centers currently under competition.
- **Science and Technology Centers (STC):** Up 27.2 percent to \$77.6 million. This includes STCs from the FY 2016 and FY 2021 cohorts and new centers to be funded in FY 2023.
- **AI Research Institutes:** up 12 percent to \$70.3 million. NSF plans to award seven additional institutes in FY 2023.
- **Materials Research Science and Engineering Centers (MRSEC):** Up 13.4 percent to \$56.8 million. Funding in FY 2023 will continue support of 11 new centers established in FY 2020 and up to 8 new centers from the FY 2023 competition.
- **CAREER:** Down 24 percent to \$360 million, enabling funding of 680 new awards.
- **Long-Term Ecological Research Sites:** Up 6 percent to \$34 million.
- **Centers for Chemical Innovation (CCI):** Essentially flat at \$28 million. NSF plans to fund one new Phase II award in FY 2023.

Source: The full NSF FY 2023 Budget Request can be viewed at <https://www.nsf.gov/about/budget/fy2023/pdf/fy2023budget.pdf>.

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(in millions of \$)

	FY 2021 Actual	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2021	FY 2023 Request vs. FY 2022
NSF, total discretionary	8,440.03	8,838.00	10,492.08	2,052.05 (24.3%)	1,654.08 (18.7%)
Research and Related Activities†‡	6,761.35	7,159.40	8,425.99	1,664.63 (24.6%)	1,266.59 (17.7%)
Biological Sciences	817.74	TBD	970.23	152.49 (18.6%)	N/A
Computer and Information Science and Engineering	1,007.13	TBD	1,150.78	143.65 (14.3%)	N/A
Engineering	764.43	TBD	940.28	175.85 (23.0%)	N/A
Geosciences	1,004.27	TBD	1,239.05	234.78 (23.4%)	N/A
Mathematical and Physical Sciences	1,593.31	TBD	1,746.85	153.54 (9.6%)	N/A
Social, Behavioral, and Economic Sciences	282.11	TBD	330.21	48.10 (17.0%)	N/A
Translation, Innovation, and Partnerships (TIP) ‡	369.01	TBD	879.87	510.86 (138.4%)	N/A
International Science and Engineering	51.29	TBD	74.04	22.75 (44.4%)	N/A
Office of Polar Programs	484.04	TBD	547.10	63.06 (13.0%)	N/A
Integrative Activities‡	386.42	TBD	545.86	159.44 (41.3%)	N/A
US Arctic Research Commission	1.60	TBD	1.72	0.12 (7.5%)	N/A
STEM Education‡§	1,110.85	1,006.00	1,377.18	266.33 (24.0%)	371.18 (36.9%)
Major Research Equipment and Facilities Construction	161.27	249.00	187.23	25.96 (16.1%)	-61.77 (24.8%)
Agency Operation and Award Management	384.52	400.00	473.20	88.68 (23.1%)	73.20 (18.3%)

*The amounts shown for FY 2021 actual and FY 2022 enacted are taken from the NSF budget request.

†FY 2021 TIP funding is adjusted for comparability to reflect the movement of activities from other parts of R&RA to TIP in FY 2022.

‡ FY 2023 funding for the Graduate Research Fellowship Program has been included entirely within STEM Education whereas previously the program funding was split between EHR and Integrative Activities within Research and Related Activities. FY 2021 funding for the program is shown entirely within EDU to make easier comparisons across fiscal years. However, FY 2022 EDU funding does not reflect this transfer as Congress enacted funding for the previously named Education and Human Resources Directorate without the transferred funding.

§NSF proposes to rename the Education and Human Resources (EHR) Directorate to the Directorate for STEM Education (EDU); the new name is reflected here.

National Science Foundation



National Science Board	4.43	4.60	5.09	0.66 (14.9%)	0.49 (10.7%)
Office of Inspector General	17.61	19.00	23.39	5.78 (32.8%)	4.39 (23.1%)

Department of State and United States Agency for International Development



The budget request would provide \$60.4 billion for the Department of State (DOS) and U.S. Agency for International Development (USAID), which would represent a 1.1 percent increase relative to the FY 2022 enacted level excluding consideration of emergency supplementals to address the COVID-19 pandemic or to support the people of Ukraine.

