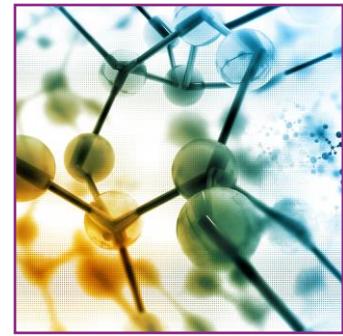
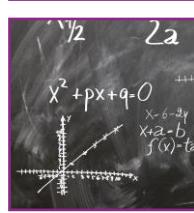


# Analysis of the President's FY 2020 Budget Request for Federal Research, Health, and Higher Education Programs

Prepared by Lewis-Burke Associates LLC  
March 21, 2019



## Table of Contents

Executive Summary.....	3
Department of Commerce.....	5
National Oceanic and Atmospheric Administration .....	5
National Institute of Standards and Technology .....	7
Economic Development Administration .....	9
Department of Defense .....	10
Department of Education.....	14
Department of Energy .....	18
Department of Health and Human Services .....	23
National Institutes of Health .....	23
Food and Drug Administration .....	28
Department of Health and Human Services (Other) .....	30
Department of Homeland Security.....	36
Department of Justice .....	39
Department of Labor.....	42
Department of Transportation .....	44
Department of State and United States Agency for International Development .....	47
Environmental Protection Agency .....	50
Institute of Museum and Library Services .....	53
National Aeronautics and Space Administration .....	54
National Endowment for the Humanities & National Endowment for the Arts.....	59
National Science Foundation.....	61
U.S. Department of Agriculture.....	68
U.S. Geological Survey.....	71
Acronym Glossary .....	75

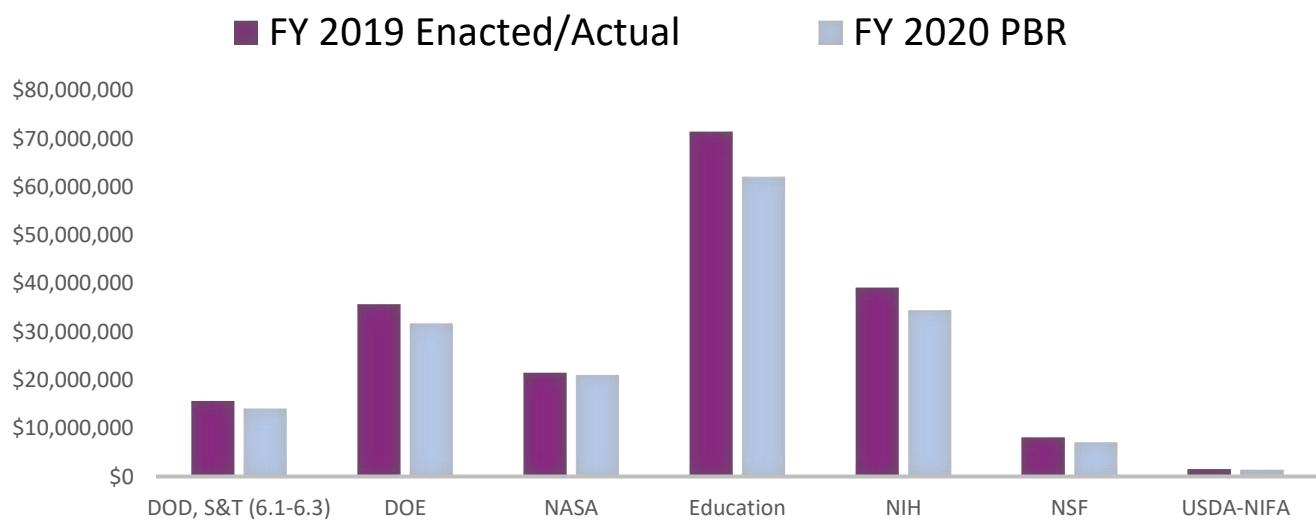
## Executive Summary

On March 11, 2019, President Trump released his third budget proposal to Congress. The fiscal year (FY) 2020 budget request reflects the political priorities of the Trump Administration and kicks off the congressional budget and appropriations process. Similar to prior years, the request proposes drastic cuts to many of the non-defense federal agencies of interest to the research, education and healthcare communities to help pay for increases in defense spending. However, Congress is expected to continue the trend of rejecting most of the proposed budget cuts. It is ultimately up to Congress to decide which proposals to embrace, modify, or reject as part of the annual appropriations process.

President Trump's FY 2020 budget request sets out two main priorities—increasing military spending and building a barrier on the U.S.-Mexico border. However, these priorities set up confrontation with Congress and in particular a Democratic-controlled House. Congress has started to negotiate a new, two-year budget agreement that lifts the caps on discretionary spending for both defense and non-defense programs. The last budget agreement covered only FY 2018 and FY 2019 and without a new agreement, discretionary spending would have to be cut by \$126 billion below FY 2019 enacted levels. However, this budget request will delay and complicate the ability of Congress to work with the White House on a new budget agreement.

Similar to the previous two years, the budget request puts an emphasis on defense and national security at the expense of non-defense federal agencies and programs. The budget request would increase defense spending by about five percent to \$750 billion, while cutting non-defense programs by nine percent or about \$55 billion below the FY 2019 enacted funding levels. The graphic below shows proposed FY 2020 funding levels for major federal research agencies compared to the FY 2019 enacted levels.

## KEY AGENCIES AT A GLANCE (IN THOUSANDS)



## FY 2020 Trump Administration Science and Technology Priorities

While FY 2020 president's budget request proposes significant cuts to science and technology programs across the federal government, increased investments are proposed in top research and development priorities, including:

- quantum information science,
- artificial intelligence and machine learning,
- strategic computing,
- autonomous systems,
- genomics and engineered biology,
- next-generation microelectronics,
- space exploration, and
- precision agriculture.

The request uses the Overseas Contingency Operations (OCO) account to dramatically increase defense spending while technically adhering to sequestration caps, which Democrats in Congress view as a budget gimmick. Democrats have called for continued parity between defense and non-defense spending. The budget request also renews the fight over a border wall, requesting \$8.6 billion through the Departments of Defense and Homeland Security. In final FY 2019 funding bills passed in January, Congress rejected the President's \$5.7 billion request for the border wall.

While Congress will decide final funding levels for FY 2020 and is likely to reject many proposed cuts, the budget request still provides a useful window into major Administration priorities, some of which have bipartisan support, especially in science and technology areas, such as artificial intelligence, quantum information science, and cybersecurity (see side bar). Unfortunately, these increased investments in targeted areas come at the expense of core research fields, such as materials research, chemistry, biology, physics, mathematics, computer science, and social and behavioral sciences—many of which support and underpin advances in these strategic investments.

Major goals of the overall budget request also include shrinking the federal workforce, overhauling federal compensation and benefits, and cutting burdensome regulations. Proposed cuts to major federal programs and associated proposed cuts to federal staff along with changes to compensation and benefits have a negative impact on morale and the ability of the government to attract and retain top talent for program managers and other major positions. The budget proposal also outlines major policy changes that will likely be rejected by Congress, such as a new border security and immigration enforcement fund to advance the Administration's border security and immigration changes, reforms to the Medicaid program, and users fees for the prescription drug pricing program.

The budget request also seeks to impact education and workforce programs. The budget request proposes significant cuts or elimination to numerous federal student aid and competitive grant programs at the Department of Education. With congressional interest in advancing the *Higher Education Act* reauthorization this year, the request also outlines higher education policy reforms sought by the Trump Administration, including modifying aid and loan programs, streamlining loan repayment, and increasing transparency of program level outcomes.

While many federal agencies have not released detailed budget justifications explaining how the funding would be fully allocated, the overview below contains an analysis of the information currently available for relevant agencies and programs of interest to the higher education, research, and healthcare communities.

# Department of Commerce



*At the time of this writing, the DOC FY 2020 Congressional Budget Justification was not available. Below reflects the information that is currently available in the OMB budget appendices for the Department of Commerce.*

## National Oceanic and Atmospheric Administration

**The NOAA Operations, Research and Facilities (ORF) account would receive a \$539 million cut (15 percent) and the Procurement, Acquisition, and Construction (PAC) account would receive a \$362 million cut (21 percent) compared to the FY 2019 level. The main extramural research office, OAR would be cut by \$216 million (41 percent) compared to the FY 2019 level.**

**Quick Take:** Consistent with the past two years, the Administration has proposed the elimination of extramural research programs throughout the agency, totaling \$276 million. The rationale is that these grants support local activities that should be left to the states while NOAA should focus on providing technical support and resources rather than grants.

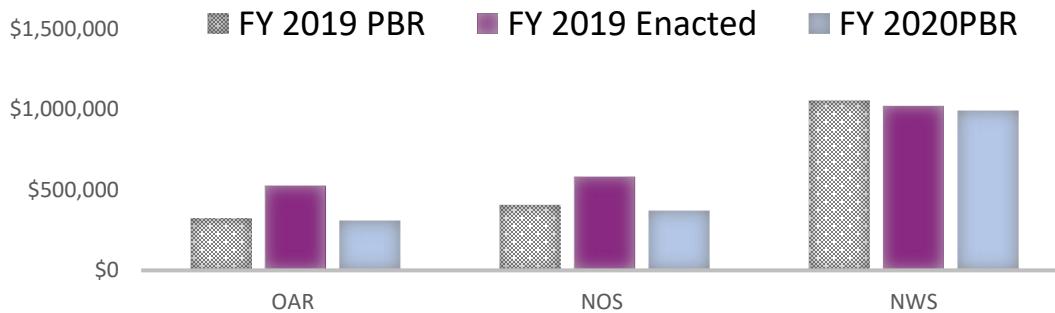
**Major Cuts/Eliminations:** Steep cuts are proposed for extramural research grants at OAR and the NOS. For the third year in a row, the president's budget request would terminate the following signature programs: National Sea Grant Program, Coastal Zone Management grants, National Estuarine Research Reserve, and the entire Office of Education. Congress has historically protected these programs and often, provided small increases.

**Signature Initiatives:** The narrative indicates that the Administration would prioritize weather satellites and proposes an increase for this operations account, although the procurement account would receive a 17 percent decrease.

### The Bottom Line

NOAA topline extramural research will likely remain stagnant, as congressional champions will fight to protect signature programs and individual Members will advocate for regional Cooperative Institutes (CI), rather than a push for any topline growth. The NWS will likely continue to be the most prioritized office, due to concern over extreme weather events.

## NOAA OAR, NOS, NWS (IN THOUSANDS)



*Source: Information and figures for the Department of Commerce are available in the OMB FY 2020 budget appendices at <https://www.whitehouse.gov/wp-content/uploads/2019/03/com-fy2020.pdf>.*

### **National Oceanic and Atmospheric Administration (NOAA)** *(in millions of \$)*

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>Operations, Research and Facilities (ORF)</b>	<b>3,596</b>	<b>3,058</b>	<b>-538.6 (15.0%)</b>
Oceanic and Atmospheric Research (OAR)	525.1	309.0	-216.1 (41.1%)
National Ocean Service (NOS)	581.5	370.0	-211.5 (36.4%)
National Weather Service (NWS)	1,020.0	989.0	-31.1 (3.1%)
National Marine Fisheries Service (NMFS)	908.8	812.0	-96.8 (10.7%)
<b>Procurement, Acquisition, and Construction (PAC)</b>	<b>1,768.3</b>	<b>1,406.2</b>	<b>-362.1 (20.5%)</b>
National Environmental Satellite, Data, and Information Systems (NESDIS)	1,457.1	1,201.0	-256.1 (17.6%)

\*The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.

## National Institute of Standards and Technology



The president's FY 2020 budget request proposes \$668 million for NIST, which would be a decrease of \$318 million or 32 percent below the FY 2019 enacted level.

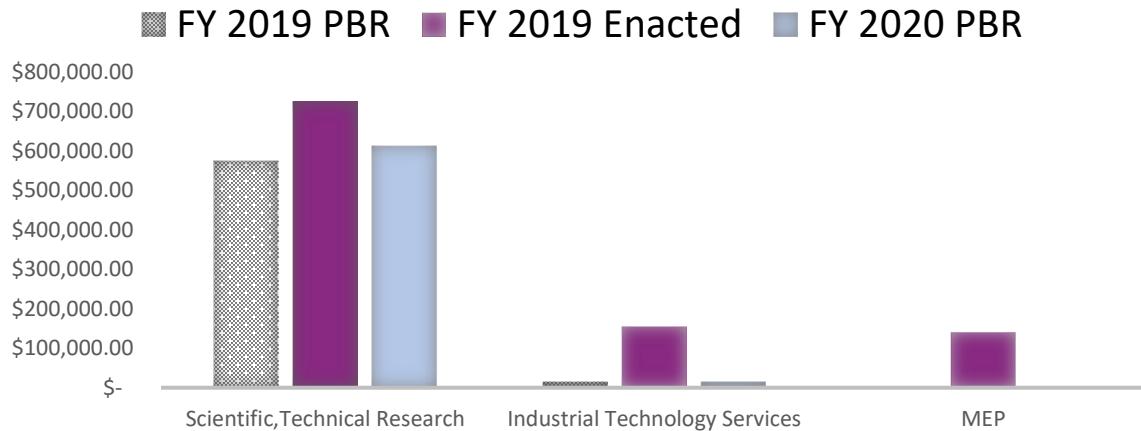
**Quick Take:** This year's budget request is in line with previous requests of the Trump Administration and proposes cuts across the board. Lewis-Burke will continue to monitor and provide updates on NIST initiatives as more budget details are released.

**Major Cuts/Eliminations:** The President proposed steep cuts to NIST's Industrial Technology Services program, which includes funds for the Manufacturing USA Institutes and the Hollings Manufacturing Extension Partnership (MEP). MEP would be eliminated while support for the Manufacturing USA program would be flat.

### The Bottom Line

The FY 2020 budget request is similar to previous requests and proposes steep cuts across the board. However, Congress is unlikely to support these cuts and is anticipated to maintain steady funding for the agency.

## MAJOR NIST PROGRAMS (IN THOUSANDS)



## **Proposed Reductions and Terminations**

### **Hollings Manufacturing Extension Partnership**

Within the Industrial Technology Services account, the most drastic cut proposed is for MEP. Like last year, the budget request proposes eliminating the program and would require MEP centers to support themselves.

### **Scientific and Technical Research and Services**

The Scientific and Technical Research and Services account would see a 15.6 percent cut under the budget request compared to the FY 2019 enacted level. The bulk of NIST's research is done internally or with established partners, but this cut could impact any future extramural opportunities.

## **New and Signature Initiatives**

### **Federal Capital Revolving Fund**

The president's budget request proposes creating a new program called the Federal Capital Revolving Fund (FCRF) to help finance the improvement of NIST's aging research infrastructure. The funds would be directed to federally-owned, civilian property infrastructure projects.

## **Ongoing Areas of Interest**

NIST is anticipated to continue focusing on research related to cybersecurity, advanced manufacturing, smart cities, internet of things, quantum science, and advanced computing.

*Information and figures for the Department of Commerce are available in the OMB FY 2020 budget appendices at <https://www.whitehouse.gov/wp-content/uploads/2019/03/com-fy2020.pdf>.*

### **National Institute of Standards and Technology (in thousands of \$)**

	<b>FY 2019 Enacted</b>	<b>FY 2020 Request</b>	<b>FY 2020 Request vs. FY 2019</b>
<b>NIST, Total</b>	<b>985,500</b>	<b>667,581</b>	<b>-317,919 (32.2%)</b>
<b>Scientific and Technical Research and Services</b>	<b>724,500</b>	<b>611,719</b>	<b>-112,781 (15.6%)</b>
<b>Industrial Technology Services</b>	<b>155,000</b>	<b>15,172</b>	<b>-139,828 (90.2%)</b>
Manufacturing USA	15,000	15,000	--
Hollings Manufacturing Extension Partnership	140,000	0	<b>-140,000 (100.0%)</b>

## Economic Development Administration



The president's budget request will once again propose the elimination of EDA, providing \$30 million for an orderly closeout of agency functions in FY 2020.

**Quick Take:** According to the available briefing materials, the president's FY 2020 budget request would eliminate EDA in support of the Administration's goal to "move the Nation towards fiscal responsibility and to redefine the proper role of the Federal Government." The president's budget request in FY 2019 also called for the agency's elimination, at the time citing the expiration of EDA's authority in 2008 and a perceived lack of transparency in awarding grants as justifications to eliminate the agency. The elimination of EDA would be a major setback to the federal government's support for programs to advance public works projects and stimulate innovation-based economic growth.

### The Bottom Line

The Administration's proposal to eliminate EDA, which is consistent with the president's FY 2018 and FY 2019 requests, is a setback to federal economic development efforts. However, Congress has now twice rejected the president's proposed cuts, and approved a modest increase (0.8 percent) for programs relevant to universities and research institutes, such as the Regional Innovation Program, in FY 2019. It is expected that Congress will again reject these cuts

*Source: Information and figures for the Department of Commerce are available in the OMB FY 2020 budget appendices at <https://www.whitehouse.gov/wp-content/uploads/2019/03/com-fy2020.pdf>.*



Under the president's budget request, the RDT&E account would increase by \$7.8 billion or 8 percent compared to the FY 2019 actual level. The S&T accounts, which include basic research (6.1), applied research (6.2), and advanced technology development (6.3), would be cut by \$2 billion or 10 percent compared to the FY 2019 actual level.

**Quick Take:** The Administration continues to prioritize readiness and modernization by increasing prototyping and systems development at the expense of basic and applied research. The budget request supports the Department's return to great power competition with China and Russia as depicted in *The National Defense Strategy*.

