

ANALYSIS OF THE PRESIDENT'S FISCAL YEAR 2025 BUDGET REQUEST FOR BIOLOGICAL SCIENCES RESEARCH AND EDUCATION

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SUMMARY

On March 11, 2024, President Joe Biden released his proposed budget for fiscal year (FY) 2025. The plan would provide \$1.63 trillion for discretionary spending, of which \$734 billion (+2.4 percent) would be allocated to non-defense discretionary spending and 895 billion (+1 percent) to defense spending. Non-defense discretionary spending includes funding for the National Science Foundation, National Institutes of Health, and other non-defense agencies.

The President's FY 2025 budget request largely adheres to the spending caps negotiated in 2023 as part of the Fiscal Responsibility Act, which called for 1 percent growth in non-defense discretionary funding over FY 2024 levels.

Most federal science agencies would receive budget increases in FY 2025 if the President's budget is enacted. The administration proposes \$202 billion for federal research and development, an increase of 1 percent relative to the FY 2023 enacted level. The proposed budget is subject to congressional appropriations.

Congress completed FY 2024 appropriations on March 23, 2024 nearly six months into the fiscal year. Details of program level funding for some agencies for FY 2024 were not available during the preparation of this report. This analysis compares budget allocations in the FY 2025 budget request with FY 2024 enacted spending levels for most programs; when FY 2024 data were unavailable, comparisons were made to FY 2023 enacted spending levels.

A PRIMER ON THE FEDERAL BUDGET

Federal spending is broadly categorized as discretionary or mandatory.

Congress determines discretionary spending on an annual basis through the appropriations process. Collectively, twelve pieces of legislation (appropriations bills) fund the federal government — everything from the military to national parks to research.

Discretionary spending limits for various programmatic areas are established by a joint budget resolution adopted by Congress. These levels are informed by the recommendations of authorizing committees and political priorities. Each appropriations subcommittee is provided with a budget threshold within which they must fund the programs under their jurisdiction.

Funding for mandatory programs is controlled by laws outside of the appropriations process. Examples include Social Security, Medicare, and certain agriculture programs.

Mandatory spending has been a growing proportion of the federal budget for decades. Approximately two-thirds of the federal budget is allocated to mandatory spending programs.

PLEASE NOTE:

Only discretionary funding is reported in this document.

Calculations in this report are relative to the FY 2024 enacted level, unless otherwise noted with an *, which denotes a comparison to FY 2023.

AGENCY BUDGET SUMMARIES

United States Department of Agriculture (USDA)

- *Department of Agriculture request: \$31.6 billion (+\$3.7 billion*)*
- *Research, Education, and Economics request: \$3.8 billion (+\$30 million)*

Overall, agricultural research is proposed to receive less than a 1 percent increase.

Intramural agricultural research in the Agricultural Research Service (ARS) would receive \$1.8 billion (-2 percent). In spite of the small overall cut, additional funding would be directed to research on climate science (+\$13 million), precision nutrition (+\$15 million), smart plants that can self-treat (+\$7 million), PFAS contamination in agriculture (+\$8 million), and supporting the Cancer Moonshot (+\$17 million).

These increases would be offset by \$71.4 million in cuts from ongoing research projects, which the Department describes as “necessary to reset priorities.” Every division within ARS would experience the elimination of some research projects.

The National Bio and Agro-Defense Facility could see an increase of \$13 million. This state-of-the-art biocontainment facility will be used to research emerging animal diseases.

New money is also requested for Climate Hubs to support the adoption of climate-smart practices by farmers, ranchers, and foresters. The \$14 million additional investment would help these practitioners make region specific climate-informed decisions and provide technical assistance to implement those decisions.

The National Institute of Food and Agriculture (NIFA) partners with academic institutions to conduct extramural research, education, and extension activities. NIFA would be funded at \$1.7 billion (+3 percent) in FY 2025. Within NIFA, competitively awarded extramural research supported by the Agriculture and Food Research Initiative (AFRI) would increase by 7 percent to \$475 million. New investments would be targeted to climate change adaptation and mitigation, clean energy, the Cancer Moonshot, and precision nutrition.

Agriculture education would see \$365 million for creation of career development opportunities for the next generation of scholars at Minority-Serving Institutions.

The budget also includes \$2 million to help address the backlog of research facility needs at land-grant universities.

USDA Forest Service

- *Forest Service request: \$8.9 billion (+\$546 million)*
- *Forest and Rangeland Research request: \$315.6 million (+\$15.6 million)*

Wildfire management continues to be the major focus of Forest Service activities, representing more than half of total funding for the agency.

The budget request also prioritizes climate change through support of carbon sequestration through reforestation and mitigation of forest pests.