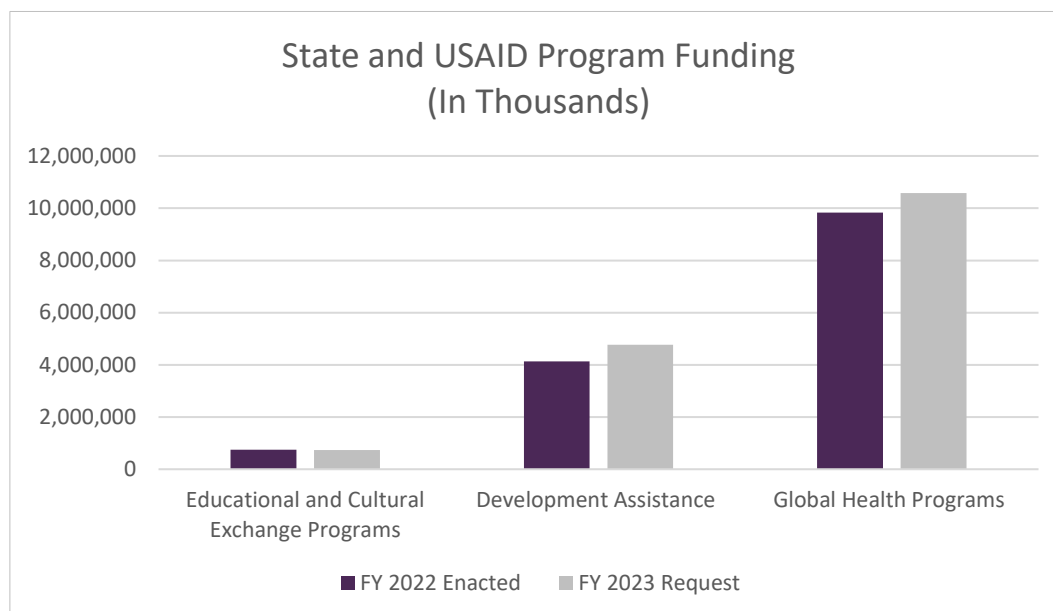
Quick Take: The President’s budget request for FY 2023 promotes the Administration’s intent to engage internationally to address the COVID-19 pandemic, combat climate change, and counter global threats to democracy and the increasing ambitions of competitors including China and Russia. Further, the request also provides significant support for priority regions including Ukraine and Latin America. The budget request proposes a 15.2 percent increase to foreign assistance programs relative to FY 2022 enacted levels, a small portion of which may be available to support development focused research.

Major Cuts/Eliminations: There are no major cuts or eliminations highlighted in the Congressional Budget Justification that are directly relevant to the academic community.

New Initiatives/Priorities: Similar to the budget request from FY 2022, the request focuses on global health security, climate change, and emerging technologies. The FY 2023 request is aligned with the five pillars of the DOS and USAID 2022-2026 Joint Strategic Plan, which was released in coordination with this year’s Congressional Budget Justification.

The Bottom Line

The Department of State and USAID FY2023 budget request indicates that the Biden Administration intends to continue its work with international partners to address pressing global challenges including the COVID-19 pandemic, climate change, and threats to democracy. Nonetheless, the relatively modest proposed increases to the USAID and DOS relative to FY 2022 enacted levels suggests that strong bipartisan support will be crucial to ensure that there are funds to support international and/or development focused research in FY 2023. This is especially true since absent Congressional direction, the Administration is likely to prioritize increases to U.S. contributions to multilateral organizations and other mandatory funding over discretionary bilateral programs.



Department of State and United States Agency for International Development



Proposed Reductions and Terminations

Given the slight proposed increase to DOS and USAID discretionary budget relative to prior year levels, some programs were proposed for slight (e.g.: less than 10 percent) declines relative to the FY 2022 levels to accommodate increases to other priority areas. One programmatic area proposed for slightly reduced funding is the educational and cultural exchange programs run out of the Bureau of Educational and Cultural Affairs. Importantly, these programs have strong Congressional support so are unlikely to be cut relative to FY 2022 levels.