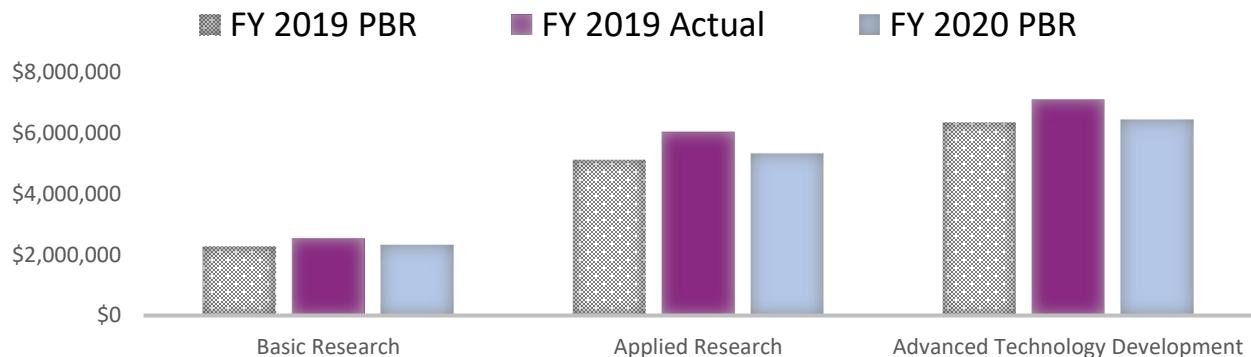
**New Initiatives/Priorities:** The budget request would include \$221 million for the Joint Artificial Intelligence Center (JAIC), demonstrating the increased emphasis on artificial intelligence. The budget request reiterates the Administration's focus on space by providing funding for the new Space Development Agency, space science and technology R&D, and space science and technology prototyping.

**Army's Reorganization and Modernization Priorities:** The most drastic change in the budget request is the reorganization of the Army's S&T enterprise. The Army has significantly reorganized its S&T programs to align with their modernization priorities. The budget request terminates, reduces, or consolidates many existing applied research programs into new programs that better reflect the modernization priorities. Additionally, some programs shifted into advanced technology development (6.3) and advanced component development and prototype (6.4) programs.

### The Bottom Line

While the Administration continues to propose increases for RDT&E, funding for basic and applied research is not keeping pace. Proposed reductions in basic research accounts, like University Research Initiatives and Defense Research Sciences, would negatively impact DOD's ability to engage with academia. Congress continues to support increased DOD-academic engagement and will likely reject the proposed cuts.

## DOD S&T, BASIC RESEARCH (IN THOUSANDS)



## **Proposed Reductions and Terminations**

### **Science and Technology Accounts**

The S&T accounts (6.1 – 6.3) would be cut across the Services. The Army, Navy, and Air Force's S&T accounts would decrease by 33.3 percent, 10.4 percent, and 5.6 percent, respectively. Within basic research, the University Research Initiatives and the Defense Research Sciences were also proposed for decreases. These two budget lines fund the bulk of university-driven basic research for the Department. The proposed cuts to S&T accounts continue the Administration's trend of prioritizing prototyping and systems development.

### **National Defense Education Program**

The National Defense Education Program (NDEP) was proposed for a 32.1 percent cut. The NDEP funds programs like the Science, Mathematics, and Research for Transformation (SMART) program and the Manufacturing Engineering Education Program (MEEP). NDEP received a sizeable congressional increase in FY 2019 and this cut will likely be rejected.

## **New and Signature Initiatives**

### **Space**

There has been significant press regarding the establishment of Space Force. The budget request proposes \$72.4 million for the initial establishment of the new combatant command. Additionally, funding would be allocated for programs such as the Space Development Agency (\$105 million), space science and technology R&D (\$20 million), space science and technology prototyping (\$85 million), and Defense Innovation Unit Prototyping (\$92 million). Of the Services, the Air Force currently does the most operations in space, and it appears that funding for their space technology efforts have shifted to applied and prototyping research efforts. The Air Force did propose new efforts for space and space situational awareness.

### **Research Priorities Across the Services**

- The **Army's** research priorities include their modernization priorities (Long-Range Precision Fires; Next Generation Ground Combat Vehicle; Network C3I technology; Air and Missile Defense Technology; Future Vertical Lift; and Soldier Lethality), electronic warfare technology, synthetic training environment refinement, and prototyping and robotic development.
- The **Navy's** research priorities include ocean warfighting applied research, future naval capabilities applied research, electronic warfare, munitions, the joint strike fighter, and cybersecurity.
- The **Air Force's** research priorities include high energy lasers, human effectiveness, aerospace sensors, munitions, and directed energy technology.

## **Ongoing Areas of Interest**

The **Defense Advanced Research Projects Agency (DARPA)**, which is funded under Defense-wide RDT&E, would receive \$3.6 billion, a \$129 million increase relative to FY 2019. Within DARPA, increases are proposed for defense research sciences, information & communications technology, tactical technology, materials and biological technology, command, control and communications systems, and network-centric warfare technologies. The budget request would decrease funding for sensors, advanced aerospace, and space programs.

The budget request would also provide \$737 million in funding for the **Defense Threat Reduction Agency (DTRA)**, an increase of \$74 million above the FY 2019 actual level. However, the increased funding for DTRA would not be for basic research but for applied efforts for countering weapons of mass destruction, as well as a new defense rapid innovation program for DTRA.

Finally, **defense health R&D** would receive \$732 million which is an increase relative to the FY 2019 request but significantly less than the actual value of \$2.1 billion. The Congressionally Directed Medical Research Program (CDMRP) accounts for the difference between the actual and requested amounts, as CDMRP funding is added by Congress during the appropriations process.

*Source: The DPD budget information is available at  
[https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020\\_Budget\\_Request\\_Overview\\_Book.pdf](https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request_Overview_Book.pdf)*

**Department of Defense**  
*(in thousands of \$, amounts do not include OCO funding)*

	FY 2019 Actual	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>RDT&amp;E, total</b>	<b>94,767,690</b>	<b>102,647,545</b>	<b>7,879,855 (8.3%)</b>
<b>S&amp;T, Total</b>	<b>15,645,490</b>	<b>14,058,561</b>	<b>-1,586,929 (10.1%)</b>
6.1, Total	2,528,429	2,320,019	-208,410 (8.2%)
6.2, Total	6,025,099	5,315,527	-709,572 (11.8%)
6.3, Total	7,091,962	6,423,015	-668,947 (9.4%)
<b>Army RDTE</b>	<b>11,074,556</b>	<b>12,192,771</b>	<b>1,118,215 (10.1%)</b>
Army 6.1	506,444	454,980	-51,464 (10.2%)
Army 6.2	1,578,725	893,990	-684,735 (43.4%)
Army 6.3	1,585,778	1,099,564	-486,214 (30.7%)
<b>Navy RDTE</b>	<b>18,490,002</b>	<b>20,270,499</b>	<b>1,780,497 (9.6%)</b>
Navy 6.1	679,772	605,978	-73,794 (10.9%)
Navy 6.2	1,018,795	936,453	-82,342 (8.1%)
Navy 6.3	851,710	742,210	-109,500 (12.9%)
<b>Air Force RDTE</b>	<b>41,166,683</b>	<b>45,616,122</b>	<b>4,449,439 (10.8%)</b>

<i>Air Force 6.1</i>	561,329	529,761	<b>-31,568 (5.6%)</b>
<i>Air Force 6.2</i>	1,480,573	1,435,626	<b>-44,947 (3.0%)</b>
<i>Air Force 6.3</i>	928,747	839,153	<b>-89,594 (9.6%)</b>
<b>Defense Wide RDTE</b>	<b>23,659,448</b>	<b>24,346,953</b>	<b>687,505 (2.9%)</b>
<i>Defense Wide 6.1</i>	780,884	729,300	<b>-51,584 (6.6%)</b>
<i>Defense Wide 6.2</i>	1,947,006	2,049,458	<b>102,452 (5.3%)</b>
<i>Defense Wide 6.3</i>	3,725,727	3,742,088	<b>16,361 (0.4%)</b>
<b>Defense Health R&amp;D</b>	<b>2,179,621</b>	<b>732,273</b>	<b>-1,447,348 (66.4%)</b>



The discretionary programs within ED would be decreased by \$8.5 billion or 12 percent compared to the FY 2019 enacted level. This proposed reduction includes the cancellation of \$2 billion of unobligated balances in the Pell Grant program while maintaining the maximum Pell Grant at \$6,195.

**Quick Take:** The request again proposes significant cuts to student aid and competitive grant programs with attention devoted to policy proposals for a *Higher Education Act* (HEA) reauthorization.

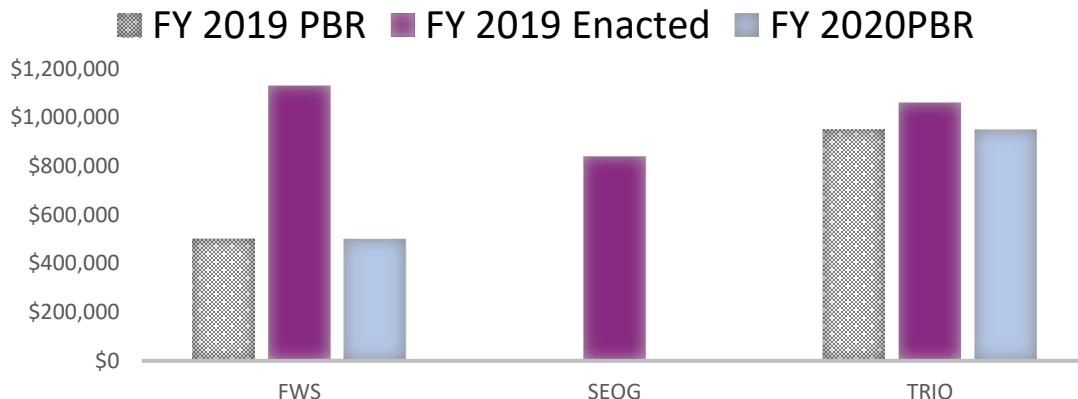
**Major Cuts/Eliminations:** Among the 29 programs proposed for elimination are the Federal Supplemental Educational Opportunity Grants (SEOG) program, the Graduate Assistance in Areas of National Need (GAANN) program, the International Education and Foreign Language programs, Teacher Quality Partnership (TQP), and others.

**New Initiatives/Priorities:** The Administration offers many proposals to reform HEA, including proposing the expansion of Pell Grant eligibility to short-term programs, reform of the Federal Work-Study program, and increased transparency for students through new program-level earnings and outcome data.

#### The Bottom Line

This request includes several proposed cuts, which Congress will likely reject, that would significantly impact student aid, institutional aid, and student support programs. More details will be needed on how ED will address proposals around institutional accountability and providing students with program-level earnings and outcome data.

## ED PROGRAMS (IN THOUSANDS)



## **Proposed Reductions and Terminations**

### **Student Aid**

While the budget request recommends level funding for the **Pell Grant** maximum grant award for the 2020-2021 school year, other federal student aid programs would be cut dramatically. The budget request proposes to reduce the **Federal Work Study (FWS)** program by more than half with a cut of approximately \$630 million. The Administration also proposes to revise the current institutional allocation formula for FWS funding, based on an institution's level of Pell-eligible students, and focus FWS on workforce and career-oriented training opportunities. The **Federal Supplemental Educational Opportunity Grant (SEOG)** program would be eliminated.

The budget request would eliminate the **Subsidized Stafford loan** program for loans originating after July 1, 2020. The budget also proposes to streamline and replace current **income-driven loan repayment plans** with a single plan with an increased monthly payment cap of 12.5 percent of discretionary income. Only borrowers with undergraduate student debt would see any balance remaining after 15 years of repayment forgiven. For borrowers with any graduate debt, any balance remaining after 30 years of repayment would be forgiven. Additionally, the budget request would eliminate the **Public Service Loan Forgiveness (PSLF) program** for new loans originating after July 1, 2020.

### **Higher Education Grant Programs**

As noted above, the president's FY 2020 request proposed eliminations include several competitive grant programs, such as the **Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP)**, the **Teacher Quality Partnership (TQP)** grant program, the **Graduate Assistance in Areas of National Need (GAANN)** program.

Following last year's Administrative proposal, the FY 2020 budget recommends consolidating six existing minority serving institution programs under Title III and Title V, including **Developing HSIs** and **Strengthening Asian American and Native American Pacific Islander-serving Institutions** program, into a single consolidated Minority-Serving Institutions (MSI) grant program. The Title III **Strengthening Institutions** program would be fully eliminated. The Strengthening Historically Black Colleges and Universities (HBCUs) grant programs would not be consolidated and remain level-funded. The Minority Science and Engineering Improvement Program (MSEIP) would not be consolidated but would experience a small reduction.

Additionally, the **Promise Neighborhoods** grant program, part of the Safe Schools and Citizenship Education programs at ED which can include higher education institutional partners, would be eliminated.

### **Education Research**

The FY 2020 budget request would cut funding for the **Institute of Education Sciences (IES)** overall by nearly \$94 million from the FY 2019 enacted level. While Research, Development, and Dissemination activities and special education research would have small reductions, the budget proposes eliminating funding for the Regional Educational Laboratories and Statewide longitudinal data systems.

## New and Signature Initiatives

The request would provide \$300 million, a \$170 million increase, for the **Education Innovation and Research (EIR)** grant program that supports evidence-based innovations in classroom instruction, teacher development, and K-12 student achievement. Of the requested amount, \$100 million would be directed toward innovation and reform in support of **STEM education**. The request would also provide **School Safety National Activities** at \$200 million, a \$105 million increase from the FY 2019 enacted levels. This funding would provide resources to carry out school safety-related activities based on the recommendations of the Federal Commission on School Safety.

## Ongoing Areas of Interest

Reflecting ED's regulatory interests currently being pursued through negotiated rulemaking, the FY 2020 budget request outlines several of the Administration's policy proposals for a reauthorization of the Higher Education Act. The Department's interests include simplification and consolidation of aid and repayment programs, pursuing innovation and career-oriented training, as well as increased institutional accountability through student loan risk sharing.

*Source: ED's FY 2020 Budget Summary and Background Information is available at <https://www2.ed.gov/about/overview/budget/budget20/index.html> and ED budget justifications can be found at <https://www2.ed.gov/about/overview/budget/budget20/justifications/index.html>*

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

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>Innovation and Improvement<sup>†</sup></b>			
<b>Education Innovation and Research</b>	130,000	300,000	<b>170,000 (130.8%)</b>
<b>Student Financial Assistance<sup>†</sup></b>			
<b>Pell Grant<sup>‡</sup></b>	6,195	6,195	--
<b>SEOG</b>	840,000	0	<b>-840,000 (100%)</b>
<b>Federal Work-Study</b>	1,130,000	500,000	<b>-630,000 (56%)</b>
<b>Higher Education<sup>†</sup></b>			
<b>Aid for Hispanic Serving Institutions (HSIs)<sup>§</sup></b>	124,415	0	<b>-124,415 (100%)</b>
<b>Promoting Post-Baccalaureate Opportunities for Hispanic Americans<sup>§</sup></b>	11,163	0	<b>-11,163 (100%)</b>
<b>Title VI International Education and Foreign Language Studies (Domestic and Overseas)</b>	72,164	0	<b>-72,164 (100%)</b>

<b>TRIO Programs</b>	1,060,000	950,000	-110,000 (10.4%)
<b>GEAR UP</b>	360,000	0	-360,000 (100%)
<b>GAANN</b>	23,047	0	-23,047 (100%)
<b>Institute of Education Sciences</b>	<b>615,462</b>	<b>521,563</b>	<b>-93,899 (15.3%)</b>
<b>Research, Development and Dissemination</b>	192,695	187,500	5,195 (2.7%)
<b>Research in Special Education</b>	56,000	54,000	-2,000 (3.6%)
<b>Regional Education Laboratories</b>	55,423	0	-55,423 (100%)
<b>Statewide Longitudinal Data Systems</b>	32,281	0	-32,281 (100%)

\* The amounts shown for FY 2019 Enacted are taken from the H.R. 115-952, Conference Report and H.R. 6157, Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019 and Continuing Appropriations Act, 2019.

† 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.

§ Six existing Title III and Title V programs would be eliminated, including Strengthening Alaska Native and Native Hawaiian serving Institutions, Strengthening Predominantly Black Institutions, Strengthening Asian American and Native American Pacific Islander-serving Institutions, Strengthening Native American Nontribal-serving Institutions, Developing Hispanic-Serving Institutions, and Promoting Postbaccalaureate Opportunities for Hispanic Americans, and a new Title III/V Institutional Formula Grant is proposed.

## Department of Energy



The president's FY 2020 budget request would fund DOE at a level of \$31.7 billion, a \$4 billion reduction from the FY 2019 enacted level.

**Quick Take:** Consistent with the Trump Administration's priority to grow defense spending, DOE's defense programs, primarily under the NNSA, would grow by \$940 million (4 percent) and make up an unprecedented 73 percent of all DOE funding. This proposed growth would come at the expense of fundamental research and applied energy programs which would be down \$4.7 billion (35 percent) compared to the FY 2019 enacted level.

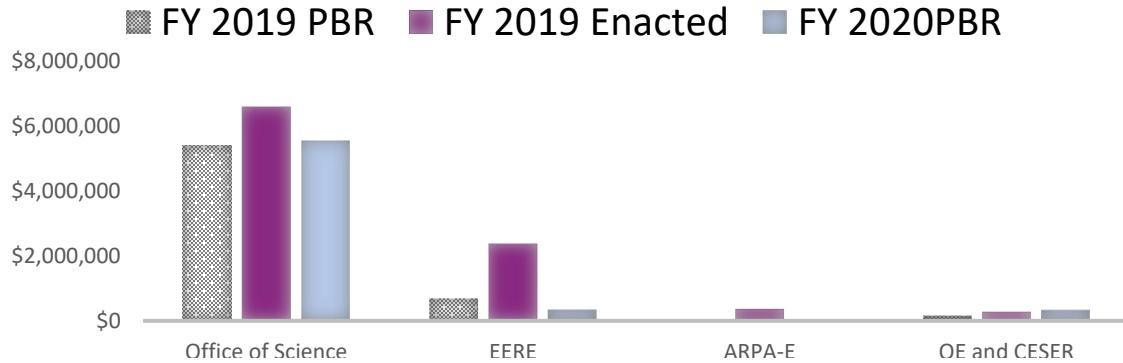
**Major Cuts/Eliminations:** All fundamental research and all applied energy programs, with the exception of grid cybersecurity and modernization efforts, would be targeted for significant cuts. The Office of Science would be down \$1.04 billion (16 percent). The most severe cuts are proposed for renewable energy and energy efficiency programs which would be down \$2 billion (86 percent). Similar to prior years, ARPA-E is proposed to for elimination.