Forest and Rangeland Research activities at the Forest Service would see an increase of 5 percent. Most of the proposed increase would support increased staff salaries. A small increase would accelerate efforts related to integrating remote sensing data, in-situ observations, and advanced modeling to better understand greenhouse gas fluxes from forests. An increase is also proposed for national capital accounting on the value of ecosystem services.

Department of Commerce

National Oceanic and Atmospheric Administration (NOAA)

- *NOAA request: \$6.6 billion (+\$199 million)*

Under the President's budget, NOAA would receive a 3 percent increase. Within the agency's budget request, \$861 million would be invested in research and development and another \$304 million on science equipment and facilities.

Once again, NOAA's weather, oceans, and climate observation satellites are by far the biggest destination of increased funding for the agency. In the FY 2025 budget request, satellite programs account for all of the proposed increase for NOAA multiple times over. These increases would be offset by a multitude of programmatic cuts totaling \$533.9 million and an additional \$276.6 million in program terminations across the agency (relative to the FY 2024 annualized Continuing Resolution).

The budget request proposes \$645.7 million for the Office of Oceanic and Atmospheric Research (-2 percent). New funding is requested to enhance the accessibility and usability of federal climate data for building resilience. Among the proposed cuts are ocean exploration and research grants (-45 percent), climate laboratories and cooperative institutes grants (-9 percent), ocean laboratories and cooperative institutes grants (-6 percent), National Sea Grant College Program (-10 percent), and climate competitive research grants (-10 percent). Congressionally directed projects (-\$20.8 million*) and Sea Grant aquaculture research (-\$14.0 million) are proposed to be eliminated.

At \$590.7 million, the National Ocean Service is facing a 12 percent overall reduction. Multiple programs are proposed for elimination, including the National Coastal Resilience Fund, the Center of Excellence for Operational Ocean and Great Lakes Mapping, geospatial modeling grants, regional ocean data portals, and congressionally directed projects. Cuts would also be made to competitively awarded research (-75 percent), Integrated Ocean Observing System regional observations, and coral reef conservation grants. One of the few programs proposed for an increase is operations of the National Marine Sanctuary System.

The National Marine Fisheries Service would see a 5 percent increase to \$1.2 billion in FY 2025. New funding is requested to conduct scientific surveys and environmental reviews to support the Administration's goal to deploy 30 gigawatts of offshore wind energy by 2030. In spite of the division's overall requested increase, several program terminations are proposed, including congressionally directed projects (-\$38.5 million*), species recovery grants (which may be offset by funding from the Bipartisan Infrastructure Law and the Inflation Reduction Act), and marine mammal rescue grants. Programmatic decreases are requested for a variety of fisheries research projects and grants.

NOAA's Office of Education would receive a small increase (+3.3 percent) at \$35.6 million.

National Institutes of Standards and Technology (NIST)

- *NIST request: \$1.5 billion (+\$38.5 million)*
- *Scientific and Technical Research Services request: \$975 million (-\$105 million)*

NIST is charged with promoting U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. The agency would receive a nearly 3 percent budget increase in FY 2025.

The Scientific and Technical Research Services (STRS) account would shrink by almost 10 percent compared to the total funding of \$1.08 billion provided by Congress for the program in FY 2024. However, the FY 2024 enacted total for STRS included \$223 million in congressionally directed spending or earmarks. If earmarks are not considered, the FY 2025 request would translate to a 14 percent increase for the STRS account. Laboratory programs, which provide industry, academia, and other federal agencies with research capabilities in measurement science, would receive \$787 million (-2 percent*). In FY 2025, NIST would prioritize its laboratory research efforts on 5 strategic focus areas, namely quantum science, artificial intelligence, engineering biology, Internet of Things, and climate.

The Industrial Technology Services account would remain flat at \$212 million. Both its manufacturing programs, namely Manufacturing USA (\$37 million) and Hollings Manufacturing Extension Partnership (\$175 million) would receive level funding.

The budget proposes an 85 percent increase to the Construction of Research Facilities account, which would receive \$312 million for the repair and revitalization of NIST facilities.

Department of Energy (DOE)

DOE Office of Science

- *DOE request: \$51.4 billion (+1.2 billion)*
- *Office of Science request: \$8.6 billion (+\$343 million)*
- *Biological and Environmental Research request: \$945 million (+\$45 million)*

DOE Office of Science is slated to receive a 4 percent boost in FY 2025. The Office supports both scientific research and design, development, construction, and operation of scientific user facilities. Approximately 29,000 researchers located at over 300 institutions and 16 DOE national laboratories are supported by grants from the Office of Science.

The FY 2025 request proposes increased investments in Administration priorities such as artificial intelligence, machine learning, basic research on climate change

and clean energy, including fusion energy, the SC Energy Earthshots initiative, and Microelectronics Science Research Centers.