New and Signature Initiatives

If the proposed budget is enacted, DOS would enhance its attention to cybersecurity and emerging technology. For the first time, the budget request includes funds to support the new DOS Bureau of Cyberspace and Digital Policy and a new Special Envoy for Critical and Emerging Technology. While the proposal indicates these institutions will promote U.S. to leadership in cyberspace and the digital economy and develop new norms and standards to govern these technologies, relatively few details are provided in the request about the policy and programming priorities in these areas. In addition, USAID has recently established the Chief Digital Development Officer, who will lead on the implementation of the Agency's Digital Strategy and who will coordinate with others across USAID including the Innovation, Technology, and Research Hub, and the Digital Africa Initiative to expand digital capabilities, promote open connectivity in USAID partner countries, create digital public goods, and ensure that digital technologies remain democratic. The budget also, for the first time, provides funding to the Build Back Better World initiative (B3W) with over \$1.25 million provided from DOS and USAID, with additional commitments anticipated from multiple other U.S. institutions including the U.S. Department of the Treasury, Millennium Challenge Corporation, and the U.S. International Development Finance Corporation. This partnership, which was announced in partnership with other G7 countries in July of 2021 is intended to focus on climate, health and health security, digital technology, and gender equity and inclusive growth as it supports infrastructure investments in developing countries to counter China's Belt and Road Initiative and to maintain U.S. Competitiveness.

While not a new initiative, the Biden Administration proposes \$3.9 billion, a 26.1 percent increase to International Organizations, including the United Nations and peacekeeping operations and other institutions to which the U.S. fell behind on assessed contributions or pledges. In addition, the request also includes proposals for contributions to numerous multilateral climate funds as a part of the Treasury's budget, including \$1.6 billion for the Green Climate Fund. These proposals are all likely to be controversial with Members of Congress, as in previous years.

Ongoing Areas of Interest

The President's FY 2023 request would significantly increase **Global Health Programs (GHP)**, with a request of \$10.6 billion, a \$746 million, or 7.6 percent, increase relative to the FY 2022 enacted level. Much of the increased funding is to support the first of three \$2 billion payments to the Global Fund to Fight AIDS, Tuberculosis, and Malaria which is undergoing a replenishment this year, a \$440 million or 28 percent increase relative to the FY 2022 enacted level. The request also proposes \$995 million to support the **U.S. Global Health Security Strategy** to prevent, detect, and respond to infectious disease threats and assist developing countries in enhancing their capacity to respond to the COVID-19 pandemic and/or the next emerging threat. In addition, the request also includes other mandatory funding for DOS and USAID **pandemic preparedness** activities. Importantly, funding for other GHPs is requested to have close to flat funding relative to FY 2022 enacted levels – including research to support work on malaria (\$780 million, a 0.6 percent increase), tuberculosis (\$350 million, a 6 percent reduction), neglected tropical disease (\$114.5 million, a 7 percent increase).

Department of State and United States Agency for International Development



President Biden's request would also provide \$2.3 billion towards **international climate change programs**, of which approximately \$1.6 billion would be available for USAID and DOS supported bilateral climate adaptation and mitigation programs. In additional \$650 million would be available to support programming through other development sectors—including water, health and health security, and agriculture—that would provide significant climate co-benefits. Most of these funds will not be research focused, though there is a possibility that some of these bilateral programs could include research components. In addition, the United States would also provide funding for additional climate change focused work through the support of various climate-focused multilateral institutions as noted above. To support the increase in climate change needs across the diplomatic and development workforce, the administration has proposed for the first-time allocation of resources to establish a **Center for Climate Diplomacy** at its Foreign Service Institute to ensure department employees in both the foreign and civil service are trained to address climate change policy and programming. In addition, they have also proposed to allocate significant staffing increases to climate change positions.

The request would support the implementation of the **Feed the Future (FTF) initiative** to achieve the goals of the **Global Food Security Strategy (GFSS)**. Through FTF, the U.S. would support developing countries to address challenges associated with hunger, poverty, and food and water insecurity, including additional issues related to the COVID-19 pandemic, climate change, and conflict. While there is not detail in the budget request about the funding level for the FTF Innovation Labs, a popular program among agricultural research universities, the **Bureau for Resilience and Food Security** would receive \$353 million in development assistance for FY 2023, which is roughly flat with the amount requested in FY 2022.

The budget request would provide the USAID **Bureau of Democracy, Development, and Innovation (DDI)** with \$1 billion in development assistance for FY 2023, in addition to other funds provided to it through Economic Support Funds and Global Health Programs. This would represent a significant increase relative to FY 2022. Notably, however, since the bureau was only established in November of 2020 and political leadership has not yet been confirmed, there is significant uncertainty over how these funds will be allocated within USAID's discretionary authority. This budget increase is significant since DDI houses the **Innovation, Technology and Research Hub (ITR)**, which administers many of USAID's university-focused research programs – and which will play a significant role in administering USAID's digital development strategy. While there is not mention of it in the budget request, ITR oversees the **Higher Education Solutions Network**, which was cut from \$25 million to \$17.5 million in FY 2021.