**New Initiatives/Priorities:** DOE plans to significantly expand quantum information science and artificial intelligence research efforts, including new Energy Frontier Research Centers (EFRCs) and large-scale quantum centers. New efforts are proposed for advanced microelectronics and genomics. DOE also proposes two new initiatives, a \$158 million Advanced Energy Storage Initiative and a \$59 million Harsh Environment Materials Initiative for advanced thermoelectric power plants.

### The Bottom Line

DOE is targeted for major cuts. However, Congress is likely to again reject the proposed cuts. New or growing research areas proposed that have bipartisan support include quantum information science, artificial intelligence and machine learning, advanced energy storage, and grid technologies for improved reliability, resiliency, and security.

## MAJOR DOE PROGRAMS (IN THOUSANDS)



## **Proposed Reductions and Terminations**

### **Office of Science**

The budget request would cut the Office of Science by \$1.04 billion, or 16 percent, compared to the FY 2019 enacted level. Cuts are proposed for all six major Office of Science programs. The most significant reduction would be for climate change research under **Biological and Environmental Research** which would be down \$211 million or 30 percent. The smallest reduction is for **Advanced Scientific Computing Research**—a proposed cut of \$15 million or 2 percent—because this program supports the procurement and deployment of exascale computing systems, a top DOE priority. The funding reductions would primarily impact construction schedules for new science facilities, including light sources, neutron sources, and accelerator facilities. Proposed cuts would significantly increase the costs of major construction projects and delay the commissioning of world-class science facilities as well as reduce research funding for universities and national laboratories, thus curtailing access of academic researchers to the 27 DOE-funded user facilities.

### **ARPA-E**

Similar to the two prior Trump Administration budget requests, ARPA-E would be terminated and the remaining funding would be used to complete current projects. ARPA-E operations would cease by FY 2022 as it would be the last year of funding for current three-year projects. Aspects of ARPA-E's program management would be incorporated into the applied energy programs.

### **Applied Energy Programs**

Almost all applied energy programs would face significant cuts, with the exception of those supporting grid modernization and cybersecurity efforts. The most severe cuts would be to **renewable energy programs** which would be reduced by \$896 million or 74 percent compared to the FY 2019 enacted level. This would include programs that currently support research, development, and demonstration of renewable energy technologies such as solar, wind, geothermal, fuel cells, hydrogen, and bioenergy. The budget request would also terminate support for the **Clean Energy Manufacturing Institutes** and would not provide additional funding for the **Energy-Water Desalination Hub**. Proposed cuts extend also to **fossil and nuclear energy programs**, which would be reduced by \$502 million (38 percent) and \$178 million (24 percent), respectively.

## **New and Signature Initiatives**

### **Exascale Computing**

The budget request would provide \$809 million, including \$500 million for the Office of Science and \$309 million for the NNSA, to develop, procure, and deploy exascale computing systems starting in 2021. This would be an increase of \$173 million or 27 percent above the FY 2019 enacted level. The additional funding would further accelerate the deployment of the first exascale-capable computer at Argonne National Laboratory in 2021 and at Oak Ridge National Laboratory by 2022. The funds would also contribute to the development of applications and software infrastructure and site preparation for exascale computing installation at major computing facilities at the Office of Science and NNSA labs.

### **Quantum Information Science**

The budget request would provide \$168 million to support fundamental research in quantum information science. This would be an increase of \$63 million or 60 percent above the FY 2019 enacted level. This funding would continue to advance fundamental research across the six Office of Science programs with an emphasis on advancing quantum sensors, computing, and networking. DOE also

proposes to compete large-scale **quantum science and technology centers**. These centers were authorized by Congress in December 2018 in the *National Quantum Initiative Act*. The legislation authorized between two and five large-scale DOE centers funded at up to \$25 million annually over five years. DOE would potentially have sufficient funding for two to three centers, but the total number will be contingent on the number of applicants, the quality of the proposals, and the final availability of funding from Congress.

### **AI, Microelectronics, and Genomic Sciences**

DOE is proposing new, focused efforts, which include:

- **Artificial Intelligence:** the budget request proposes \$119 million, including \$71 million for the Office of Science and \$48 million for NNSA, to improve the robustness, reliability, and transparency of machine learning and big data tools, advancing uncertainty quantification, and developing software tools to more tightly couple simulation, data analysis, and AI for DOE missions.
- **Next-generation microelectronics:** the budget request proposes \$25 million for materials research and chemistry to develop next-generation microelectronics. Microelectronics are critical underpinnings for DOE's high-performance computing and simulation capabilities to support DOE missions in energy, the environment, and national security. DOE plans to fund materials research, device physics, design and fabrication, computer engineering of micro-architectures, and computer science and applied mathematics to meet the needs of data intensive and edge computing. The goal is to have a more integrated, end-to-end development process where innovative materials, devices, and architecture requirements are driven by specific applications, algorithms, and software.
- **Genomic science:** the budget request proposes \$20 million for new synthetic and engineered biology efforts primarily to advance predictive understanding of biological systems for energy applications.

### **DOE Centers**

The budget request continues to support existing centers such as the **Energy Frontier Research Centers**; the **materials and chemical computational science centers**; and **Energy Innovation Hubs** for batteries and energy storage, fuels from sunlight, critical materials, and nuclear energy. The budget request also proposes the creation of new centers, including a new competition in FY 2020 for Energy Frontier Research Centers. Priority topics include quantum information science, next-generation microelectronics, and data analytics and machine learning for data-driven science.

### **Energy Storage and Materials in Harsh Environments**

The budget request proposes two, new cross-cutting applied energy initiatives—a \$158 million **Advanced Energy Storage Initiative (AESI)** and a \$59 million **Harsh Environment Materials Initiative (HEMI)**. Congress is likely to support these two initiatives and they will primarily be led and funded by the Office of Energy Efficiency and Renewable Energy, but will also include the Offices of Electricity, Fossil Energy, and Nuclear Energy.

The goal of AESI is to take a more holistic approach to energy storage, including more flexible generation and improved reliability and resiliency of the grid. As an evolution of the Beyond Batteries Initiative, DOE plans to explore new approaches to energy storage, which could include hybrid technologies such as pairing hydropower with solar or wind energy in order to provide a stable, dispatchable energy supply. DOE plans to leverage batteries, pumped storage, controllable loads, distributed energy

resource management, microgrids, power system planning and operations, hybrid systems, and power plant dispatchability. HEMI will focus on leveraging improvements in materials, integrated sensors, and component manufacturing to benefit thermoelectric power plants.

### Grid Modernization and Cybersecurity

The only applied energy programs proposed for increases are the Office of Electricity (OE) and the new Office of Cybersecurity, Energy Security, and Emergency Response that support grid modernization and cybersecurity efforts. OE would be increased by \$27 million or 17 percent primarily to advance **megawatt scale grid storage** “capable of supporting voltage and frequency regulation, ramping, and energy management for bulk and distribution power systems” and **high-fidelity, low cost sensors** for “predictive and correlation modeling for electricity and interdependencies with oil and natural gas systems.” The majority of new funding for cybersecurity efforts is for the national laboratories to work with utilities and industry on detecting and mitigating high risk threats to the grid. However, additional research and development funding available to universities would be used to develop artificial intelligence techniques to protect critical energy delivery infrastructure. For example, AI techniques might allow “for energy delivery systems or components, such as generation plants, to automatically adapt operations and survive a cyber-attack that would otherwise disrupt energy delivery.”

*Source: DOE's FY 2020 Budget in Brief is available at*

<https://www.energy.gov/sites/prod/files/2019/03/f60/doe-fy2020-budget-in-brief.pdf>.

### Department of Energy (in thousands of \$)

	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>DOE, Total</b>	<b>35,685,317</b>	<b>31,702,529</b>	<b>-3,982,788 (11.2%)</b>
<b>Science</b>	<b>6,585,000</b>	<b>5,545,972</b>	<b>-1,039,028 (15.8%)</b>
Advanced Scientific Computing Research	935,500	920,888	-14,612 (1.6%)
Basic Energy Sciences	2,166,000	1,858,285	-307,715 (14.2%)
Biological and Environmental Research	705,000	494,434	-210,566 (29.9%)
Fusion Energy Sciences	564,000	402,750	-161,250 (28.6%)
High Energy Physics	980,000	768,038	-211,962 (21.6%)
Nuclear Physics	690,000	624,854	-65,146 (9.4%)
Workforce Development for Teachers and Scientists	22,500	19,500	-3,000 (13.3%)

Science Laboratories Infrastructure	232,890	163,600	-69,290 (29.8%)
<b>ARPA-E<sup>1</sup></b>	<b>366,000</b>	<b>-287,000</b>	<b>-653,000 (178.4%)</b>
<b>EERE</b>	<b>2,379,000</b>	<b>343,000</b>	<b>-2,036,000 (85.6%)</b>
<b>Electricity</b>	<b>156,000</b>	<b>182,500</b>	<b>26,500 (17.0%)</b>
<b>Cybersecurity, Energy Security, and Emergency Response</b>	<b>120,000</b>	<b>156,500</b>	<b>36,500 (30.4%)</b>
<b>Nuclear Energy</b>	<b>1,326,090</b>	<b>824,000</b>	<b>-502,090 (37.9%)</b>
<b>Fossil Energy R&amp;D</b>	<b>740,000</b>	<b>562,000</b>	<b>-178,000 (24.1%)</b>
<b>National Nuclear Security Administration</b>	<b>15,228,618</b>	<b>16,485,000</b>	<b>1,256,382 (8.3%)</b>
Weapons Activities	11,100,000	12,408,603	1,308,603 (11.8%)
Defense Nuclear Non-proliferation	1,930,000	1,993,302	63,302 (3.3%)

<sup>1</sup> The FY 2020 budget request proposes eliminating ARPA-E and using its unobligated balances to execute its termination.



## Department of Health and Human Services

The president's FY 2020 budget request would provide \$87 billion in discretionary funding for activities at the Department of Health and Human Services, including the FDA, NIH, and other programs.

### National Institutes of Health

The National Institutes of Health (NIH) would be cut by more than \$4.7 billion (12 percent) compared to the FY 2019 enacted level, for a total of \$34.4 billion in FY 2020. This would include cuts to most NIH institutes around 14 percent.

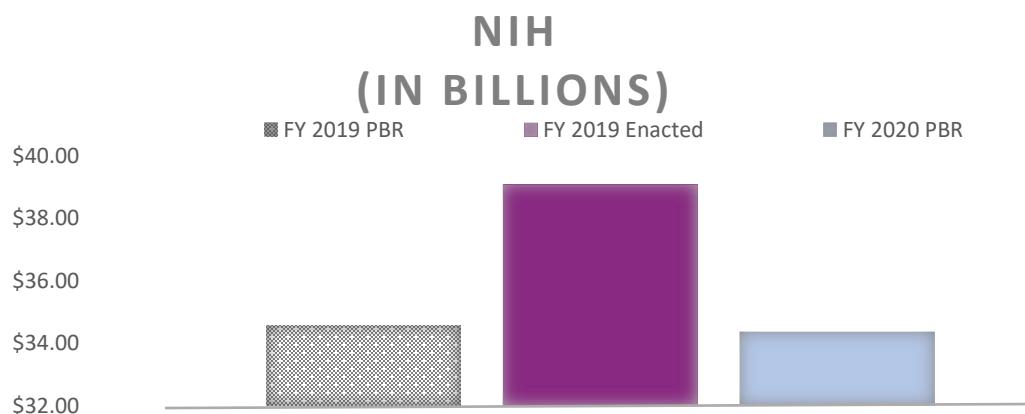
**Quick Take:** The only part of NIH that the Administration's proposal doesn't suggest cutting is the Buildings and Facilities budget of \$200 million. Although the Trump Administration once again proposes a large reduction to NIH, congressional support for the agency remains high and Congress will not enact these cuts.

**Major Cuts/Eliminations:** NIH has for some time aspired to remove investigator salary support from grants to free up more money for supporting research expenses. NIH again proposes capping the percentage of an investigator's salary that can be supported by grants at 90 percent and furthermore, limiting the total amount of an investigator's salary that can be paid for by a grant to Executive Level II, or \$154,300.

**New Initiatives/Priorities:** The Trump Administration proposed new efforts to address pediatric cancer with an additional investment by the National Cancer Institute (NCI) of \$50 million a year for ten years. Additionally, the Administration set a goal of reducing rates of HIV transmission by 90% over the next ten years. While these goals are laudable, major cuts to the base budgets of the relevant institutes and centers (ICs) will ultimately make it harder to provide robust support for new cures and therapies.

#### The Bottom Line

Congress strongly supports the agency and is likely to reject the proposed cuts. NIH would continue to support key priorities like the BRAIN Initiative, All of Us precision medicine initiative, Cancer Moonshot, and addressing the opioid and addiction epidemic.



## **Proposed Reductions and Terminations**

The Administration once again proposes moving the **Agency for Healthcare Research and Quality (AHRQ)** into NIH and renames it the National Institute for Research on Safety and Quality to be funded at \$256 million. As NIH is already proposed for a \$4.7 billion decrease, the incorporation of AHRQ, without a corresponding budget increase, means the cut to NIH is closer to \$5 billion. The Administration made similar proposals in the two previous years, but they were dismissed by appropriators as actions only allowed by authorizing committees.

Regarding **salary support** and administrative issues, the budget request again proposes capping the percentage of an investigator's salary that can be paid with grant funds at 90 percent. Additionally, the budget request would lower the **salary cap** from \$187,000 to \$152,000, which was proposed in the previous years' budget requests and has been rejected by Congress. However, NIH leadership is supportive of trying to reduce investigator salary support on grants, especially university researchers supported entirely by federal funding, and so it is reasonable to expect this will be an ongoing topic of discussion.

## **New and Signature Initiatives**

Following his announcement during the State of the Union, the president's FY 2020 budget request would provide an additional \$50 million in **pediatric cancer** in an effort to increase the number of drugs and clinical trials available to address this leading cause of childhood mortality. The money would also support basic research to better understand the biology of pediatric tumors, sarcomas, and malignancies. Additionally, the funds would be used to create a "Data Federation," a proposal which has been touted by the current NCI director, Ned Sharpless. Building on data from existing initiatives and new infrastructure, the goal is to create a way to easily navigate between clinical records, genomic information, pathology records, and outcomes data, all while moving across different platforms in different physical locations. However, Dr. Sharpless will be leaving NCI to serve as acting commissioner of the Food and Drug Administration and it is less certain how effectively his ambitious vision for data integration will be executed by deputy director Doug Lowy, who will resume the position of acting director of NCI. Simultaneously, the president's budget request would cut NCI by 14.6 percent, the largest decrease proposed for any NIH institute or center.

In his State of the Union, the President also announced an ambitious plan to reduce the rate of new HIV infections by 90 percent over the next ten years. Notably, **HIV/AIDS** received no mention in NIH budget request except that \$6 million would be provided for the 19 existing Centers for AIDS Research (CFAR) to help disseminate best practices. Meanwhile, the Office of AIDS Research, a trans-NIH program, would receive a cut of \$424 million (13.9 percent) from the FY 2019 enacted level.

The president's budget request would provide an additional \$100 million be invested for the **Next Generation Researchers Initiative** through the Office of the Director to support early stage investigators and complement ongoing efforts across the institutes. Furthermore, NIH proposes a new opportunity for early stage investigators that would not require preliminary data and would be reviewed through a separate track.

NIH's priorities overall include an increasing emphasis on **technology development** and translation compared to previous budget proposals, indicating NIH may be more open to investments in technology development across the agency's institutes and centers. The budget request cites the growing need to

effectively integrate data science, machine learning, and artificial intelligence into the practice of medicine, and identifies other emerging technologies like CRISPR (explicitly not on human embryos), 3D tissue printing, and tissues on a chip as being critical to accelerating the timeline to new cures.

## Ongoing Areas of Interest

The president's budget request highlights ongoing support for priorities in the *21<sup>st</sup> Century Cures Act* (Cures), including the **All of Us** precision medicine initiative, the Brain Research through Advancing Innovative Neurotechnologies (**BRAIN**) Initiative, and the **Cancer Moonshot**. The funding for these initiatives in FY 2020 would be \$492 million, as provided through mandatory funding from the NIH Innovation Account authorized in Cures.

Regarding the ongoing efforts to respond to the nation's **opioid and addiction crisis**, the budget request would include \$1.3 billion across NIH, including \$500 million for the **Helping End Addiction Long-term (HEAL) initiative**, which may account for the smaller proposed cuts to the National Institute of Neurological Disorders and Stroke (NINDS), which is leading the efforts to identify new ways to understand and treat pain, and the National Institute on Drug Abuse (NIDA), which is focused on improving treatments for Opioid Use Disorder (OUD).