The request also provides continued support for increasing participation from underrepresented groups in research activities, including for office-wide initiatives of Funding for Accelerated, Inclusive Research (FAIR) and Reaching a New Energy Sciences Workforce (RENEW). The FAIR initiative is focused on enhancing research on clean energy, climate, and related topics at Minority Serving Institutions, while RENEW aims to broaden participation and increase retention from underserved communities across research activities.

The Office of Science will continue supporting the Biopreparedness Research Virtual Environment initiative, which enables multidisciplinary research collaborations to respond to future pandemics and other biological threats. Another cross-cutting initiative, Energy Earthshots, which supports science at the nexus of clean energy production and climate change, would also receive continued support.

Among the Office of Science's six research programs, advanced scientific computing research would receive the largest bump (+13.5 percent), with biological and environmental research receiving a 5 percent increase and fusion energy sciences receiving a 7 percent boost. Smaller increases are proposed for high energy physics (+2.6 percent) and nuclear physics (+3.6 percent), whereas basic energy sciences would see its budget shrink by 1.7 percent.

The \$945 million for BER would support enhanced research on climate science with a new initiative focused on a high resolution prediction capability and by expanding the Urban Integrated Field Laboratories and the network of climate centers affiliated with Historically Black Colleges and Universities and Minority Serving Institutions. BER would continue investments in AI for improving Earth and environmental system predictability, expand its Earthshots efforts, and advance biotechnology innovations to support advanced manufacturing.

Within BER, Biological Systems Science would receive \$454 million, an 8 percent increase relative to FY 2024, with genomic sciences receiving \$316 million (-4 percent*), Biomolecular Characterization and Imaging Science receiving \$44 million (-2 percent*); and Biological Systems Facilities & Infrastructure getting \$94 million (+4 percent*).

The Genomic Science activity supports basic research in foundational genomics, bioenergy, environmental genomics, and computational bioscience. Foundational genomics includes basic research on discovery and manipulation of genome

structural, regulatory, and epigenetic controls to understand genotype to phenotype translations in microbes and plants. The four Bioenergy Research Centers will continue to support multidisciplinary clean energy research.

Small increases are proposed for the three BER scientific user facilities, namely, the Joint Genome Institute (+4 percent*), the Atmospheric Radiation Measurement Research Facility (+1.4 percent*), and the Environmental Molecular Sciences Laboratory (+0.4 percent*).

Earth and Environmental Systems Sciences—which supports the study of terrestrial ecosystems, including the Arctic—would receive a 10 percent boost to \$472 million. Most of that increase would go to environmental system science (+28 percent*). Minor funding cuts are slated for its other accounts, including atmospheric systems research (-0.7 percent*), earth and environmental systems modeling (-0.8 percent*), and facilities and infrastructure (-3.3 percent*).

Advanced scientific computing research would receive a total of \$1.2 billion. Increases are proposed for its research activities (+15 percent*), while the Exascale Computing Project would shrink by \$77 million as it closes out. The proposal includes \$16 million in new funds for the construction of high performance data facility.

The budget for basic energy sciences—which supports research in material physics, chemistry, geosciences, and biosciences—would shrink by \$44 million to \$2.6 billion. Continued support is proposed for fundamental research on clean energy, the Energy Frontier Research Centers, the Energy Earthshot Research Centers, the Energy Innovation Hubs, and the National Quantum Information Science (QIS) Research Centers.

The Science Laboratories Infrastructure account is slated to expand by 2.4 percent to \$295 million, with the funds directed to 8 ongoing construction projects to improve infrastructure across the national labs.

Workforce development for teachers and scientists would grow by 8 percent to \$43 million. The request would continue support for learning and hands-on research experiences at DOE national laboratories and efforts to diversify the STEM pipeline.

Environmental Protection Agency (EPA)

- *EPA request: \$11 billion (+\$1.8 billion)*
- *Science and Technology request: \$1 billion (+\$252 million)*

The President's budget request represents a 20 percent budget increase overall for the EPA. The agency continues to rebuild its workforce, which remains below the staffing levels the agency had for much of the 1990's and early 2000's.

Among the agency's top priorities for FY 2025 are tackling the climate crisis, evaluating chemicals and their risks, and conducting environmental risk assessments to better protect human health, especially children. The EPA is also supporting the Administration's Cancer Moonshot initiative by preventing and mitigating cancer exposure from toxins, pesticides, radon, and PFAS.

EPA would also direct additional money to implementing federal laws that require agency data to be publicly accessible and for policymaking to be based on statistical evidence.