Source: The U.S. State Department's Congressional Budget Justification https://www.state.gov/wp-content/uploads/2022/03/FY-2023-Congressional-Budget-Justification_Final_03282022.pdf. The State Department and USAID 2022-2026 Joint Strategic Plan is available https://www.usaid.gov/sites/default/files/documents/State-USAID-FY2022-2026_JointStrategicPlan.pdf.

Department of State and United States Agency for International Development



U.S Department of State & U.S Agency for International Development (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
Total - State Department and USAID	59,707,200	60,373,606	666,406 (1.1%)
Educational and Cultural Exchange Programs	753,000	741,300	-11,700 (1.5%)
USAID Operating Expenses	4,140,494	4,769,787	629,293 (15.2%)
Development Assistance	9,830,000	10,576,000	746,000 (7.6%)
Global Health Programs, Total	59,707,200	60,373,606	666,406 (1.1%)



At the time of this writing, the full USGS FY 23 Budget Justification was not available. Below reflects the information that is currently available in the budget appendices for the Department of the Interior and the available Budget in Brief for USGS.

The President's FY 2023 budget request includes \$1.71 billion in discretionary funding for the U.S. Geological Survey (USGS), which would be an increase of \$317 million, or 22.7 percent, compared to the FY 2022 enacted level.

Quick Take: The request would substantially increase USGS programs across the board, with an emphasis on climate and resilience-related programs. However, the budget would not provide increases to extramural research programs proportionate to the growth of the agency for the Water Resources Research Act program or Cooperative Research Units (CRUs), which are proposed for more moderate growth.

New Initiatives/Priorities: The budget proposal continued to follow the mission area organization for funding that was established in FY 2021 and would provide significant boosts to nearly all mission areas. The Water Resources mission area saw the smallest relative increase, but still received \$302.7 million, a 5.9 percent increase over the FY 2022 enacted level. Within this account, the Administration proposed \$15 million for the Water Resources Research Act program, an increase of \$1 million over the FY 2022 enacted level. Other signature programs would also increase significantly, including the Climate Adaptation Science Centers (CASCs) would receive \$85.7 million, an increase of 65.2 percent over the FY 2022 enacted level. The CRUs would also increase with a proposed funding level of \$28.2 million, 8.2 percent over FY 2022 enacted levels.

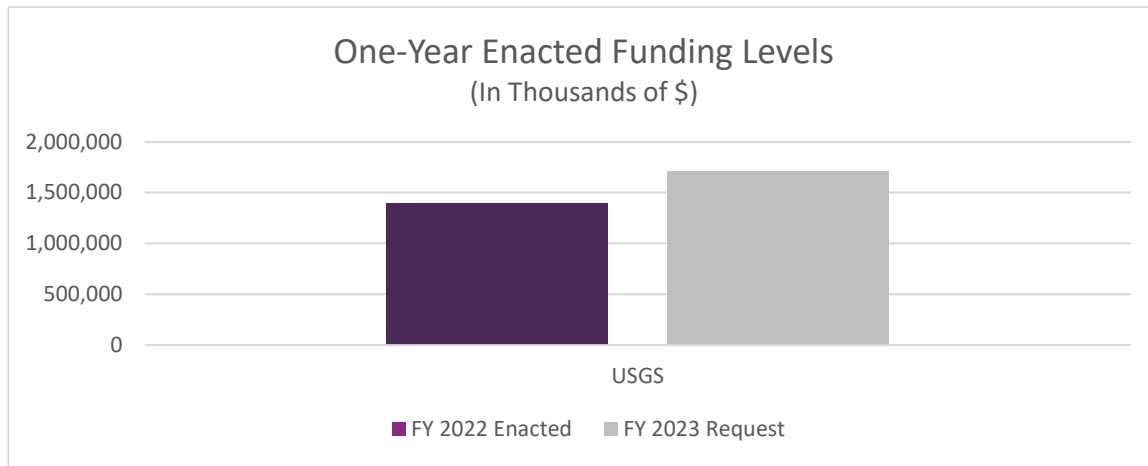
Ongoing areas of interest: The large increases proposed are indicative of the Biden Administration's continued prioritization of addressing climate change and promoting conservation. In FY 2023, USGS will continue to work on natural hazards, preparedness, and resilience to include research on earthquakes, wildfires, and coastal hazards. Environmental health, invasive species, and toxic substances will all continue to be areas of focus in the Ecosystems mission area, which would see an overall increase of 35.2 percent. Additionally fitting with the Administration's emphasis on clean energy and sustainable supply chains, if the budget is enacted the Energy and Mineral Resources mission area would see a large increase to \$147 million including \$90.3 million for the Mineral Resources Program to "support supply chain research related to critical minerals, mine waste research and assessment in support of reclamation and potential mineral recovery, and research and assessments of potential new sources of critical minerals," an increase of 41.6 percent relative to FY 2022 enacted levels.