*Source: NIH's FY 2020 Budget Justification and Background Information is available at <https://officeofbudget.od.nih.gov/pdfs/FY20/br/Overview-Volume-FY-2020-CJ.pdf>.*

National Institutes of Health (in thousands)			
	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>NIH, Total</b>	<b>39,084,000</b>	<b>34,367,629</b>	<b>-4,716,371 (12.1%)</b>
National Cancer Institute (NCI)	6,143,892	5,246,737	-897,155 (14.6%)
National Heart, Lung, and Blood Institute (NHLBI)	3,488,335	3,002,696	-485,639 (13.9%)
National Institute of Dental and Craniofacial Research (NIDCR)	461,781	397,493	-64,288 (13.9%)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)	2,115,434	1,897,235	-218,199 (10.3%)
National Institute of Neurological Disorders and Stroke (NINDS)	2,274,413	2,026,031	-248,382 (10.9%)
National Institute of Allergy and Infectious Diseases (NIAID)	5,523,324	4,754,379	-768,945 (13.9%)
National Institute of General Medical Sciences (NIGMS)	2,872,780	2,472,838	-399,942 (13.9%)
Eunice Kennedy Shriver National Institute of Child	1,506,458	1,296,732	-209,726 (13.9%)

<b>Health and Human Development (NICHD)</b>			
National Eye Institute	796,536	685,644	-110,892 (13.9%)
National Institute of Environmental Health Sciences (NIEHS)	774,707	667,000	-107,707 (13.9%)
National Institute on Aging (NIA)	3,083,410	2,654,144	-429,266 (13.9%)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)	605,065	520,829	-84,236 (13.9%)
National Institute on Deafness and Other Communications Disorders (NIDCD)	474,404	408,358	-66,046 (13.9%)
National Institute of Mental Health (NIMH)	1,870,296	1,630,422	-239,874 (12.8%)
National Institute on Drug Abuse (NIDA)	1,419,844	1,296,379	-123,465 (8.7%)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)	525,591	452,419	-73,172 (13.9%)
National Institute on Nursing Research (NINR)	162,992	140,301	-22,691 (13.9%)
National Human Genome Research Institute (NHGRI)	575,579	495,448	-80,131 (13.9%)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)	389,464	335,244	-54,220 (13.9%)
National Institute on Minority Health and Health Disparities (NIMHD)	314,679	270,870	-43,809 (13.9%)
National Center for Complementary and Integrative Health (NCCIH)	146,473	126,081	-20,392 (13.9%)
National Center for Advancing Translational Sciences (NCATS)	806,373	694,112	-112,261 (13.9%)
John E. Fogarty International Center (FIC)	78,109	67,235	-10,874 (13.9%)
National Library of Medicine (NLM)	441,997	380,463	-61,534 (13.9%)
Office of the Director (OD)	2,112,675	1,926,144	-186,531 (8.8%)
Building Facilities	200,000	200,000	--
National Institute for Research on Safety and Quality*	N/A	256,000	256,000 (N/A)

\* The FY 2020 president's budget request proposes that the Agency for Healthcare Research and Quality (AHRQ) be consolidated into NIH as the National Institute for Research on Safety and Quality (NIRSQ).

## Food and Drug Administration

The president's budget request would provide \$6.1 billion in funding for FDA, an increase of \$557 million (10 percent) compared to the FY 2019 enacted level. The request includes \$3.3 billion in discretionary spending, a \$257 million increase above the FY 2019 enacted level.

**Quick Take:** The budget request would provide a boost in funding to support several efforts prioritized by outgoing FDA Commissioner Scott Gottlieb. These priorities include strengthening activities in response to the nation's opioid crisis, accelerating the development of generic drugs, and creating a new user fee on e-cigarettes.

**Major Cuts/Eliminations:** Given the boost in overall funding, the budget request would not impose major cuts to the agency's programs. Instead the budget request focuses on policies to alter the generic drug approval process, which is in alignment with the Administration's drug pricing initiative to promote competition in the prescription drug marketplace.

**New Initiatives/Priorities:** The budget request would include \$55 million in additional funding to support new approaches to address the opioid epidemic. The request would include \$27 million to continue expanding efforts to modernize generic drug development, an increase of about \$2 million above the FY 2019 enacted level. The FDA Innovation Account would also receive \$75 million, a \$15 million increase over the FY 2019 enacted level, as authorized under the *21<sup>st</sup> Century Cures Act*.

### The Bottom Line

FDA is a winner. The agency would receive a 10 percent boost in its overall budget to further support or expand current priorities including strengthening activities in response to the nation's opioid crisis, accelerating the development of generic drugs, and creating a new authority around e-cigarettes. The Administration's support for FDA Commissioner Scott Gottlieb's major priority areas is likely a testament of the Commissioner's skills as a trusted and thoughtful leader and it is anticipated that the incoming Acting FDA Director Ned Sharpless will continue driving these existing pillars for the agency.

## New and Signature Initiatives

### Combatting the Opioid Epidemic

The president's budget request would provide the FDA with an additional \$55 million for activities to combat the opioid epidemic. One of the agency's highest priorities under Commissioner Scott Gottlieb's leadership is addressing the opioid crisis and addiction. According to the FDA budget justification, the agency's four main areas in responding to the opioid epidemic include: decreasing exposure to opioids and preventing new addiction; supporting treatment of individuals with opioid use disorder; fostering development of novel pain treatments and therapies; and improving enforcement activities to curb illegal sales of opioids. Additionally, as authorized in the bipartisan *Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment (SUPPORT) for Patient and Communities Act*, FDA's Center for Drug Evaluation and Research (CDER) would address several challenges and barriers to develop non-addictive products to treat pain, as well as promote development of evidence-based opioid prescribing practices.

### **Modernizing the Generic Drug Market**

The budget request would provide \$27 million to continue expanding efforts to modernize generic drug development. This is a \$2 million increase above the FY 2019 enacted level. The request outlines several legislative proposals to speed the development of generic drugs, primarily by enhancing the efficiency of generic drug application reviews and approvals. The budget request also outlines several related legislative proposals to address drug pricing, such as amending the 180-day exclusivity generic drug forfeiture provision.

### **Supporting the Oncology Center of Excellence**

The budget request would provide an additional \$5 million for the Oncology Center of Excellence (OCE), which was established by the *21<sup>st</sup> Century Cures Act*. According to the FDA's budget justification, this additional funding would support a new model for team-based product review across FDA's medical product centers. The center uses an integrated approach to bring together stakeholders such as regulatory scientists and reviewers to accelerate the development and regulation of oncology products for patients with cancers.

## **Ongoing Areas of Interest**

### **Promoting Advanced Manufacturing Platforms**

The president's budget request would provide \$38.5 million to continue promoting new manufacturing platforms, which is the same as the FY 2019 enacted level. As outlined by the agency's budget justification, advanced manufacturing platforms such as continuous manufacturing would further support the agency's efforts to accelerate product development of more targeted therapies. According to the FDA's budget justification, "such improvements in efficiency can lead to lower costs for manufacturers which make it more attractive and feasible for manufacturers to locate their manufacturing and jobs in the U.S. and ultimately lower prices for consumers."

*Source: FDA's FY 2020 Budget Summary and Background Information is available at  
<https://www.hhs.gov/sites/default/files/fy-2020-budget-in-brief.pdf> and  
<https://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Reports/BudgetReports/UCM633738.pdf>*

## **FOOD AND DRUG ADMINISTRATION**

*(in thousands of \$)*

	<b>FY 2019 Enacted*</b>	<b>FY 2020 Request</b>	<b>FY 2020 Request vs. FY 2019</b>
<b>FDA (Discretionary)</b>	3,068,678	3,326,000	257 (8.4%)
<b>FDA (Total)</b>	5,584,965	6,142,000	557 (10.0%)

\*The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.

## Other Department of Health and Human Services Programs

**Quick Take:** The president's FY 2020 budget request includes numerous legislative proposals focused on lowering prescription drug costs, as well as reforming and streamlining Medicare and Medicaid. Many of these proposals have already been floated by the Administration and are in line with the Trump Administration's messaging on reforming and modernizing healthcare.

**Major Cuts/Eliminations:** The president's budget request again targets health professions programs, eliminating a majority of the funding for Title VII health professions programs and Title VIII Nursing Workforce Development programs at HRSA. The request also combines graduate medical education programs through Medicare, Medicaid, and Children's Graduate Medical Education (GME) into a single program. The budget request again proposes to eliminate AHRQ and consolidates its activities into NIH.

**New Initiatives/Priorities:** The president's budget request would invest \$291 million for the first of a 10-year initiative focused on prevention and treatment of HIV. Activities would be focused at CDC, HRSA, IHS, and NIH.

### The Bottom Line

The president's budget request would maintain a focus on addressing the opioid epidemic and supporting key signature initiatives, including efforts to eradicate HIV, which could garner bipartisan support in Congress. Congress is expected to again reject several proposals in the budget request including cuts to health professions programs at HRSA, the consolidation of AHRQ into NIH, and the consolidation of chronic disease programs into a block grant at CDC.

As Congress considers a deal to lift the budget caps this year it will be important for academic medical centers to closely monitor the menu of legislative options proposed in the president's budget request that have cost-savings associated with them. In the past, Congress has enacted policies such as site-neutral payments for Hospital Outpatient Departments as part of negotiations in budget deals.

## Proposed Reductions and Terminations

### Health Professions and Graduate Medical Education

As proposed in the previous two budget requests from President Trump, the FY 2020 budget request would significantly reduce funding for 13 programs under Title VII health professions programs and Title VIII Nursing Workforce Development Programs at HRSA, eliminating most of the programs except for NURSE Corps and National Health Service Corps. The eliminated programs support training across health professions including psychology, social work, counseling, oral health, medicine, geriatrics and nursing, in addition to providing scholarship opportunities for individuals from disadvantaged backgrounds. The budget request justifies proposed cuts by its support for programs such as the National Health Service Corps, in which service in underserved areas is exchanged for loans and scholarships. Congress continues to illustrate bipartisan support for health workforce programs and has rejected the Administration's proposed cuts in the past.

The budget request would also propose to combine graduate medical education programs through Medicare, Medicaid, and Children's Graduate Medical Education (GME) into a single program that would be distributed based on a formula (the number of residents and Medicare and Medicaid inpatient stays).

Total funding for the new GME program (combining all previous GME payments) would be equal to FY 2017 payments and then would grow at the Consumer Price Index for All Urban Consumers (CPI-U) minus one percent, which is estimated in the budget request to save about \$21.3 billion. The HHS Secretary would have new authority to focus funding on priority areas such as primary care. Teaching Health Center GME is not included in this new consolidated program. Congressional consideration of specific GME legislative proposals are unlikely to occur this year. However, it is important to note that in prior years when Congress was considering a budget deal, GME and indirect medical education were considered as part of the menu of options for reducing the cost of such legislation.

#### **Elimination of AHRQ and a New National Institute for Research on Safety and Quality**

The president's budget request would again propose to move activities from AHRQ into a new National Institute for Research on Safety and Quality at NIH, which would be funded at \$256 million, about \$82 million less than the current enacted level for AHRQ. According to budget materials, the transfer would support HHS' efforts to move from volume to value-based care by "supporting health services research, addressing pressing health care issues through data and technology, and harnessing the power of predictive analytics to improve diagnostics,"<sup>2</sup> all of which are current AHRQ areas of focus. While there are mixed feelings in the healthcare community about the impact of this proposed move, Congress has shown no inclination to relocate AHRQ's activities to NIH.

#### **National Institute for Occupational Safety and Health (NIOSH) at the CDC**

Funding for NIOSH would be cut by \$146.3 million in FY 2020. According to the CDC budget justification, after absorbing the cuts, NIOSH would prioritize intramural research to reduce worker illness and injury and to advance worker well-being.<sup>3</sup>

#### **Chronic Disease and Prevention Programs**

Similar to past Trump Administration requests, the budget request would again propose creating America's Health Block Grant, a \$500 million block grant program to states to support chronic disease prevention activities. The block grant program would use funds from the Prevention and Public Health Fund. Several programs and activities would be eliminated or consolidated into the block grant as part of this move including Racial and Ethnic Approaches to Community Health (REACH) and funding for arthritis activities at the CDC. Congress has not shown any support for this block grant in prior budget requests and it is unlikely this will change for FY 2020.

In addition, the budget request would again eliminate funding for the Prevention Research Centers (PRCs) at the CDC. Congress continues to support the PRC program and has not included cuts to its funding despite requests to eliminate its funding in past budget requests. In addition, CDC recently announced new grantees through 2024.

#### **Medicare Payments to Hospitals: Site Neutral Payment Policy, and Bad Debt**

The budget request includes a legislative proposal for paying on-campus hospital outpatient departments at the same rate as physician offices under the Physician Fee Schedule for services,

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<sup>2</sup> <https://www.hhs.gov/sites/default/files/fy-2020-budget-in-brief.pdf>, FY 2020 Budget in Brief, Department of Health and Human Services, 2019 (pg.57).

<sup>3</sup> <https://www.cdc.gov/budget/documents/fy2020/fy-2020-cdc-congressional-justification.pdf>, Department of Health and Human Services, Fiscal Year 2020 Centers for Disease Control and Prevention, Justification of Estimates for Appropriations Committee, 2019 (pg.13).

including clinic visits, which the Administration estimates would save \$131 billion over 10 years. The president's budget request also proposes site neutral payments for all off-campus hospital outpatient departments, including those grandfathered in as part of the *Bipartisan Budget Act (BBA) of 2015*. Under the proposal all services would be paid under Physician Fee Schedule. It is estimated in the budget request that this provision would save about \$28.7 billion over 10 years.

In addition, the budget request would reduce payments for bad debt from 65 percent to 25 percent, estimated by the Administration to save \$38.5 billion over 10 years. The president's FY 2020 budget request includes several other legislative proposals that yield savings and impact academic medical centers. Such proposals could add to the menu of savings Congress considers when negotiating a deal to lift the budget caps, which must occur this year. The last sweeping site neutral policy came in the *BBA of 2015*, and academic medical centers were no longer able to receive hospital outpatient payments for new off-campus facilities. The American Hospital Association has already come out against these cuts.

## New and Signature Initiatives

### HIV

The president's budget request would provide \$291 million focused on his initiative to end HIV in the United States. The \$291 million would focus on treatment and prevention starting with the counties that have the highest rates of infection rates. According to the Administration, about 50 percent of HIV diagnoses were in about 48 counties. Funding would support collaborative activities at CDC, HRSA, NIH and IHS. This includes "\$140 million at the CDC to test and diagnose new cases, rapidly link newly infected individuals to treatment, connect at-risk individuals to pre-exposure prophylaxis (PrEP), expand HIV surveillance, and directly support states and localities in the fight against HIV."<sup>4</sup>

## Ongoing Areas of Interest

### Combatting the Opioid Epidemic

The president's budget request would continue support for a wide-range of efforts to combat the nation's opioid and addiction epidemic. The request would provide relatively level funding for opioid activities including \$4.8 billion to sustain investments in strengthening research, surveillance, prevention, treatment, recovery services, and access to opioid reversal drugs. The president's budget request would continue funding for existing initiatives, including \$1.5 billion for SAMHSA's State Opioid Response (SOR) grants and \$1 billion for research at NIH for opioid and pain research. This includes support for the Helping to End Addiction Long-term Initiative (HEAL) at current levels. The request would also provide \$476 million to continue existing activities at the CDC to track and prevent overdose deaths, including \$58 million to address infectious disease consequences of the opioid crisis. This amount is the same as the FY 2019 level for CDC's opioid-related activities. The president's budget request would also include an additional \$55 million to enhance activities at the FDA in response to the opioid epidemic (*more details can be found in the FDA analysis*). HRSA would receive \$120 million to continue the Rural Communities Opioids Response Program (RCORP) to support treatment and prevention of substance and opioid use disorder in high-risk rural communities. Of interest to academic medical centers, the president's budget request would also provide \$4 million to support a new program, authorized by the *Substance Use-Disorder Prevention that Promotes Opioid Recovery and*

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<sup>4</sup> <https://www.hhs.gov/sites/default/files/fy-2020-budget-in-brief.pdf>, FY 2020 Budget in Brief, Department of Health and Human Services, 2019 (pg.3).

*Treatment (SUPPORT) Act*, which would provide grants to accredited medical schools and teaching hospitals to develop medication-assisted treatment (MAT) prescription curricula.

### **340B Drug Pricing Program**

The budget request includes several legislative proposals focused on the 340B Drug Pricing Program (340B). The budget request proposes implementing a user fee on 340B entities of 0.1 percent and would require 340B entities to report on charity care. The request would also expand HRSA's general authority over the 340B Program. According to HRSA's budget justification, "General regulatory authority over the 340B Program would allow HHS to set clear enforceable standards of participation on all aspects of 340B program and will help ensure compliance with 340B Program requirements."<sup>5</sup> These ideas have been discussed by the Administration and during Congressional hearings focused on 340B over the past year. Changes to 340B could potentially be included in drug pricing legislation, particularly provisions that strengthen oversight of the program; however, Democrats would likely push back on significant changes that could weaken the program.

### **Medicare, Medicaid and Value-Based Care**

The budget request includes several proposals focused on Medicare and Medicaid, as well as the ACA. The budget highlights that its proposals provide more "flexibility" in Medicaid, which would essentially allow states to implement stricter requirements, such as allowing for asset tests for identifying an individual's economic need. In addition, the budget request states that it would build on the Graham-Cassidy-Heller-Johnson healthcare legislation, including allowing for per-capita caps or a block grants in the Medicaid program. While the Administration is exploring tools to reform these programs, including waiver authority to move forward on some of these proposals, any major changes to Medicaid would ultimately require legislative action.

The president's budget request touts promoting value-based care and would consolidate four hospital quality programs into one (the Inpatient Quality Reporting Programs, the Hospital Value-Based Purchasing Program, the Hospital-Acquired Condition Reduction Program, and the Hospital Readmissions Reduction Program). The budget request would also support value-based purchasing for Hospital Outpatient Departments, and states that "under this proposal, two percent of payments would be linked to performance on quality and outcome measures."<sup>6</sup>

### **CMS Innovation Center**

When the CMS Innovation Center was created in Section 3021 of the ACA, it was funded for \$10 billion through 2019 and then \$10 billion for each subsequent 10-year period starting in 2020. Thus, the CMS Innovation Center is expecting to get its second \$10 billion allocation in FY 2020 to carry out its activities. Specific models and initiatives discussed in the budget request include developing and testing models in the "four Ps of driving toward value: Patients as Consumers, Providers as Accountable Patient Navigators, Paying for Outcomes, and Prevention of Disease Before It Occurs."<sup>7</sup> For example, the FY 2020 HHS Budget in Brief discusses Medicare models to encourage the adoption of high-value innovative technologies and discourage the use of low-value services, as well as interventions to improve maternal

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<sup>5</sup> <https://www.hrsa.gov/sites/default/files/hrsa/about/budget/budget-justification-fy2020.pdf>, Department of Health and Human Services, Fiscal Year 2020 Health Resources and Services Administration, Justification of Estimates for Appropriations Committee, 2019 (pg.286).