EPA's Office of Research and Development would receive \$676 million (+\$137 million*). Every research category within the office would see additional funding. Specifically, increased funding would be directed to research on the impacts of climate change on human health and ecosystems, as well as updating the chemical safety assessment process. The agency is also requesting \$18 million to replace a research vessel used on the Great Lakes for water quality and biological monitoring research.

The Pesticides: Protect the Environment Program is proposed to receive \$29 million* in additional funding for activities to evaluate the risks of pesticides on endangered and threatened species and their habitats. Continuing research on PFAS pollution on human health and the environment, as well as remediation efforts, would increase by \$66 million.*

The Safe and Sustainable Water Research Program would receive \$143.7 million (+\$32.5 million) to help address water contamination from PFAS, lead, harmful algal blooms, and other contaminants.

Water Quality Research and Support Grants are once again proposed for elimination. This congressionally directed competitive grant program supports water quality and water availability research.

Department of Health and Human Services

National Institutes of Health (NIH)

- *NIH request: \$50.1 billion (+\$3 billion)*
- *Advanced Research Projects Agency for Health (ARPA-H) request: \$1.5 billion (flat)*

NIH would receive a roughly 6 percent boost in FY 2025, with most of this increase going to the National Cancer Institute as part of the Cancer Moonshot initiative.

ARPA-H is slated to receive flat funding of \$1.5 billion, separate from the \$50.1 billion requested for NIH, to fund high-risk, transformative research that drives biomedical innovations.

The request outlines a number of priorities for NIH in FY 2024. This includes continued support for the Cancer Moonshot initiative, which would receive an overall funding of \$2.2 billion, including \$716 million in discretionary funding and \$1.5 billion in new mandatory funding. Other priorities include advancing nutrition science, tackling the opioid epidemic, eradicating HIV in the United States, developing a universal influenza vaccine, expanding mental health research, addressing health disparities and inequities, researching the human health impacts of climate change, and continued support for pandemic preparedness activities.

The budget request would support a total of 43,636 research project grants, an increase of 460 above FY 2023, including a total of 10,273 competing grants.

Most NIH institutes and centers would receive essentially flat funding, with a few receiving significant boosts:

- National Cancer Institute: +8.5 percent (if the \$1.5 billion in mandatory funding for the Cancer Moonshot initiative is excluded; and +29 percent if it is included)
- National Heart, Lung, and Blood Institute: +0.4 percent
- National Institute of Neurological Disorders and Stroke: +9 percent
- National Institute of Allergy and Infectious Diseases: +0.3 percent
- National Institute of General Medical Sciences: flat
- National Institute of Environmental Health Sciences: +0.6 percent
- National Institute of Mental Health: +16.5 percent
- National Human Genome Research Institute: flat

- National Institute of Biomedical Imaging and Bioengineering: +0.3 percent
- National Library of Medicine: +6 percent

The proposal would boost the Office of the Director's budget by 17 percent. The buildings and facilities account for NIH would remain flat at \$350 million, with priority given to addressing the maintenance and repair backlog at the agency.

The budget includes \$40 million (flat*) for NIH to continue research related to the impact of climate change on human health, in collaboration with other federal agencies.

NIH will continue to fund health disparities and inequities research at \$95 million (flat*). This includes continued support for the UNITE initiative, an NIH-wide effort launched in FY 2021 to end racial inequities across the biomedical research enterprise.

The budget includes \$127 million in funding made available through the 21st Century Cures Act for the All of Us Research Program and the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative, a decrease of \$742 million*. The request proposes a corresponding increase of \$742 million in non-Cures Act discretionary funding to provide an overall flat* funding of \$1.2 billion for All of Us and BRAIN.

The request includes \$270 million (flat*) for the development of a universal influenza vaccine and \$26 million (flat*) for the NIH-sponsored Centers for AIDS Research to continue research on HIV prevention and treatment. With respect to pandemic preparedness, \$2.69 billion is requested for NIH to support research and development on vaccines, diagnostics, and therapeutics, biosafety and biosecurity, and expanding lab infrastructure.

The agency requests level funding of \$1.8 billion for opioids, stimulants, and pain research. Within this total, \$1.2 billion would support ongoing research across NIH centers, while \$636 million (flat*) would be allocated to the Helping to End Addiction Long-term (HEAL) Initiative, which was launched in April 2018 to combat opioid addiction and perform research on pain and addiction.

The proposal includes an increase of \$360 million for the National Institute of Mental Health to support improved diagnostics, treatments, and precision of care for mental health.

Department of the Interior

United States Bureau of Land Management (BLM)

- *BLM request: \$1.6 billion (+\$142 million)*
- *Management of Lands and Resources request: \$1.4 billion (+\$134 million)*

The Bureau of Land Management is responsible for more public lands than any other federal agency. For FY 2025, the agency requests a 10 percent funding increase to support new work on landscape health, climate resilience, and transitioning to a clean energy economy.