The Bottom Line

USGS is proposed for a 25 percent budget increase. New investments include \$205 million for "climate science investments," including more than doubling Climate Adaptation Science Center funding. Overall, the budget would not provide increases to extramural research programs proportionate to the growth of the agency with the Water Resources Research Act Program and Cooperative Research Units proposed for flat funding or minimal growth, respectively. Bipartisan support is expected to continue for USGS extramural research programs. It is unclear what appetite Congress will have to support the level of proposed growth across USGS.

Source: USGS's FY 2023 Budget in Brief can be found at <https://www.doi.gov/sites/doi.gov/files/fy2023-bib-usgs-508.pdf>.

U.S Geological Survey



U.S Geological Survey (in thousands of \$)

	FY 2022 Enacted	FY 2023 Request	FY 2023 Request vs. FY 2022 Enacted
USGS, total*	1,394,360	1,711,344	316,984 22.7%
Natural Hazards	185,998	219,827	33,829 18.2%
Earthquake Hazards	90,037	99,920	9,883 11.0%
Global Seismographic Network	7,212	7,280	68 0.9%
Ecosystems	277,897	375,692	97,795 35.2%
National and Regional Climate Adaptation Science Centers	51,903	85,741	33,838 65.2%
Energy and Mineral Resources	95,223	147,010	51,787 54.4%
Water Resources	285,894	302,741	16,847 5.9%
Water Resources Research Act	14,000	15,000	1,000 7.1%
Core Science Systems	263,802	348,798	84,996 32.2%
Science Support	99,736	129,197	29,461 29.5%
Facilities	184,810	188,079	3,269 1.8%

*This total allocation does not include supplementals and transfer.

Acronym Glossary

General Terms

- FY – Fiscal Year
- OMB – Office of Management and Budget
- CR – Continuing Resolution

Department of Commerce (DOC)

- NOAA – National Oceanic and Atmospheric Administration
- OAR – Office of Oceanic and Atmospheric Research
- NERRS – National Estuarine Research Reserves Systems
- NWS – National Weather Service
- NEDIS – National Environmental Satellite, Data, and Information Service (NESDIS)
- NOS – National Ocean Service
- NMFS – National Marine Fisheries Service
- NIST – National Institute of Standards and Technology
- MEP – Hollings Manufacturing Extension Partnership
- NIMBL – National Institute for Innovation in Manufacturing Biopharmaceuticals
- EDA – Economic Development Administration

Department of Defense (DOD)

- RDT&E – Research, Development, Test, and Evaluation
- S&T – Science and Technology
- NDS – National Defense Strategy
- DARPA – Defense Advanced Research Projects Agency
- DTRA – Defense Threat Reduction Agency
- OCO – Overseas Contingency Operations

Department of Education (ED)

- SEOG – Supplemental Educational Opportunity Grant
- PSLF – Public Student Loan Forgiveness
- GEAR UP – Gaining Early Awareness and Readiness for Undergraduate Programs
- TQP – Teacher Quality Partnership
- GAANN – Graduate Assistance in Areas of National Need
- IES – Institute of Education Sciences
- HSI – Hispanic Serving Institution
- MSI – Minority Serving Institution
- HBCU – Historically Black Colleges and Universities

Department of Energy (DOE)

- ARPA-E – Advanced Research Projects Agency-Energy
- CESER – Office of Cybersecurity, Energy Security, and Emergency Response
- EERE – Office of Energy Efficiency and Renewable Energy
- NNSA – National Nuclear Security Administration
- OE – Office of Electricity

Acronym Glossary

Department of Health and Human Services (HHS)

- NIH – National Institutes of Health
- F&A – Facilities and Administrative costs
- ICs – Institutes and Centers
- FDA- Food and Drug Administration

Department of Health and Human Services (Other)