<sup>6</sup> <https://www.hhs.gov/sites/default/files/fy-2020-budget-in-brief.pdf>, FY 2020 Budget in Brief, Department of Health and Human Services, 2019 (pg.77).

mortality and morbidity under Medicaid. In addition, “the Innovation Center is interested in integrating interoperability and promotion of patients’ timely and secure access to their health information into its models and will pursue opportunities to do so.” It also notes that CMS “is considering models with elements that allow patients to make the right choices for themselves and their health by improving their access to information about pricing and alternative therapies.”<sup>8</sup>

### **Reducing Prescription Drug Costs**

The president’s budget request includes several legislative proposals focused on lowering prescription drug costs. Several of the prescription drug proposals have been shared through the Administration’s [Drug Blueprint](#) and are being considered as part of the larger drug debate in Congress.

*Source: HHS FY 2020 Budget Summary and Background Information is available at <https://www.hhs.gov/about/budget/index.html>.*

### **Other Department of Health and Human Services Programs (in millions of \$)**

	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>Health Resources and Services Administration</b>	<b>7,161</b>	<b>5,853</b>	<b>-1,308 (18.3%)</b>
<b>Title VII</b>	397	117	-280 (70.5%)
<b>Title VIII</b>	249	83	-166 (66.7%)
<b>Substance Abuse and Mental Health Services</b>	<b>5,597</b>	<b>5,535</b>	<b>-62 (1.1%)</b>
<b>Mental Health Services</b>	1,558	1,506	-52 (3.3%)
<b>Substance Abuse Treatment</b>	3,819	3,788	-31 (0.8%)
<b>Substance Abuse Prevention</b>	205	244	39 (19.0%)
<b>Agency for Healthcare Research and Quality†</b>	<b>338</b>	<b>N/A</b>	<b>N/A</b>
<b>Centers for Disease Control and Prevention</b>	<b>7,088</b>	<b>5,277</b>	<b>-1,811 (25.6%)</b>
<b>Chronic Disease Prevention and Health Promotion</b>	1,188	951	-237 (19.9%)
<b>National Institute for Occupational Safety and Health</b>	336	190	-146 (43.5%)
<b>Environmental Health</b>	209	157	-52 (24.9%)

<sup>8</sup> <https://www.hhs.gov/sites/default/files/fy-2020-budget-in-brief.pdf>, FY 2020 Budget in Brief, Department of Health and Human Services, 2019 (pg.114).

<b>Indian Health Service</b>	<b>5,804</b>	<b>5,945</b>	<b>141</b> <b>(2.4%)</b>
<b>Administration on Community Living</b>	<b>2,120</b>	<b>2,033</b>	<b>-87</b> <b>(4.1%)</b>
<b>NIDILRR</b>	<b>109</b>	<b>90</b>	<b>-19</b> <b>(17.4%)</b>
<b>Office of the National Coordinator for Health IT</b>	<b>60</b>	<b>43</b>	<b>-17</b> <b>(28.3%)</b>

\*The amounts shown for FY 2019 Enacted are taken from the H.R. 6157 Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019 and Conference Report; and H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.

†The FY 2020 president's budget request proposes that the Agency for Healthcare Research and Quality be consolidated into NIH as the National Institute for Research on Safety and Quality.

# Department of Homeland Security



The president's FY 2020 budget request would provide approximately \$51.7 billion in discretionary funding for DHS, or 4.5 percent above the FY 2019 enacted level.<sup>‡</sup>

**Quick Take:** As with the White House's FY 2019 request, the FY 2020 DHS budget request would shift significant funding and resources toward addressing the Trump Administration's priorities of border security and enforcement of immigration laws.

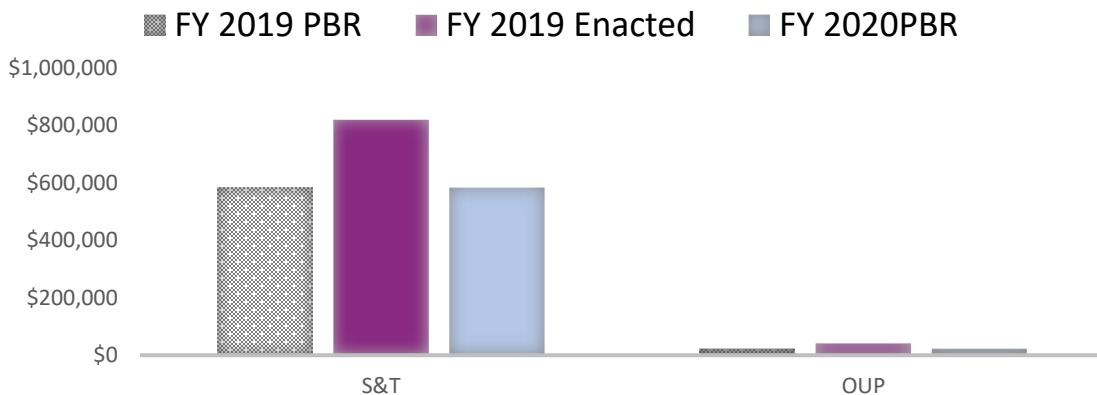
**Major Cuts/Eliminations:** The DHS Science and Technology (S&T) Directorate, including the Office of University Programs (OUP), would face significant reductions, whereas border protection measures would receive major increases, as the request would again provide \$5 billion for a wall along the southern border. Within DHS S&T, the Trump Administration would also cut the Office of University Programs by about \$18.8 million.

**New Initiatives/Priorities:** In addition to discretionary funds to address immigration issues, the Administration requests the creation of a Border Security and Immigration Enforcement Fund to "provide the additional mandatory funding resources necessary to meet the president's border security and immigration enforcement goals." These requests are likely to be non-starters in the current Congress.

## The Bottom Line

As with previous years, the Administration's budget request provides limited regard for the independent science and research programs within S&T that often attract strong university and private sector partnerships to develop solutions for the Homeland Security enterprise. Instead, this request signifies S&T's continued insistence on prioritizing investments in near-term solutions over more basic research. Congress is likely to restore many of these proposed reductions.

## DHS S&T AND OUP (IN THOUSANDS)



## **Proposed Reductions and Terminations**

### **Science and Technology Directorate (S&T)**

Funding for research programs at the S&T Directorate would be reduced nearly 33.9 percent compared to the FY 2019 enacted level. An example of the significant decrease to the S&T Directorate's capabilities and influence is evident in the budget's proposed allocations for cybersecurity activities. The budget would lower DHS's cyber research at S&T from \$104.2 million in FY 2019 to \$28.1 million, while bolstering cyber funding at other directorates such as Customs and Border Protection and Federal Emergency Management Agency (FEMA). Research priorities outlined in the budget request are directed toward the Trump Administration's goals to further advance border security and first responder/disaster resilience technologies. Specifically, the request would redirect funding for Border Situational Awareness and Opioid/Fentanyl Detection to S&T's Border Security thrust and create two new programs focused on the development of technologies in the public safety broadband arena and countering human trafficking, respectively.

### **Office of University Programs**

The Administration has proposed steep cuts to the Office of University Programs (OUP), which funds the Centers of Excellence (COEs) and Minority-Serving Institutions program. To accomplish this, OUP would presumably eliminate several COEs. Unlike previous budget requests, the Administration does not list the COEs it would plan to phase out. However, it provides detailed updates and future plans for several current centers, while notably excluding the Center for Accelerating Operational Efficiency (CAOE), Coastal Resilience Center of Excellence (CRC), Maritime Security Center of Excellence (MSC), and the Center of Excellence for Awareness and Localization of Explosives-Related Threats (ALERT). ALERT and the CRC were proposed for elimination in the FY 2019 request, and excluding these centers and others from this request could signal that these are no longer priorities for this Administration. While previous administrations' budget proposals have also proposed cuts to the S&T Directorate, particularly OUP, Congress has recognized the importance of these programs and rejected many of the proposed reductions.

## **New and Signature Initiatives**

The president's FY 2020 budget request would be the first to implement DHS's new "revitalization" plan for S&T to make the Directorate less focused on traditional R&D operations and more aligned with the technological needs of its components. Initially, these changes appear mild, reprioritizing a few initiatives toward new customer-facing offices. The new model is intended to make it easier for industry to interact with DHS components in order to transfer new technologies to markets. Lewis-Burke will continue to monitor how interactions with universities and research institutes will be altered as S&T continues to carry out its reorganization and revitalization plan.

### **Innovative Research and Foundational Tools**

As part of DHS's revitalization plan, the agency plans to phase out Apex Engines: teams at DHS that focus on immediate technological needs and processes in priority areas and assist stakeholders with implementation. In their place, the budget requests funding for Innovative Research and Foundational Tools, a new thrust that focuses on identifying approaches for scouting solutions and prioritizing investments. The new thrust would include Technology Centers, which will replace Apex Engines. It is uncertain how S&T would leverage the new thrust, and the agency is likely to face at least some push-back as Apex programs remain popular with Congress.

### **Border Security and Immigration Enforcement Fund**

In addition to enhanced funding for border security, the budget request also calls for the establishment of a new Border Security and Immigration Enforcement Fund. According to the request, the fund was established because “funding beyond what is available through discretionary appropriations is required to meet hiring goals and provide for additional border security and immigration enforcement priorities.” The request adds that “DHS looks forward to working with the Congress to identify revenue streams to pay for these critical requirements.” This will likely become another point of contention as Members of Congress consider FY 2020 appropriations.

*Source: DHS’s FY 2020 Budget Summary and Background Information is available at <https://www.dhs.gov/publication/congressional-budget-justification-fy-2020>.*

### **Department of Homeland Security (in thousands of \$)**

	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>DHS, total</b>	<b>49,411,000*</b>	<b>51,672,127†</b>	<b>2,289,000 (4.5%)‡</b>
<b>Science and Technology Directorate</b>	<b>819,785</b>	<b>582,117</b>	<b>-237,668 (33.9%)</b>
<b>University Programs</b>	<b>40,500</b>	<b>21,746</b>	<b>-18,754 (60.3%)</b>

\*Net discretionary funding provided in summary documents provided by appropriations committees.<sup>9</sup>

† Estimate based from FY 2020 budget request summary.

‡ FY 2020 budget summary documents call for a 7.8 percent increase based on an estimated FY 2019 enacted level without funding for Overseas Contingency Operations.

<sup>9</sup> <https://www.appropriations.senate.gov/imo/media/doc/DHS%20Conference%20Press%20Summary1.pdf>; and <https://appropriations.house.gov/sites/democrats.appropriations.house.gov/files/documents/Summary%20of%20Conference%20Report.pdf>

## Department of Justice



The president's FY 2020 budget request would provide \$29.2 billion in discretionary funding for the DOJ, \$1.7 billion or 5.7 percent below the FY 2019 enacted level, of which \$94.5 million would be provided for the Research, Evaluation, and Statistics account, a 16.6 percent increase.

**Quick Take:** The budget request would continue to leverage DOJ to address perceived threats to American security identified by the Trump Administration. Significant resources would be provided for combatting illegal immigration, cyber threats, violent crime, and the opioid epidemic.

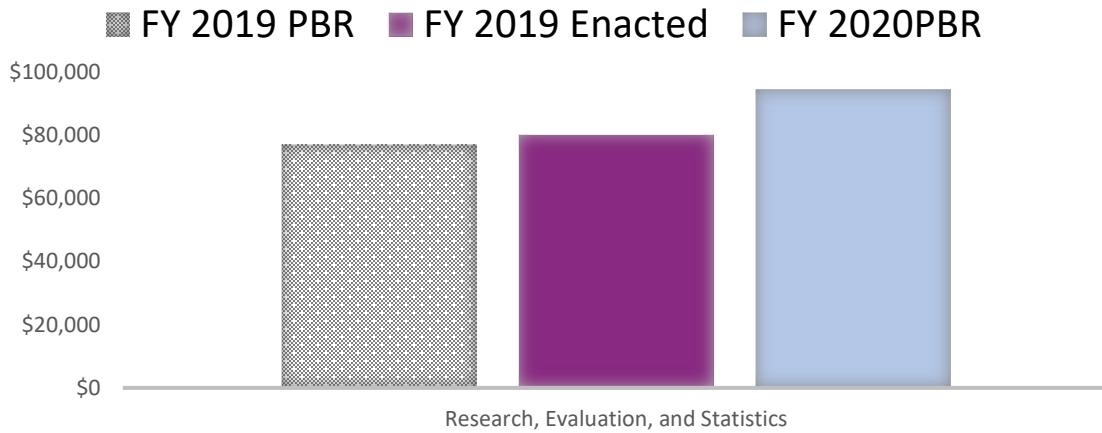
**Major Cuts/Eliminations:** The request would provide significant cost savings through the reduction and relocation of several offices, including consolidating the Office of Community Oriented Policing Services (COPS), which provides assistance for law enforcement practices and hiring; shifting Community Relations Service to the Civil Rights Division; and moving tobacco and alcohol enforcement from the Bureau of Alcohol, Tobacco, Firearms and Explosives to the Department of Treasury. Similar proposals were made in previous budget requests but failed to gain any traction with Congress.

**New Initiatives/Priorities:** Following the passage of the recent criminal justice reform bill, the *First Step Act*, the budget request would prioritize investments in research and evaluation of correction procedures to reduce recidivism and improve processes.

### The Bottom Line

The budget would provide a notable increase 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. However, it is uncertain how much of these increases are due to the Administration's plans to consolidate programs to offset costs. Similar proposals have been rejected by Congress in the past.

## DOJ RESEARCH (IN THOUSANDS)



## New and Signature Initiatives

The budget request would provide a 22.8 percent increase for the National Institute of Justice (NIJ), DOJ's primary research account. This is a surprising shift after years of proposed reductions to research and evaluation programs in support of other priorities. While few research priorities are stated, \$1.5 million is proposed to evaluate reentry programs. In addition, the Administration would transfer the National Institute of Corrections (NIC) from the Bureau of Prisons (BOP) to NIJ's parent office, the Office of Justice Programs (OJP), and allocate \$3 million for corrections-related statistics and research.

The budget request proposes significant funding increases for the prosecution, transfer, and detention of undocumented immigrants. Further, the budget request would increase funding for staff and equipment for federal law enforcement agencies and programs to combat the opioid epidemic. This includes \$330 million for programs authorized by the *Comprehensive Addiction Recovery Act* (CARA), which authorizes support for state, local, and tribal governments to provide training for the administration of opioid treatments, enhance collaborations between criminal justice and substance abuse agencies, and explore treatment alternatives to incarceration.

Also, the budget request would prioritize programs to reduce violent crime and illegal drug distribution. To this end, the request would provide \$80 million for Project Safe Neighborhoods (PSN), a block grant program through the U.S. Attorneys' Offices in each federal district to promote partnerships between law enforcement and community leaders to implement gang violence and gun crime enforcement; violence prevention and intervention initiatives; and community outreach at the local level.

## Proposed Reductions and Terminations

### Various Research, Evaluation, and Statistics Programs

While the budget request would provide a significant increase for research funding overall, it still calls for steep cuts to programs not prioritized by the Administration, including research on the forensic sciences and the Community Based Crime Reduction Program, which supports evidence-driven criminal justice solutions.

### Restructuring Proposals

The Administration continues to seek cost savings at DOJ by merging administrative support and certain grant management staff, including the COPS Office, which would be merged with OJP and other high-profile shifts outlined in this section. However, these offices typically have strong support from Members of Congress, who are unlikely to support any proposed cuts or changes that could hinder operations.

*Source: DOJ's FY 2020 Budget Summary and Background Information is available at <https://www.justice.gov/doj/fy-2020-budget-and-performance-summary>.*

**Department of Justice**  
*(in thousands of \$)*

	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>DOJ, total</b>	<b>30,934,388*</b>	<b>29,226,000</b>	<b>1,708,388 (5.7%)</b>
<b>Research, Evaluation, and Statistics</b>	80,000	<b>94,500</b>	<b>14,500 (16.6%)</b>
National Institute of Justice	37,000	46,500	9,500 (22.8%)

\*The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.



## Department of Labor

The discretionary programs within the Department of Labor (DOL) would be down \$1.2 billion (9.7 percent) compared to the FY 2019 enacted level.

**Quick Take:** The budget request continues the Administration's support for apprenticeships.

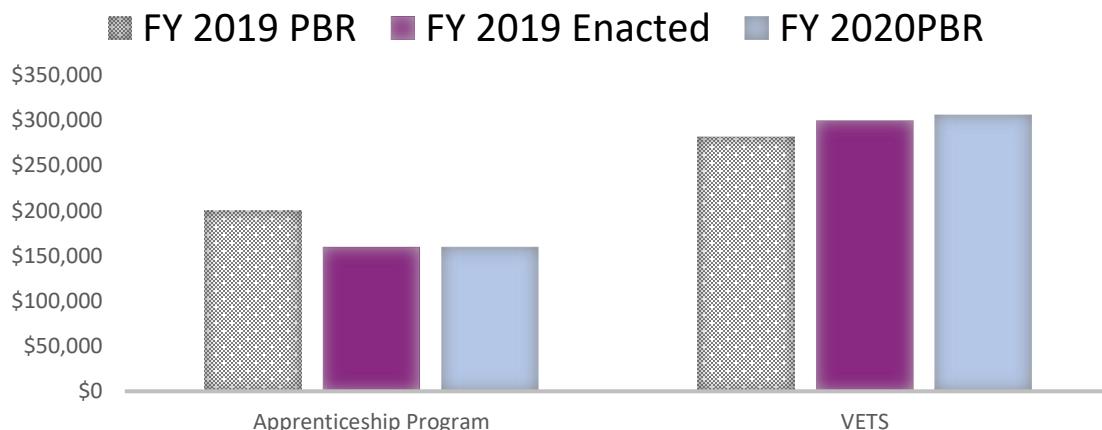
**Major Cuts/Eliminations:** Many of the programs proposed for elimination or cuts do not relate to higher education.