The Administration also continues to pursue the America the Beautiful initiative, which aims to conserve, connect, and restore 30 percent of the nation's lands and waters by 2030.

A \$153 million (+\$10 million) request for Wildlife Habitat Management would support the highest priority habitat recovery actions for listed species as well as identify, conserve, and restore landscape-level wildlife corridors for big game, migratory birds, pollinators, and at-risk species. This initiative also includes identification and protection of seasonal habitats important for connectivity. Also proposed for new funding is use of nature-based solutions in landscape climate adaptation measures.

Sixty million dollars (+ \$4 million) is proposed for Aquatic Resources conservation and restoration.

Once again, increased funding is proposed for eradication and control of invasive species and re-establishing native plant communities. BLM continues to work with other partners to implement the National Seed Strategy, a research-based native seed production program. The goal is to develop a viable native seed industry that can supply seeds to restoration projects conducted by the Department of the Interior and other partners. New activities proposed for FY 2025 include a National Interagency Seed and Restoration Center and an Ecoregional Seed Hub.

The Wild Horse and Burro Management program would see a 20 percent increase for removals, fertility control treatments, and permanent sterilization efforts. The agency notes: "Rapidly expanding wild horse and burro populations undermine the

health of our public lands, potentially undoing years of BLM land health investments.”

Cultural Resources Management would receive \$20.4 million, a \$1.2 million increase. Some of the additional funding would be directed for Native American Graves Protection and Repatriation Act activities, specifically to support and coordinate expedited repatriation and disposition of tribal ancestors’ remains and cultural property, in compliance with the recently finalized federal rule.

United States Fish and Wildlife Service (USFWS)

- *USFWS request: \$1.9 billion (+\$143 million)*

An 8 percent overall increase is proposed for the U.S. Fish and Wildlife Service, which is the only federal agency with a primary responsibility for management of the nation’s biological resources. Most divisions of the agency would see increased funding under the proposed budget.

An extra \$50 million is requested for preventing the listing of species under the Endangered Species Act, as well as to support conservation of at-risk species and their habitats. Some ongoing activities, including the State of the Birds program and a marine mammal rescue grant program, are proposed to be ended for cost-savings reasons.

The Science Applications program would receive \$37.9 million (+\$4.1 million) to support science partnerships with external stakeholders for collaborative landscape conservation activities. This program supports pollinator conservation, proactive conservation of at-risk species and their habitats, and habitat and ecosystem restoration grants. Science Applications also supports internal USFWS programs, such as developing the agency’s climate change action program.

The National Wildlife Refuge System would receive \$75 million in additional funding. Included is funding for USFWS to establish and manage a second Ecoregional Seed Hub. Other areas of increase are wildlife disease prevention and pollinator conservation. Cuts are proposed for nutria eradication and invasive species strike teams.

The Administration’s request would establish a pilot Aquatic Invasive Species Rapid Response Fund to establish a process and decision model to operate early detection and rapid response to aquatic invasive species.

The Administration is also seeking congressional approval to transfer \$91 million provided under the Bipartisan Infrastructure Law to USFWS to accelerate Endangered Species Act consultations that are needed to advance certain infrastructure projects.

United States Geological Survey (USGS)

- *USGS request: \$1.6 billion (+\$123 million)*
- *USGS Ecosystems Activity request: \$326 million (+\$27 million)*

The budget for the USGS would be augmented by 8.4 percent. Funding increases are proposed for USGS programs across the board, with priority given to climate research and science focused on protecting human health and safety.

The Ecosystems Mission Area—the primary biological research arm of the Department of the Interior—provides the science needed to achieve sustainable management and conservation of biological resources in wild and urban spaces. The Ecosystems account would be augmented by \$27 million or 9 percent to \$326 million. The USGS proposes to separate the Land Change Science Program and the National & Regional Climate Adaptation Science Centers—currently combined into a single program within Ecosystems—into two independent programs. Additionally, the Land Change Science Program would be renamed to Ecosystems Change Research Program and would be funded at \$22.2 million, a nearly 13 percent increase.

Budget for the National & Regional Climate Adaptation Science Centers would grow by 10 percent to \$69.3 million. The Climate Adaptation Science Centers are responsible for developing the science and tools to address the effects of climate change on land, water, wildlife, fish, ecosystems, and communities. Within this account, \$1.4 million is set aside for the National Nature Assessment (NNA), a comprehensive attempt to assess, across the U.S., the current state of nature, to understand the future of nature, and to identify approaches to adaptation and mitigation.