- GME – Graduate Medical Education
- AHRQ – Agency for Healthcare Research and Quality
- NIDILRR – National Institute on Disability, Independent Living, and Rehabilitation Research
- NIOSH – National Institute for Occupational Safety and Health
- HRSA – Health Resources and Services Administration
- CHGME – Children’s Hospitals Graduate Medical Education
- CMS – Centers for Medicare and Medicaid Services
- ACL – Administration for Community Living
- ERCs – Education and Research Centers
- CDC – Centers for Disease Control and Prevention
- SAMHSA – Substance Abuse and Mental Health Services Administration
- TANF – Temporary Assistance for Needy Families
- ACA – Patient Protection and Affordable Care Act
- ASPR – Assistant Secretary for Preparedness and Response
- SNS – Strategic National Stockpile
- MCMs – Medical Countermeasures
- IHS – Indian Health Services

Department of Homeland Security (DHS)

- S&T – DHS Science and Technology Directorate
- OUP – Office of University Programs
- CBP – U.S. Customs and Border Protection
- ICE – Immigration and Customs Enforcement
- USCIS – U.S. Citizenship and Immigration Services
- NPPD – National Protection and Programs Directorate
- DACA – Deferred Action for Childhood Arrivals

RD&I – Research, Development, And Innovation

- POE – Port of Entry
- COE – Centers of Excellence
- ALERT – Center for Awareness and Localization of Explosive-Related Threats
- CWMD – Countering Weapons of Mass Destruction

Department of Justice (DOJ)

- FBI – Federal Bureau of Investigation
- DEA – Drug Enforcement Agency
- COPS Office – Office of Community Oriented Policing Services
- OJP – Office of Justice Programs

Acronym Glossary

- CRS – Community Relations Service
- CARA – Comprehensive Addiction Recovery Act
- PSN – Project Safe Neighborhoods
- RES – Research, Evaluation, and Statistics
- NIJ – National Institute of Justice

Department of State and U.S. Agency For International Development (USAID)

- ECE – Educational and Cultural Exchange Programs
- ECA – Bureau of Educational and Cultural Affairs
- IVLP – International Visitor Leadership Program
- DA – Development Assistance Program
- ESF – Economic Support Fund
- GCCI – Global Climate Change Initiative
- USGDL – U.S. Global Development Lab
- GHP – Global Health Programs
- CSD – Countering States Disinformation Program

Environmental Protection Agency (EPA)

- S&T – Science & Technology*
- STAR – Science to Achieve Results
- AE – Air and Energy Program
- SSWR – Safe and Sustainable Water Program
- SHC – Safe and Sustainable Water Resources Program
- SHC – Sustainable and Healthy Communities Program
- CSS – Chemical Safety for Sustainability Program
- LMS – Lean Management System **Institute of Museum and Library Services (IMLS)**

National Aeronautics and Space Administration (NASA)

- STMD – Space Technology Mission Directorate
 - SMD – Science Mission Directorate
 - APD – Astrophysics Division
- WFIRST – Wide-Field Infrared Survey Telescope

Acronym Glossary

- ISS – International Space Station
- ESD – Earth Science Division
- OE – Office of Education
- JWST – James Webb Space Telescope
- ARMD – Aeronautics Research Mission Directorate
- TACP – Transformative Aeronautics Concepts Program
- ULI – University Leadership Initiative
- HEOMD – Human Exploration and Operations Mission Directorate
- PSD – Planetary Sciences Division
- HPD – Heliophysics Division

National Science Foundation (NSF)

- ENG - Directorate for Engineering
- BIO – Directorate for Biological Sciences
- CISE – Directorate for Computer and Information Science and Engineering
- EHR – Directorate for Education and Human Resources
- GEO – Directorate for Geosciences
- MPS – Directorate for Mathematical and Physical Sciences
- SBE – Directorate for Social, Behavioral and Economic Sciences
- ISE - Office of International Science and Engineering
- OIA - Office of Integrative Activities
- OPP – Office of Polar Programs

National Endowment for the Humanities (NEH) and National Endowment for the Arts (NEA)

U.S. Department of Agriculture (USDA)

- ARS – Agricultural Research Service
- NIFA – National Institute of Food and Agriculture
- SARE – Sustainable Agriculture Research Education and Extension
- APHIS – Animal and Plant Health Inspection Service
- NBAF – National Bio and Agro-Defense Facility
- AFRI – Agriculture and Food Research Initiative
- FSIS – Food Safety and Inspection Service

Department of Interior (DOI)

- U.S. Geological Survey (USGS)



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