**New Initiatives/Priorities:** The request proposes to double the American Competitiveness and Workforce Improvement Act of 1998 fee for the H-1B visa program. Revenue from this increase would support DOL grants to expand apprenticeships and provide additional support for ED's Career and Technical Education grants.

### The Bottom Line

The Administration continues to signal its interest in workforce development, especially in science, technology, engineering, and mathematics (STEM) fields. DOL is continuing its development of a new industry-recognized apprenticeship system. The request also continues support for veterans through the Transition Assistance Program and Veterans Employment and Training Services (VETS) programs.

## DOL PROGRAMS (IN THOUSANDS)



## **Proposed Reductions and Terminations**

### **Apprenticeship Program**

The budget request would fund the Office of Apprenticeship at \$35.9 million, a reduction of \$246,000 when compared to the FY 2019 enacted level. The request would also propose to flat fund the apprenticeship program. The Administration has been consistent in its support of apprenticeships as an earn-and-learn strategy. DOL has been tasked with expanding apprenticeships in “high-growth” sectors including health care, information technology, cybersecurity, and advanced manufacturing. This enhanced prioritization of high-skilled areas has led DOL to seek partnerships with universities and research institutes to form new apprenticeship models.

## **New and Signature Initiatives**

The budget request includes a proposed revision to H-1B fees, to \$3,000 per worker for large employers and \$1,500 for small employers, that would go to programs that “prepare American workers for jobs currently filled by foreign workers, especially in STEM fields.”<sup>10</sup> These funds would go to support skills instruction and apprenticeship opportunities including those for students transitioning from the secondary to postsecondary level.

## **Ongoing Areas of Interest**

The request notes, “DOL is working to further expand apprenticeships by empowering third party “accreditors” to recognize new, industry driven apprenticeship programs, focusing on those in high-growth sectors where apprenticeships are underutilized, such as healthcare, information technology, and advanced manufacturing.” The request would fund the Transition Assistance Program (TAP) at \$29.4 million, an increase of \$6 million over the FY 2019 enacted level. The request also notes DOL’s interest in assisting military spouses and continued implementation of the two-year Veterans Apprenticeship Pilot.

*Source: DOL’s FY 2020 Budget Summary and Background Information is available at <https://www.dol.gov/sites/dolgov/files/general/budget/2020/FY2020BIB.pdf> and supporting budget explanatory information can be found at <https://www.dol.gov/general/budget>.*

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

	<b>FY 2019 Enacted*</b>	<b>FY 2020 Request</b>	<b>FY 2020 Request vs. FY 2019</b>
<b>Apprenticeship Program</b>	160,000	160,000	--
<b>Veterans' Employment and Training</b>	300,041	306,041	<b>6,000 (2.0%)</b>

\*The amounts shown for FY 2019 Enacted are taken from H.R. 6157, Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019 and Continuing Appropriations Act, 2019 and Conference Report.

<sup>10</sup> <https://www.dol.gov/sites/dolgov/files/general/budget/2020/FY2020BIB.pdf>, FY 2020 Department Of Labor Budget In Brief, Department of Labor, 2019, pg. 11).

# Department of Transportation



The president's FY 2020 budget request would fund the Department of Transportation (DOT) at a level of \$75 billion, a 13 percent decrease from the FY 2019 enacted level.

**Quick Take:** The FY 2020 budget request is consistent with previous requests under this Administration, emphasizing infrastructure investments through the Better Utilizing Investments to Leverage Development (BUILD) and Infrastructure for Rebuilding America (INFRA) programs, research and integration activities for unmanned aircraft systems (UAS), and automated driving technologies. However, research programs at FAA, FRA, NHTSA and other modal agencies were slated for reductions.

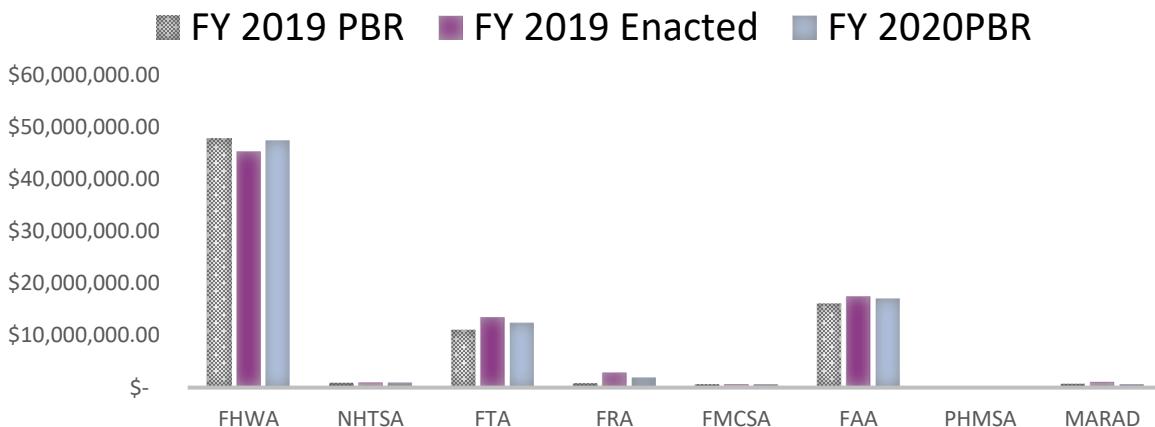
**Major Cuts/Eliminations:** The FY 2020 request would significantly cut the FAA Research, Engineering and Development (R&D) program, the FRA Research and Development Program, and other research accounts across modal agencies.

**New Initiatives and Priorities:** The Department continues to focus investments on infrastructure, UAS, and automated driving technologies.

## The Bottom Line

The Administration continues to place significant emphasis on infrastructure investment, highlighting the successes of the BUILD and INFRA investments made in FY 2018 and requesting over \$2 billion for these programs in FY 2020. Research efforts continue to be focused on automated driving systems, UAS, and maintaining safety during the testing and deployment of these technologies.

## DOT FHWA, NHTSA, FTA, FRA, FMSCA, FAA, PHMSA, MARAD (IN THOUSANDS)



## **Proposed Cuts and Terminations**

Of the eight modal agencies within DOT, six are slated for reductions in the FY 2020 budget request compared to the FY 2019 enacted level, while FHWA and FMCSA would receive increases of 4.7 and 1.3 percent, respectively. The FAA RE&D program would be funded at a level of \$120 million, \$71 million below the FY 2019 enacted level, a reduction which is consistent with previous requests under this Administration. The FRA Research and Development Program would also see a significant funding reduction with a requested level of \$19 million or \$21.6 million less than the FY 2019 enacted level.

## **New and Signature Initiatives**

Infrastructure investment and modernization continues to be a priority for the Administration, the FY 2020 request would provide \$1 billion for the BUILD program and an additional \$1.035 billion for the INFRA program. Focused investments on infrastructure are consistent with the Trump Administration's previous requests.

The budget request would provide FAA with \$202 million for research, development, facilities, and capacity building activities related to unmanned aircraft systems (UAS). This would include \$7.5 million for research relating to detection and avoidance technologies as well as \$130 million for the development of an Unmanned Traffic Management system.

The FY 2020 request would provide \$420 million for the FHWA Research, Technology and Education (RT&E) Program, which is equal with the FY 2019 enacted level. Funding for programs within this account like the Intelligent Transportation Systems (ITS) Program, the University Transportation Center (UTC) program, and other surface transportation programs remain flat as they receive mandatory funding through the Highway Trust Fund established in the FAST Act.

## **Ongoing Areas of Interest**

The FY 2020 request echoes priorities of previous years, reiterating the successes of the BUILD and INFRA programs in 2018 and stressing the importance of making the American transportation system safer. The safe development and deployment of UAS and automated driving technologies through FAA, NHTSA, FHWA, and FTA remain a priority, as does workforce development and job creation across modal agencies.

*Source: DOT's FY 2020 Budget Highlights is available at <https://www.transportation.gov/mission/budget/fiscal-year-2020-budget-highlights> and DOT budget explanatory notes can be found at <https://www.transportation.gov/mission/budget/fiscal-year-2020-budget-highlights>.*

**Department of Transportation**  
*(in thousands of \$)*

	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>DOT, Total</b>	<b>86,480,532</b>	<b>75,032,000</b>	<b>-11,448,532 (13.2%)</b>
<b>Federal Highway Administration</b>	45,268,596	47,404,092	2,135,496 (4.7%)
<b>National Highway Traffic Safety Administration</b>	966,308	938,317	-27,991 (2.9%)
<b>Federal Transit Administration</b>	13,460,232**	12,416,090	-1,044,142 (7.8%)
<b>Federal Railroad Administration</b>	2,873,898	1,942,874	-931,024 (32.4%)
<b>Federal Motor Carrier Safety Administration</b>	666,800	675,800	9,000 (1.3%)
<b>Federal Aviation Administration</b>	17,451,858	17,105,000	346,858 (2.0%)
<b>Pipeline and Hazardous Material Safety Administration</b>	273,272	254,533	-18,739 (6.9%)
<b>Maritime Administration</b>	1,115,372	682,497	-432,875 (38.8%)

\*The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.

\*\*The FY 2019 Consolidated Appropriations Act includes rescission of prior year balances for FY 2005 or prior fiscal years to Formula Grants, \$46,560,000.

# Department of State and United States Agency for International Development



The budget request provides \$40 billion for the State Department and USAID, which would approximately be a 26 percent cut from the FY 2019 enacted level of \$54.4 billion.

**Quick Take:** The president's budget request for FY 2020 largely reflects the request for FY 2019, which focuses on improving personnel safety and security overseas and prioritizes the hiring and training of a development and diplomatic workforce. The budget request makes reductions in foreign aid to organizations "whose results are unclear, whose work does not directly affect our national security interests, or for which the funding burden is not fairly shared among members." <sup>11</sup>

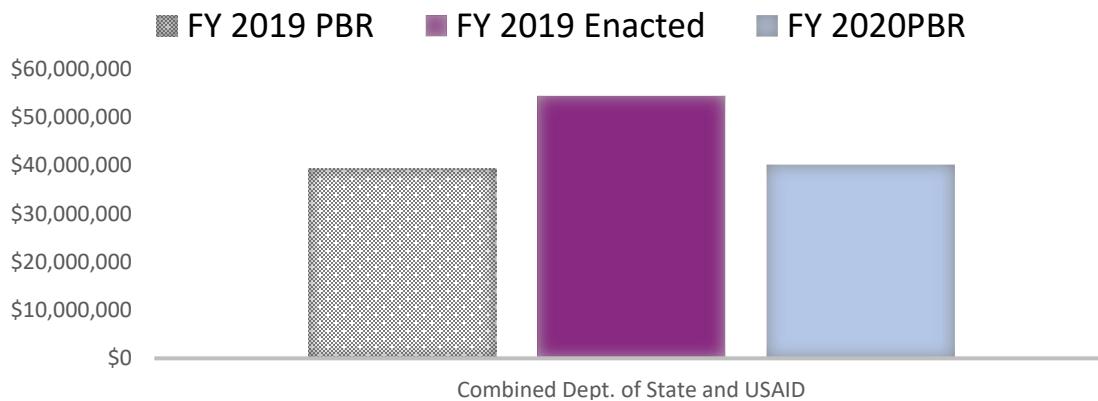
**Major Cuts/Eliminations:** Educational and Cultural Affairs (ECA) Programs would see its budget slashed to \$309.6 in FY 2020, less than half of the FY 2019 enacted level of \$700 million. The Development Assistance (DA) Program would be terminated along with the Economic Support Fund (ESF) account.

**New Initiatives/Priorities:** The budget would fund three programs that have recently been merged and placed into ECA to combat cyber campaigns against the U.S. They are the American Spaces Program, the U.S. Speakers Program, and TechCamps.

## The Bottom Line

The proposed steep cuts in funding will likely not become reality. Congress has rebuked the President in his previous budget requests when he proposed similar cuts. There is bipartisan support in both the House and Senate for robust funding for the State Department and USAID. Last year, Congress roundly rejected a proposed cut of 29 percent to the State Department.

## STATE & USAID (IN THOUSANDS)



<sup>11</sup> <https://www.state.gov/r/pa/prs/ps/2019/03/290146.htm> FY 2020 of State, Foreign Operations, and Related Programs Fact Sheet Press Release

## **Proposed Reductions and Terminations**

The budget request would reduce the **Educational and Cultural Exchange Programs (ECE)** by \$391.3 million. The budget request alludes to the Trump Administration's National Security Strategy (NSS) in explaining why proposed cuts to educational and cultural programs are necessary, stating that "transnational threats of terrorism and crime; direct, hybrid, and cyber threats from state and non-state actors alike; and the false narratives of global competitors" are a threat to U.S. security.<sup>12</sup>

Like FY 2019, the **Development Assistance (DA) Program** would be terminated along with the **Economic Support Fund (ESF)**. However, these two accounts would be consolidated into a new Economic Support and Development Fund (ESDF). ESDF would enable USAID and the Department of State to "advance U.S. interests, target the challenges of a new era of great power competition, and support reliable strategic and diplomatic partners." This mirrors the FY 2019 request that created the EDSF; Congress did not fund the EDSF and instead funded the DA and ESF accounts separately.

As in previous years, the budget request does not mention the **Global Climate Change Initiative (GCCI)**. However, designing solutions to address the threat of climate change is included in the National Security Strategy and Joint Strategic Plan.

## **New and Signature Initiatives**

The budget request would fund three new programs, the **American Spaces Program, the U.S. Speakers Program, and TechCamps**. The programs will fall under the ECA's jurisdiction as a result of an inter-departmental merger of the Bureau of Public Affairs and the Bureau of International Information Programs. The merger was approved internally late last year and is intended to counter campaigns by U.S. rivals and adversaries (such as China and Russia) that seek to spread disinformation and misinformation across U.S. social media and other internet platforms.

## **Ongoing Areas of Interest**

**Food Security** would be funded at \$492 million to support the implementation of the Global Food Security Strategy (GFSS). Again, this closely mirrors the president's FY 2019 priorities, and the FY 2020 request focuses on enhancing economic growth in the agriculture sector; fostering a well-nourished population; and improving resilience to vulnerabilities. This year, a total of \$30 million is proposed to support a Resilience Challenge Fund to leverage private-partner investment.

Similar to prior budget requests, the president's FY 2020 request would cut **Global Health Programs (GHP)**. The request proposes funding GHP at \$6.3 billion, about \$2.4 billion less than the FY 2019 enacted level of \$8.8 billion. Like FY 2019, much of the same priorities are evident in FY 2020. For example, the GHP request supports programs focused on HIV/AIDS, prevention of child and maternal deaths; and combatting infectious disease.

The budget request also illustrates the Trump Administration's approach to national security. For instance, the budget request proposes about \$1.8 billion to combat China's growing influence in the Indo-Pacific.

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<sup>12</sup> <https://www.state.gov/documents/organization/290302.pdf> FY 2020 Congressional Budget Justification, Department of State, Foreign Operations, and Related Programs, 2019 (pg. 29)

*Source: The U.S. State Department's Congressional Budget Justification*  
<https://www.state.gov/documents/organization/290302.pdf>

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

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>Total - State Department and USAID</b>	<b>54,376,900</b>	<b>40,032,186</b>	<b>-14,344,714 (26.4%)</b>
Title I (Dept. of State and Related Agencies)	12,090,901	13,696,647	1,605,746 (13.3%)
Educational and Cultural Exchange Programs	700,946	309,626	-391,320 (55.8%)
USAID Operating Expenses	1,214,808	1,275,200	60,392 (5.0%)
Development Assistance	3,000,000	N/A	N/A
Global Health Programs, Total	8,837,450	6,343,475	-2,493,975 (28.2%)

\* The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.

†In the FY 2020 request, the Development Assistance program would be terminated along with the Economic Support Fund (ESF) account; a new consolidated “Economic Support and Development Fund (ESDF)” would be created as described in the commentary above.

# Environmental Protection Agency



President Trump's FY 2020 budget request includes \$6 billion for EPA, which constitutes a \$2 billion or nearly 25 percent cut from the FY 2019 enacted level. Funding for the Science and Technology (S&T) account would be reduced by \$266.4 million or 38 percent.

**Quick Take:** The Trump Administration's FY 2020 proposal calls for sharp decreases and eliminations that would shrink EPA's budget and maintain limited core functions articulated by congressional statute. This is consistent with the past two budget requests and the Administration's ongoing efforts to transfer authority and financial responsibility to State and local governments for environmental activities.

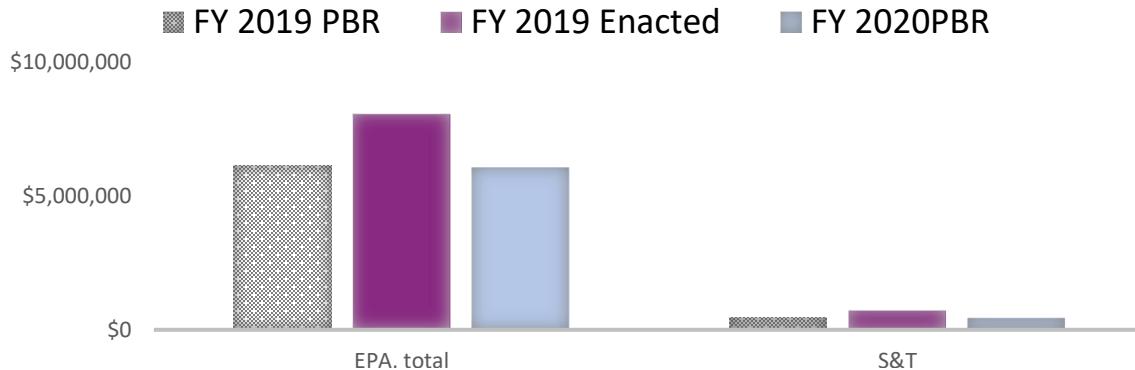
**Major Cuts/Eliminations:** The FY 2020 request would significantly reduce budgets across EPA, though the severity of these cuts vary. For example, the Hazardous Substance Superfund account would only be decreased by 9.5 percent as compared to the more substantial cut proposed for S&T. As in prior years, the Administration's request would eliminate the Science to Achieve Results (STAR) program within S&T, which is EPA's primary mechanisms for funding extramural research grants. Overall, eliminated programs would account for over \$650 million out of the total \$2 billion proposed reduction.