Other programs within Ecosystems would also see budget increases relative to FY 2024:

- The Environmental Health program, which includes contaminant biology and toxic substances hydrology research, would receive an 8.5 percent boost.
- Species management research would grow by 7 percent.

- Biological threats and invasive species research would receive a 2 percent bump.
- Land management research would be augmented by 16.5 percent, with \$3.5 million to support wildlife migration corridor mapping for big game populations.
- The 43 Cooperative Research Units (CRUs), which are located in 41 states, would see their budgets grow by nearly 6 percent to \$29.8 million. The CRUs allow USGS to leverage research and technical expertise affiliated with these universities to conduct research, provide technical assistance, and develop scientific workforces through graduate education and mentoring programs.

Other mission areas are also slated for budget increases. Water Resources would receive a 7 percent increase to \$310 million, with water use and availability science program seeing a 22 percent boost. However, the request terminates funding for the \$15.5 million Water Resources Research Act program. Support for Natural Hazards would increase by 6 percent. This includes programs to monitor earthquakes (+2 percent), volcanoes (+6 percent), and coastal and marine hazards (+17 percent).

Core Science Systems is slated to receive \$313 million in FY 2025, a 15 percent boost. After receiving a \$5.5 million cut in FY 2024, the Science Synthesis, Analysis, and Research (SSAR) Program would grow by \$11.7 million (47 percent) to \$37 million in FY 2025. The request for SSAR includes \$2.5 million to lead the development of the Administration's American Conservation and Stewardship Atlas, a tool that will enable science to inform conservation for the America the Beautiful initiative. The Atlas will support conservation, stewardship, and restoration activities and provide the data needed to achieve the Administration's goal of conserving 30 percent of America's lands and waters by 2030. The plan would provide \$144 million (+25 percent) for the National Land Imaging Program within Core Science Systems, including \$110 million to support satellite operations and an increase of \$12 million to support the development of Landsat Next.

The Energy and Mineral Resources Mission Area is looking at a significant increase of 19 percent. Science Support programs at USGS would receive a 13 percent increase, while the Facilities account would shrink by 2 percent.

National Science Foundation (NSF)

- *NSF request: \$10.2 billion (+\$1.1 billion)*
- *Research and Related Activities request: \$8 billion (+\$869 million)*
- *Major Research Equipment and Facilities Construction request: \$300 million (+66 million)*
- *STEM Education request: \$1.3 billion (+\$128 million)*
- *Biological Sciences Directorate request: \$863 million (+\$18 million*)*

The President’s budget request would increase NSF’s funding by 12.4 percent. This request is significantly lower than the FY 2024 request of \$11.3 billion for NSF. Since Congress provided NSF with an 8 percent cut in FY 2024, the FY 2025 request is only about 3 percent higher than the FY 2023 enacted level. Furthermore, the Administration’s request falls significantly short of the \$16.7 billion level authorized by the CHIPS and Science Act for NSF in FY 2025.

NSF’s proposal is organized around 4 themes—advancing emerging industries for national and economic security, building a resilient planet, creating opportunities everywhere, and strengthening research infrastructure. Roughly \$2.2 billion is proposed to support investments in emerging industries that include advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, microelectronics, semiconductors, and quantum information science.

The research account at NSF would expand by 12 percent over FY 2024. Of this total, \$900 million would be set aside for the Technology, Innovation, and Partnerships (TIP) Directorate to help translate research into practical applications. \$205 million is requested under TIP’s budget to support the NSF Regional Innovation Engines in FY 2025 to “catalyze new business and economic growth in those regions of America that have not fully participated in the technology boom of the past several decades.” Similarly, the Convergence Accelerator would receive \$100 million to “regionalize its approach to accelerate the translation of use-inspired research by investing in regional cohorts of transdisciplinary, multi-sector teams pursuing technology solutions to location-specific challenges.”

Overall, NSF’s Research and Related Activities account would be augmented by \$869 million. All research directorates would see growth in their funding compared to FY 2023 (directorate- and program-level funding numbers were not available for FY 2024):

- **Biological Sciences (BIO) Directorate: \$863 million (+2 percent*)**

- Computer and Information Science and Engineering (CISE) Directorate: \$1.1 billion (+3 percent*)
- Engineering (ENG) Directorate: \$808 million (+1 percent*)
- Geological Sciences (GEO) Directorate: \$1.7 billion (+4.5 percent*)
- Office of Polar Programs (now within GEO): \$589 million (+10 percent*)
- Mathematical and Physical Sciences (MPS) Directorate: \$1.7 billion (+1 percent*)
- Social, Behavioral and Economic Sciences (SBE) Directorate: \$320 million (+4 percent*)
- TIP Directorate: \$900 million (+35 percent*)
- Office of International Science and Engineering: \$68.4 million (flat*)
- Integrative Activities: \$519 million (-2 percent*)

The Directorate for STEM Education (EDU) would operate at \$1.3 billion, 11 percent above FY 2024. Within EDU, the Division of Undergraduate Education would see its budget grow by 13 percent*, while the Division of Graduate Education would receive a 5 percent* bump. Budget for the Division of Equity for Excellence in STEM would grow by 5 percent*. The Graduate Research Fellowship Program within EDU, would receive a budget increase of 7 percent* to \$341 million. Notably, it would support 2,300 new fellowships in FY 2025.