**New Initiatives/Priorities:** In general, the FY 2020 request emphasizes the Administration's interest in streamlining agency functions by reducing spending and closing offices. Exceptions include new grant programs aimed at implementing the *America's Water Infrastructure Act of 2018* (AWIA) and addressing environmental hazards in schools.

## The Bottom Line

The FY 2020 budget request demonstrates that the Trump Administration has not deviated from its efforts to create a leaner, smaller EPA. However, as the past three appropriations cycles have proven, bipartisan opposition in Congress will likely result in a more measured approach to the agency's budget and protection for programs with broad support, like STAR.

## EPA TOTAL AND S&T (IN MILLIONS)



## **Proposed Reductions and Terminations**

Proposed agency investments in FY 2020 would be guided by priorities outlined in the *FY 2018 – FY 2022 EPA Strategic Plan*. These include water infrastructure needs, improvements to air and water quality, land revitalization, chemical safety, transparency and accountability, efficiency, and compliance with congressional statute. Programs or activities determined to be outside the scope of these priorities would be slated for modest-to-severe cuts or eliminated entirely.

### **Science and Technology**

Many S&T programs are proposed for reductions or terminations in FY 2020, and the account would receive a 37.7 percent cut overall for a total of \$440.1 million. Consistent with previous requests, the FY 2020 proposal would eliminate the extramural **Science to Achieve Results (STAR) program** and refocus EPA S&T on intramural research activities, specifically those that align with the priorities stated above. Funding for the National Center for Environmental Research, which administers STAR and other external research grant programs, would be almost entirely eliminated.

The **Air and Energy (AE) program** would receive \$31.7 million in FY 2020, a reduction of \$60.2 million from the FY 2019 enacted level. In FY 2020, funding for global climate change research would be reduced and funding for air quality research would be eliminated. Instead, AE would prioritize the analysis of existing data and the translation of research findings to inform communities on methods for reducing the impact of air pollution.

The **Safe and Sustainable Water Resources (SSWR) program** would likewise see a significant reduction of \$36.3 million from the FY 2019 enacted level for a total of \$70.0 million in FY 2020. SSWR research in FY 2020 would focus on seven priority areas: assistance to state and local authorities on stormwater and wastewater infrastructure needs; monitoring the proliferation of pathogens in recreational waters; understanding, mitigating, and predicting the health impacts of algal and cyanobacteria toxins; assisting state and local entities in watershed nutrient management; providing research support for the reuse of both potable and non-potable water; assessing the impact of microplastics on the health of coral reefs; and ensuring safe drinking water. Unlike the first six, this last area would represent a new addition to SSWR's list of priorities. Consistent with the Administration's focus on water quality issues, SSWR would emphasize research related to pre- and polyfluoroalkyl substances (PFAS), lead exposure, and nutrient pollution.

The **Sustainable and Healthy Communities (SHC) program** would receive \$53.6 million in FY 2020, a reduction of \$80.7 million compared to FY 2019. Similar to SSWR, SHC research would also emphasize PFAS and lead exposure. Research support for numerous SHC programs like the Health Impact Assessment (HIA) and others would be significantly reduced. Funding for the Ecotox database; EPA's Report on the Environment; life cycle research on materials in commerce; and the People, Prosperity, and the Planet (P3) program would be terminated.

EPA's **Chemical Safety for Sustainability (CSS) program** would receive \$63.9 million in FY 2020, a decrease of \$26.5 million compared to FY 2019 levels. CSS priorities in FY 2020 would include: computational toxicology; the development of computational and analytical tools for unknown chemical detection and identification; and understanding PFAS toxicity. Funding for high-throughput toxicity testing, endocrine disruptor research, and tissue modeling would be cut.

As in prior requests, the FY 2020 proposal would eliminate the **Water Quality Research and Support Grants**, a \$5 million program established by Congress through the appropriations process. The program is intended to be separate from the STAR program and provides funding to nonprofit organizations conducting water quality research that is “national in scope.” The Administration is once again proposing to terminate the program on the basis that it does not support “core environmental work.”

### New and Signature Initiatives

New initiatives proposed as part of the FY 2020 request are largely removed from the agency’s research enterprise and are instead geared towards assisting state and local authorities in areas such as water infrastructure and lead exposure. Specifically, the Administration would set aside \$83 million to help implement the **America’s Water Infrastructure Act of 2018** through grants supporting drinking fountain lead testing, drinking water infrastructure resilience, sewer overflow control, technical assistance for treatment works, and water infrastructure and workforce investment. EPA would also allocate \$50 million for a proposed **Healthy School Grant Program** aimed at addressing environmental hazards at schools. Specific areas would include lead exposure, asthma triggers, integrated pest management, and exposure to other toxic chemicals.

### Ongoing Areas of Interest

The budget request would support several programs consistent with the Administration’s interest in infrastructure. Consistent with the FY 2019 request, the FY 2020 proposal would allocate \$25 million for the **Water Infrastructure Finance and Innovation Fund**, which provides federal credit assistance to finance eligible water and wastewater projects.

*Source: EPA’s FY 2020 Budget Justification is available at  
<https://www.epa.gov/sites/production/files/2019-03/documents/fy-2020-congressional-justification-all-tabs.pdf>.*

### U.S. Environmental Protection Agency (in thousands of \$)

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>EPA, total</b>	8,058,488	6,068,490	-1,989,998 (24.7%)
<b>EPA Science and Technology</b>	706,473	440,060	-266,413 (37.7%)

\* The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.



## Institute of Museum and Library Services

The discretionary programs within the Institute of Museum and Library Services (IMLS) would be funded at \$23 million a reduction of 91 percent compared to the FY 2019 enacted level.

**Quick Take:** The budget request proposes to eliminate the Institute of Museum and Library Services.

**Major Cuts/Eliminations:** The proposed funding is for the orderly closure of the Institute of Museum and Library Services.

**New Initiatives/Priorities:** IMLS would continue to make FY 2019 awards and honor all obligated grant funds. IMLS would continue its normal review process for current applications.

### The Bottom Line

This is the third year that the budget request did not provide funding for the continuation of IMLS activities for the next fiscal year. Given the consistent funding and Congressional support IMLS has received in recent fiscal years, IMLS is unlikely to be eliminated.

### Institute of Museum and Library Services (in thousands of \$)

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>IMLS, total</b>	242,000	23,000	<b>-219,000 (90.5%)</b>

\*The amounts shown for FY 2019 Enacted are taken from H.R. 6157, Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019 and Continuing Appropriations Act, 2019 and Conference Report.



## National Aeronautics and Space Administration

NASA would be funded at \$21 billion, a \$481 million or 2 percent decrease from the FY 2019 enacted level. SMD would receive \$602 million, 9 percent below FY 2019.

**Quick Take:** The Administration's request for NASA maintains similar priorities compared to previous requests. Focus remains on increased investment in human exploration activities oriented towards lunar exploration.

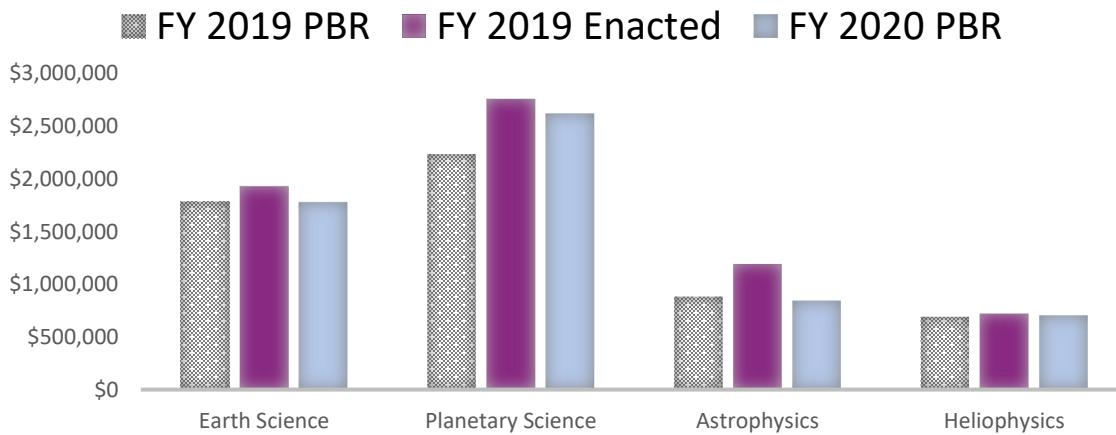
**Major Cuts/Eliminations:** WFIRST and Europa Lander would again be proposed for termination, and implementation of key Earth Science Decadal recommendations would be disregarded. In keeping with last year's request, the Space Technology Mission Directorate would again be renamed and re-scoped to emphasize human exploration activities over those with cross-agency or multi-directorate applications.

**New Initiatives/Priorities:** The request would continue investment in lunar science and discovery activities and demonstrates increased commitment to a Mars Sample Return mission.

### The Bottom Line

NASA fares well relative to other agencies, however the proposal once again remains out of sync with congressional support for SMD and STMD activities. Expect Congress to once again reject major organizational and programmatic shifts.

## NASA SCIENCE DIVISIONS (IN THOUSANDS)



## **Proposed Reductions and Terminations**

Within SMD's Astrophysics Division (APD), the Administration request again proposes terminating the **Wide Field Infrared Survey Telescope (WFIRST)**. The request also proposes termination of the Planetary Science Division's **Europa Lander mission**, although it would continue to support development of a Europa Clipper mission. Congress has traditionally restored funding for WFIRST and Europa Lander, however it is unclear the extent to which support will continue for both missions. WFIRST holds wide popularity among the astrophysics community as the top-recommended space-based observatory in the 2010 Astronomy and Astrophysics Decadal Survey. It also benefits from widespread political support in Congress, though this support has come under strain due to schedule slippage and cost growth. Meanwhile, Europa Lander's development was guaranteed in large part by former House Commerce, Justice, Science, and Related Agencies Chairman John Culberson (R-TX) who lost his seat in the 2018 midterm elections.

The budget request includes \$1.78 billion for the **Earth Science Division**— a reduction of \$151.2 million below the FY 2019 enacted level. The justification includes details on continued implementation of the Earth Science and Applications from Space 2017 Decadal Survey (ESAS 2017), including recommended investments in technology maturation programs and the top-tier “Designated” observables identified in the report. However, the request would not implement the recommended new “Earth Explorer” medium-scale class of competed, PI-led missions that target other key Decadal science goals. As with the FY 2019 request, the budget proposes elimination of the Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) and Climate Absolute Radiance and Refractivity Observatory (CLARREO) Pathfinder missions. Unlike previous requests however, the Administration would no longer seek to terminate the Deep Space Climate Observatory (DSCOVR) mission’s Earth-facing instruments and the Orbiting Carbon Observatory-3 (OCO-3). Congress has explicitly rejected previous efforts by the Administration to abandon ongoing development or operations of major Earth science missions, and it is expected to continue this support.

As with the prior year’s request, the **Office of STEM Engagement** would be eliminated; funding to closeout ongoing Space Grant and Established Program to Stimulate Competitive Research (EPSCoR) program activities is not identified. In previous attempts to eliminate this account, Congress has pushed back and restored funding.

## **New and Signature Initiatives**

The White House continues to emphasize investments and organizational shifts that lay the groundwork for increased human exploration activities. Consistent with the FY 2019 request, the existing Space Technology Mission Directorate and the Human Exploration and Operations Mission Directorate would be reformed into the newly created **Exploration Technology Directorate and Deep Space Exploration Systems Directorate**, respectively. Each would perform several of the same functions as the previous accounts, although only in support of the human spaceflight program and not to advance cross-agency technologies (e.g. in support of science or aeronautics) as is the case with STMD.

The objective of the FY 2020 proposal’s new **Exploration Technology** account would be to more narrowly focus NASA’s technology development activities toward lunar and deep space exploration, thus bringing these activities under the agency-wide Exploration Campaign. This would be a significant departure from NASA’s current technology development enterprise, which emphasizes the need for

investment in technologies that are broadly applicable across NASA's various mission directorates including its Science programs. The centerpiece of the Exploration Technology account would be a proposed Lunar Surface Innovation Initiative, which would support investments in in-situ resource utilization, nuclear surface power, and technologies to enable survival and operations during the lunar night. Like STMD, Exploration Technology would support technology development across all phases of the technology readiness level (TRL) spectrum. This new account would be funded at \$1.01 billion in FY 2020.

Unlike the FY 2019 request, SMD's contribution to the agency's **Lunar Development and Exploration Program** is detailed to a far greater degree. In the last six months NASA announced the selection of nine lunar payload providers through the Commercial Lunar Payload Services (CLPS) competition and center-led lunar technology demonstration instruments. NASA also solicited proposals for its Lunar Surface Instrument and Technology Payload (LSITP), which allows for other stakeholders to propose science-oriented lunar research experiments. The agency plans to select a delivery provider and payloads from the NASA-only and LSITP calls this year with continued development activities and additional calls in FY 2020.

The Administration's request also includes greater information and commitment to a **Mars Sample Return** mission than previous budget requests. The mission's architecture is not determined, but NASA notes that the funding included for its development within the Mars Future account would enable a launch "as early as 2026."

## Ongoing Areas of Interest

Consistent with the FY 2019 request, SMD would continue to emphasize the utilization of **CubeSats and SmallSats** across all four divisions for low-cost, high-return science missions.

The request would fund the **Planetary Sciences Division** at \$2.62 billion, a decrease of \$136.4 million below FY 2019. The request would include continued funding for Mars 2020, Discovery missions currently in development, and work required in FY 2020 based on the results of the current New Frontiers competition. Europa Clipper would receive funding for a launch in 2023. The Administration noted that both Mars 2020 and Europa Clipper mission are facing cost growth but does not provide details about what steps NASA is taking to mitigate future impacts to other PSD missions such as Mars Sample Return.

The **Astrophysics Division** would receive \$884.2 million in FY 2020, a decrease of \$346.2 million below FY 2019 enacted. Detailed FY 2019 enacted numbers are not available apart from limited items that received specific congressional direction. However, it is likely that this cut primarily reflects the proposed cancellation of WFIRST, as noted above. The request notes that NASA will be undertaking a science and missions operations review of the Stratospheric Observatory for Infrared Astronomy (SOFIA) to find ways to increase its scientific impact and SOFIA will be included in the FY 2022 Senior Review.

The request would fully fund ESD's **Earth Venture** program. NASA would implement a new \$150 million cost-capped and competed Earth Venture Continuity (EVC) mission class. EVC will "fly on-orbit demonstrations... for maintaining the long-term record of important Earth science measurements." This new mission line was a key ESAS 2017 recommendation.

The **Heliophysics Division** within SMD would receive \$704.5 million in FY 2020, a decrease of \$15.5 million or 2.2 percent below the FY 2019 enacted level. This amount would accommodate the development of the Interstellar Mapping and Acceleration Probe (IMAP) as well as new Small Explorer (SMEX) and accompanying Missions of Opportunity selections. The requested amount would enable the continued implementation of the *Diversify, Realize, Integrate, Venture, Educate* (DRIVE) initiative, which is an integrated, multiagency effort between NASA and NSF that utilizes a series of low-cost activities to maximize scientific returns on both ongoing and future programs. The request would also include an additional \$15.9 million for Space Weather Science and Applications (SWxSA). This activity, which is consistent with the recommendations of the 2013 Decadal Survey in Solar and Space Physics, would support research-to-operations, operations-to-research, and interagency collaboration on space weather observation and forecasting.

**Aeronautics** would receive \$666.9 million in FY 2020, a decrease of \$58.1 million or eight percent below the FY 2019 enacted level. The request would support the final assembly of the Low Boom Flight Demonstration mission, which will now be known as the X-59 QueSST aircraft, as well as development of more efficient methods for designing hypersonic vehicles. In addition, NASA would begin ramping up activities associated with its nascent **Urban Air Mobility (UAM)** initiative. NASA defines UAM as an air transportation system wherein autonomous vehicles safely ferry everything from packages to passengers over populated areas. UAM investments would span multiple Aeronautics programs and include Grand Challenge flight demonstrations to assess the maturity of key technologies, the development of new UAM modeling tools, and advancements in specialized autonomous systems.

The amount requested for Aeronautics would include \$124.4 million (up 11 percent over FY 2018 levels) for the **Transformative Aero Concepts Program (TACP)**, which supports multidisciplinary research aimed at developing groundbreaking aeronautical concepts. The program specifically emphasizes research at the convergence of aeronautics and non-aeronautics technologies. Of particular relevance to the university community, NASA plans to implement a third round of **University Leadership Initiative (ULI)** teams. Established in 2015, ULI supports universities or university-led teams conducting research to overcome specific technical challenges while contributing to the aeronautics workforce development pipeline.