Budget for the NSF INCLUDES, renamed in the CHIPS & Science Act of 2022 as the Eddie Bernice Johnson INCLUDES Initiative, would expand by roughly 26 percent* to \$37 million. This program supports education and career pathways to help build a diverse and skilled American STEM workforce. EDU would invest \$9.5 million (+6 percent*) in biotechnology through research and workforce development programs. The NSF Research Traineeship program would receive \$60 million, an increase of roughly 1.5 percent*.

The Major Research Equipment and Facilities Construction (MREFC) account would receive \$300 million in FY 2025, a 28 percent boost relative to FY 2024, to support two projects, including long-term upgrades of NSF's Antarctic infrastructure and Leadership-Class Computing Facility. Agency Operations and Award Management would receive a 12.5 percent boost, while support for the National Science Board would increase by 3 percent compared to FY 2024.

Among NSF's cross-cutting programs, the Long-Term Ecological Research (LTER) network is slated to receive \$31 million, same as FY 2023. The Research Experiences for Undergraduates program would receive nearly level funding of \$80 million. However, support for Faculty early career development programs or CAREER grants would be cut by 4.5 percent* to \$409 million.

NSF's Biological Sciences Directorate

Overall, the BIO directorate is slated for a 2 percent increase. BIO provides about 65 percent of federal funding for basic non-medical biological research at academic institutions.

The FY 2025 request for BIO aligns with a number of Administration priorities, including “biotechnology to promote the bioeconomy, environmental forecasting and mitigating the impacts of global warming on essential ecosystem services, predicting and preventing the emergence of infectious diseases, and increasing racial equity and diversity across the STEM enterprise.”

Within BIO, funding would be allocated to each of its five divisions as follows:

- Biological Infrastructure (DBI): \$230.4 million (+12 percent*)
- Environmental Biology: \$163 million (-3 percent*)
- Integrative Organismal Systems: \$188 million (-3 percent*)
- Molecular and Cellular Biosciences: \$141.2 million (-3 percent*)
- Emerging Frontiers: \$140 million (+6 percent*)

BIO would continue investments in the new agency-wide program called BioFoundries to foster innovation in biotechnology, bioengineering, and biomanufacturing.” BIO will also continue to support “building and broadening the biological sciences workforce” through its postdoctoral fellowships, the Building Research Capacity of New Faculty in Biology (BRC-BIO) program, the Research and Mentoring for Post baccalaureates in Biological Sciences (RaMP) program, and its Leading Culture Change through Professional Societies of Biology (BIO-LEAPS) program.

Increased investments of \$155 million (+\$7 million*) are proposed within BIO to support biotechnology initiatives to promote the bioeconomy. Other research directorates will work together with BIO to make investments in biotechnology, including ENG (\$96 million), GEO (\$10.5 million), CISE (\$8.5 million), MPS (\$67 million), SBE (\$1.6 million), and TIP (\$70 million). Overall, NSF proposes making an investment of \$421 million (+9 percent*) in biotechnology.

BIO would once again prioritize investments in climate change, by increasing support for clean energy technology research by 4.5 percent* and the U.S. Global Change Research Program by 14 percent*. Other major BIO investments include advanced manufacturing (\$7.5 million), artificial intelligence (\$21 million), quantum

information sciences (\$3.4 million), and improving undergraduate STEM education (\$1.5 million).

The National Ecological Observatory Network (NEON) would receive \$82 million through DBI, an increase of roughly \$10 million*.

BIO also proposes to increase investments in synthesis centers focused on “integration and reuse of existing data to create new knowledge that will fuel advances in both basic and use inspired research across all scales of biological organization.” \$9.5 million is requested for Centers for Analysis and Synthesis within DBI, an increase of \$7 million*. This includes \$5 million in continued support for a new center in environmental science that will leverage data being provided by NEON, LTER, and other environmental observatories and databases to support community efforts in ecological modeling and eco-forecasting.

The Biology Integration Institutes (BIIs) program, which supports collaborative research on frontier questions about life that span multiple disciplines within and beyond biology, would be funded at \$45.2 million (+28 percent*). This request would support up to 18 BIIs in total, an addition of 4 institutes to the existing 14.

Smithsonian Institution

- *Smithsonian Institution request: \$1.16 billion (+\$70 million)*

Federal support for the Smithsonian Institution would grow by 6.4 percent. This increase includes the congressionally mandated pay raise and funds to revitalize physical infrastructure. Smithsonian is also funded by private donations and a trust fund.

The Facilities Capital account would receive \$200 million for repair and revitalization of facilities. This total is \$2.3 million above FY 2024, but \$51.6 million below the FY 2023 enacted level. It represents a strategic decision by the Smithsonian Institution to prioritize supporting staff and daily operations, while addressing priority revitalization projects. Included in the request are: \$5.8 million for the National Museum of Natural History to continue major revitalization work; \$27.8 million for the National Zoo and Conservation Biology Institute’s ongoing revitalization work; \$12.9 million for the Smithsonian Tropical Research Institute; \$1.2 million for the Smithsonian Environmental Research Center; \$13.6 million for the Suitland Collections Center; and \$8 million to continue the major renovation project at the National Air and Space Museum.

The Salaries and Expenses account would grow by 7.5 percent to \$960 million. This includes an increase of \$225,000* for collections stewardship, including the Shared Stewardship, Ethical Returns and Human Remains programs, and an increase of \$2 million* for biodiversity research through the Biodiversity Center. The budget plan supports increased research partnerships and public communications related to the Life on a Sustainable Planet initiative, including the work conducted by the Global Earth Observatory (GEO) networks related to environmental resilience, ecosystem monitoring, climate change, and related fields. Overall, research programs at the Smithsonian Institution are slated to receive an increase of 6 percent* to \$117 million, including a 5.7 percent* increase for scientific research and discovery and a 7 percent* increase for vital arts and humanities research.

Funding for the development, preservation, and documentation of collections would increase by 6.4 percent* to \$90.4 million. Funding increases are proposed for most ongoing activities at Smithsonian, including public programs for the dissemination of information (+2.8 percent*), exhibitions (+4.7 percent*), and educational outreach (+2.5 percent*).

The National Museum of Natural History would receive \$58.8 million (+6.4 percent) under the Salaries and Expenses account. This includes \$19.3 million (+\$2.4 million*) for improving the stewardship of national collections, \$19.4 million (+\$564,000*) for scientific research, \$2 million for educational outreach (+\$57,000*), and \$8 million (+\$230,000*) for public programs.

The Smithsonian's National Zoo and Conservation Biology Institute (NZCBI), which focuses on conserving species and the environment, is slated to receive \$38.5 million, a nearly 9 percent increase. The Smithsonian Tropical Research Institute, which works towards understanding the biological and cultural diversity in the tropics, would receive a boost of 6.7 percent to \$17.3 million. The Smithsonian Environmental Research Center conducts research on land and water ecosystems in the coastal zone and would receive \$5.3 million (+7.7 percent). This center serves as the headquarters for the MarineGEO program, which tracks changes in near-shore marine ecosystems; leads long-term studies of ForestGEO's temperate forest plots; and is a base for the NSF-funded National Ecological Observatory Network forest tower and ground-based sampling array.

WHAT'S NEXT?

The President's budget request is only a proposal; it does not have binding authority. Congress uses the President's budget request as a starting point for their budget negotiations. Congress has already begun their consideration of the FY 2025 budget, although it will be several months before any final decisions are made.

ABOUT AIBS

The American Institute of Biological Sciences is the national scientific organization dedicated to advancing the biological sciences to promote an increased understanding of all life. Our mission is to promote the use of scientific information to inform decision making and advance biology for the benefit of science and society.

AIBS initiatives are unified by a commitment to promoting informed decision-making. Our strategic priorities include:

- **Publications and Communications** including reliable reports, analyses, and the peer-reviewed journal *BioScience*, which is a forum for integrating the life sciences and educating the public about biological sciences.
- **Scientific Peer Advisory and Review Services** for research proposals and programs sponsored by funding organizations, including the federal government, state agencies, private research foundations, and other non-government organizations, and to educate the community about the science of peer review.
- **Community Programs** that advance the field and profession of biology while promoting and providing leadership, with a particular emphasis on public policy and advocacy, education and professional development, as well as public awareness of science.

AIBS works with any stakeholder that advances the broad field and profession of biology. Organizations partner with us on initiatives, work with us to identify and communicate matters of common concern, and help connect us to their communities for idea and information exchange – particularly regarding public policy, education, public understanding of science, and matters of professional concern.

AIBS has member societies and organizations that support our work financially. AIBS has clients from government agencies to biological societies and other nonprofits that use our expert services for a fee.

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For questions related to this publication, please contact the AIBS Public Policy Office at publicpolicy@aibs.org.

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