*Source: NASA's FY 2020 budget information, including full details and summary information, is available at <https://www.nasa.gov/news/budget/index.html>.*

### National Aeronautics and Space Administration

(in millions of \$)

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>NASA, total</b>	<b>21,500.0</b>	<b>21,019.0</b>	<b>-481</b> <b>(2.2%)</b>
<b>Science</b>	<b>6,905.7</b>	<b>6,303.7</b>	<b>-602</b> <b>(8.7%)</b>
<b>Earth Science</b>	<b>1,931.0</b>	<b>1,779.8</b>	<b>-151.2</b> <b>(7.8%)</b>
<b>Planetary Science</b>	<b>2,758.5</b>	<b>2,622.1</b>	<b>-136.4</b> <b>(4.9%)</b>
<b>Astrophysics</b>	<b>1,191.6</b>	<b>844.8</b>	<b>-346.8</b>

			(29.1%)
<b>James Webb Space Telescope</b>	304.6	352.6	<b>48</b> <b>(15.8%)</b>
<b>Heliophysics</b>	720.0	704.5	<b>-15.5</b> <b>(2.2%)</b>
<b>Aeronautics</b>	<b>725.0</b>	<b>666.9</b>	<b>-58.1</b> <b>(8.0%)</b>
<b>Space Technology**</b>	<b>\$926.9</b>	<b>0</b>	<b>-926.9</b> <b>(-100.0%)</b>
<b>Exploration Technology**</b>	<b>0</b>	<b>1,014.3</b>	<b>1,014.3</b> <b>(100.0%)</b>
<b>Deep Space Exploration Systems</b>	<b>5,050.8</b>	<b>5,021.7</b>	<b>-29.1</b> <b>(0.6%)</b>
<b>Space Operations</b>	<b>4,639.1</b>	<b>4,285.7</b>	<b>-353.4</b> <b>(7.6%)</b>
<b>STEM Engagement</b>	<b>110.0</b>	<b>0</b>	<b>-110</b> <b>(100%)</b>
<b>Aerospace Research &amp; Career Dev.</b>	65.0	0	-65 (100%)
<b>Space Grant</b>	44.0	0	-44 (100%)
<b>EPSCoR</b>	21.0	0	-21 (100%)
<b>Minority University Research and Education Project</b>	33.0	0	-33 (100%)
<b>Safety, Security, &amp; Mission Services</b>	<b>2,755.0</b>	<b>3,084.6</b>	<b>329.6</b> <b>(12.0%)</b>
<b>Construction and Environmental Compliance and Restoration</b>	<b>348.2</b>	<b>600.4</b>	<b>252.2</b> <b>(72.4%)</b>
<b>Office of Inspector General</b>	<b>39.3</b>	<b>41.7</b>	<b>2.4</b> <b>(6.1%)</b>

\*FY 2019 Enacted figures are taken from Public Law 116-006, Consolidated Appropriations Act, 2019 and associated explanatory statement.

\*\*The FY 2020 request would eliminate the Space Technology Mission Directorate and reallocate its constituent programs under a proposed lunar- and deep space-focused Exploration Technology account.

# National Endowment for the Humanities & National Endowment for the Arts



The National Endowment for the Humanities (NEH) and the National Endowment for the Arts (NEA) would both be eliminated in FY 2020 budget proposal.

**Quick Take:** Similar to each of the prior president's budget requests, the NEH and NEA are each proposed for elimination; a total of \$38 million would be given to NEH to ensure that proper closure could be carried out, and a total of \$29 million would be allocated to NEA for closure in FY 2020.

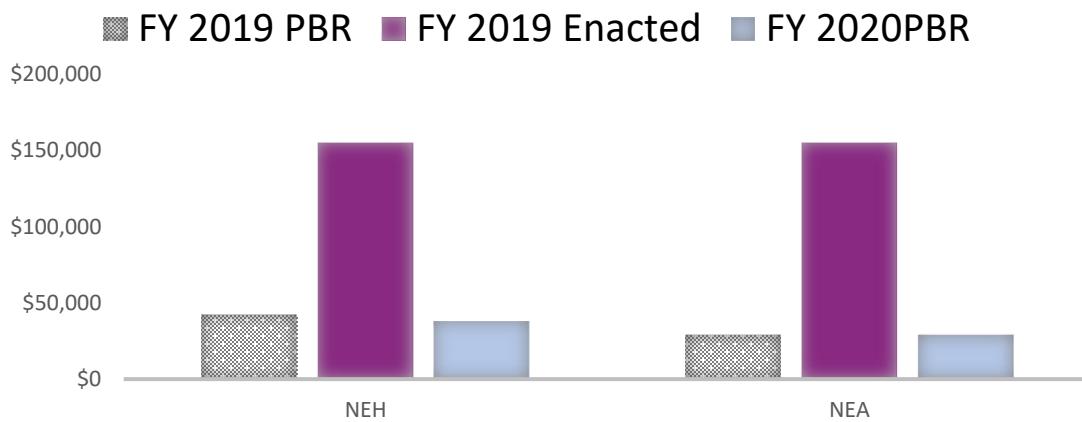
**Major Cuts/Eliminations:** Each agency would be eliminated over the course of FY 2020.

**New Initiatives/Priorities:** None.

## The Bottom Line

Simply put, these proposed eliminations are unlikely to happen. In response to past Trump Administration budget requests that proposed eliminating NEH and NEA, Congress rebuffed President Trump and funded the agencies at either flat or slightly increased levels. For example, last year, Congress doled out a \$2 million increase for each agency, giving the NEH and NEA their biggest funding levels since FY 2010. NEH and NEA enjoy broad, bipartisan support in both the House and the Senate.

## NEH AND NEA (IN THOUSANDS)



## **Proposed Reductions and Terminations**

Complete terminations of both agencies are proposed in the FY 2020 budget request. For **NEH**, the budget request would provide only \$38 million for the agency to cover financial obligations of prior awards and the necessary staff oversight and related expenses for closure. For **NEA**, the budget request would provide \$29 million, the amount necessary to cover salary and other expenses for the agency's closure.

*Source: NEH's FY 2020 Budget Request is available at <https://www.neh.gov/sites/default/files/inline-files/Appropriation-Request-for-Fiscal-Year-2020.pdf> and NEA's Appropriations Request for FY 2020 can be found at <https://www.arts.gov/sites/default/files/NEA-FY20-Appropriations-Request.pdf>.*

### **National Endowment for the Humanities and National Endowment for the Arts** *(in thousands of \$)*

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>NEH, total</b>	155,000	37,890	<b>-117,110 (75.6%)</b>
<b>NEA, total</b>	155,000	29,333	<b>-125,667 (81.1%)</b>

\*The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.

# National Science Foundation



**NSF would be funded at \$7.1 billion in FY 2020, a 13 percent or \$1 billion cut below the FY 2019 enacted level.**

**Quick Take:** Deep cuts are proposed across the board to NSF programs. Research and Related Activities (R&RA) would see a 13.1 percent cut while Education and Human Resources would fare slightly better with a proposed reduction of 9.5 percent below the FY 2019 enacted level.

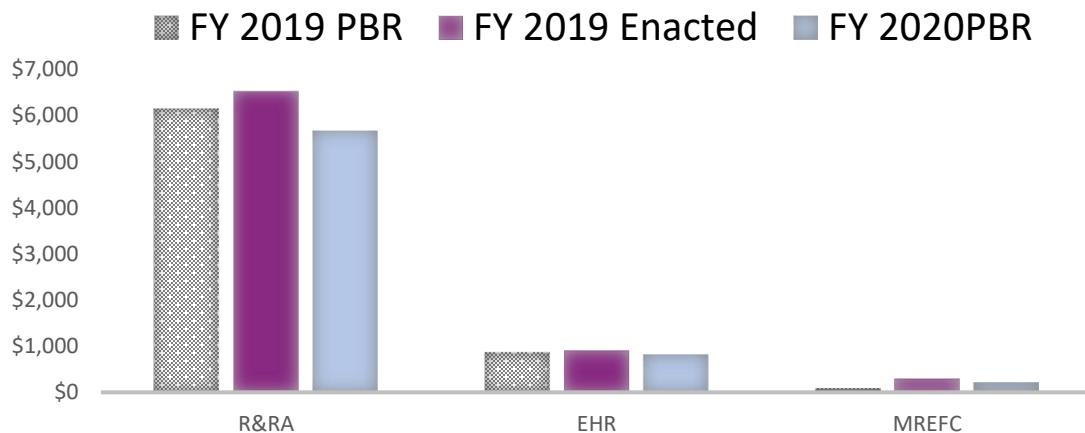
**Major Cuts/Eliminations:** All NSF Directorates would face cuts from between 8.1 percent to 16.5 percent below FY 2018 levels (individual directorate funding is not yet available for FY 2019). The largest directorate level cuts reflect the rolling back of one-time major boosts that NSF used for specific programs and facilities with the additional funding provided by Congress in FY 2018.

**New Initiatives/Priorities:** NSF continues its prioritization of the Ten Big Ideas for Future Investment and proposes similar amounts of funding for each Big Idea as in the FY 2019 budget request. Facilities and computing investments are mostly held to their existing plans and thus are generally protected from cuts.

## The Bottom Line

The budget request is far out of step with congressional support for NSF and will likely be dismissed by Congress. While the Big Ideas for Future Investment are generally supported, Congress has shown concern in previous years about balance between the Big Ideas and core funding. With this budget request showing the starker disparity yet between these two, expect intense questions about NSF's ability to support both.

## NSF MAJOR ACCOUNTS (IN MILLIONS)



## **Proposed Reductions and Terminations**

Outside of the Big Ideas and facilities investments, many NSF programs would see reductions. These include many Obama-era initiatives that were already slated to wind down, Graduate Research Fellowships, CAREER awards, and several education programs. Note that apart from major cross-cutting initiatives and certain STEM programs, the budget request provides no detail about how or whether individual divisions would apply reductions across their core activities.

### **Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS)**

The INFEWS initiative would be reduced to \$15 million, 55 percent below the FY 2018 level, as it heads towards a planned sunsetting in FY 2020. This amount is only \$1 million less than NSF proposed for INFEWS in the FY 2019 request. INFEWS is an NSF-wide interdisciplinary initiative begun in FY 2016 that aims to understand, design, and model the interconnected food, energy, and water (FEW) systems. In FY 2020 NSF plans to support ongoing awards made under the final INFEWS competition that was held in 2018. In addition, ENG plans to fund research related to the soil microbiome.

### **Understanding the Brain (UtB)**

The Understanding the Brain (UtB) initiative would be supported at \$123 million in FY 2020, down 22 percent from its FY 2018 level. For FY 2020, NSF would continue to fund cross-cutting programs, including Collaborative Research in Computational Neuroscience (CRCNS), Integrative Strategies for Understanding Neural and Cognitive Systems (NSF-NCS), and Next Generation Networks for Neuroscience (NeuroNex) as well as disciplinary and special programs across directorates. As in the FY 2019 request, changes to UtB investments would vary widely by directorate. BIO would continue almost all of its investment at \$43 million (down 5 percent from FY 2018) while MPS would halve its contribution (down 46 percent from FY 2018 levels to \$12 million). FY 2020 is expected to be the last year of the UtB initiative.

### **Additional Proposed Reductions (all comparisons are to FY 2018 levels)**

- **Graduate Research Fellowships:** Down 10 percent to \$257 million. Funding would support 1,600 new fellows, down from 2,000 in FY 2018.
- **NSF Research Traineeships:** Down 8 percent to \$50 million. NSF intends to support 12-15 traineeships and up to \$8 million in fundamental research on graduate education.
- **CAREER:** Down 13 percent to \$249 million.
- **Research Experiences for Undergraduates (REU):** Down 13 percent to \$76 million.
- **Hispanic Serving Institutes Program (HSI):** Down 67 percent to \$15 million as NSF proposes to reverse large increases provided by Congress in recent appropriations bills. Note that the FY 2018 amount included \$15 million of carryover from FY 2017. Congress appropriated \$40 million for HSIs in FY 2019 appropriations.
- **Programs funded by H-1B nonimmigrant Petitioner Fees:** These programs are expected to decrease as NSF revenue from H-1B fees is projected to be \$120 million, 38 percent below FY 2018 revenue but on par with the FY 2019 estimate. In addition, the request proposes to double the H1-B fee that funds these programs and use the extra funding to “prepare American workers for jobs that are currently being filled by foreign workers.”<sup>13</sup> If approved, the request estimates that NSF’s existing programs would get a smaller percentage of the fee, but absolute

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<sup>13</sup> EHR-15

amounts would remain the same. This proposal would have to be approved through changes to the law authorizing these H1-B fees.

- **NSF Scholarships in STEM (S-STEM):** Down 42 percent to \$90 million.
- **Innovative Technology Experiences for Teachers and Students (ITEST):** Down 16 percent to \$30 million.
- **Robert Noyce Scholarship Program:** Down 27 percent to \$47 million.
- **STEM + Computing (STEM+C) Partnerships:** Down 100 percent as this program is ended in favor of the newer Computer Science for All initiative. That program would continue to receive \$20 million, the same amount it received in FY 2018, when it was partly funded by STEM + C. Considering these two programs together, the cut would be 73 percent.
- **EHR Core Research (ECR):** Down 35 percent to \$47 million.

## New and Signature Initiatives

### Big Ideas for Future Investment

The FY 2020 budget request continues NSF's focus on the Big Ideas for Future Investment. These themes were first introduced by Director France Córdova in May 2016 and have been the subject of several major funding opportunities in FY 2018 and FY 2019. The Big Ideas include:

- Research Ideas
  - Harnessing the Data Revolution
  - The Future of Work at the Human-Technology Frontier
  - Windows on the Universe: The Era of Multi-Messenger Astrophysics
  - The Quantum Leap: Leading the Next Quantum Revolution
  - Understanding the Rules of Life: Predicting Phenotype
  - Navigating the New Arctic
- Process Ideas
  - Mid-Scale Research Infrastructure
  - NSF 2026: Seeding Innovation
  - NSF INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science): Enhancing Science and Engineering Through Diversity
  - Growing Convergent Research at NSF

The budget request would provide \$30 million in "Stewardship" funding for each of the **research ideas**, which is the same amount requested in FY 2019. As in the FY 2019 request, this stewardship funding for each Big Idea would be under a lead directorate, but the initiatives would continue to be led by cross-directorate working groups that would determine specific thrusts and investments. The FY 2020 budget request provides new details on each research big idea and the breakdown of funding between the \$30 million stewardship funding and individual directorate activities and commitments (which the request calls foundational investments). In most cases, foundational investments are proposed to be well below their FY 2018 levels. This reflects the major investments NSF made in each big idea with the additional money Congress provided the agency in FY 2018 appropriations. More information on plans for each research big idea is below:

- **Harnessing the Data Revolution (HDR):** Total funding for HDR including stewardship investments and foundational activities would be \$147 million, 13 percent below the FY 2018 level. The decrease would come primarily from CISE, ENG, and MPS cutting their foundational commitments. The \$30 million would be split between Foundations of Data Science (\$6 million)

supporting TRIPODS, new Data-Intensive Research in Science and Engineering centers (\$21 million), and Education and Workforce Development (\$3 million) for Data Science Corps.

- **Future of Work at the Human Technology Frontier (FW-HTF):** Total funding would fall to \$144.3 million, 10 percent below the FY 2018 level. All participating directorates plan to lower their foundational activities with EHR and ENG each planning to reduce their commitments by over 50 percent. FY 2020 activities are expected to include planning and coordination grants to set the stage for future centers or institute-sized grants in FY 2021 and beyond.
- **Navigating the New Arctic (NNA):** Navigating the New Arctic would see its funding grow to \$43 million, 82 percent above the FY 2018 level. This growth demonstrates the limited NSF foundational investment in this area compared to other big ideas. NSF plans to issue another solicitation for NNA in FY 2020 as well as continuing coordination with external stakeholders and other federal agencies. NNA support is expected to continue through FY 2023.
- **Quantum Leap (QL):** Funding would fall to \$66 million, 27 percent below the FY 2018 level. Foundational activities in QL are primarily supported by MPS, which is expected to drop its investment by 59 percent below the FY 2018 level. FY 2020 funding would support awards made under already released QL solicitations such as Q-AMASE-i and Quantum Leap Challenge Institutes.
- **Understanding the Rules of Life (URoL):** Funding would stay relatively flat at \$115 million, 2.7 percent below the FY 2018 level. URoL is expected to run through FY 2023. NSF expects to release new solicitations to support networks of researchers, technology developers, and educators as well as research on interaction rules between genome, phenotype, and environment. NSF also anticipates funding, “seed investments in convergence approaches to the discovery of scale invariant rules that govern biological systems,” to set the stage for larger awards in future years.<sup>14</sup> The BIO Division on Integrative Organismal Systems (IOS) plans to launch a National Academies workshop on future directions in Functional Genomics to inform its investments related to URoL.
- **Window on the Universe (WoU):** Funding would grow to \$54.5 million, 121 percent above the FY 2018 level. In addition to the stewardship investment, MPS plans to continue its foundational activities in FY 2020 while the Office of Polar Programs (OPP) would add a new small contribution. WoU is anticipated to be a 10-year effort. For FY 2020, NSF plans to continue the WoU program announced in FY 2018 as well as support current and future large observing facilities.

As in the FY 2019 request, NSF again proposes \$60 million for the **NSF Convergence Accelerators (NSF C-Accel)**. FY 2019 pilot activities will focus on the Harnessing the Data Revolution and Future of Work at the Human-Technology Frontier Big Ideas. For FY 2020, NSF plans to continue this pilot activity as well as develop new tracks through workshops, roundtables, and analysis of foundational advances related to all the Big Ideas. This funding would be augmented by \$40 million in anticipated partner funding for a \$100 million total investment. NSF C-Accel will continue to focus on use-inspired research with directed deliverables and translational approaches.

In addition to the funding proposed for the research ideas, NSF would provide investments for each of the process ideas:

- **Mid-Scale Research Infrastructure (Mid-Scale RI):** \$75 million would be provided in FY 2020, 25 percent over the FY 2019 request. Unlike the FY 2019 request, NSF proposes to fund larger mid-scale RI-2 efforts (those costing over \$20 million) in the Major Research Equipment and Facilities

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<sup>14</sup> NSF-Wide Investments - 15

Construction (MREFC) account, while leaving the smaller RI-1 program (for awards between \$6 million and \$20 million) under the Office of Integrative Activities (OIA). \$45 million would be provided for RI-2 and \$30 million would be provided for RI-1. This funding will support awards made under FY 2019 Mid-Scale RI-1 and RI-2 solicitations. NSF intends to fund three to ten RI-1 awards and four to six RI-2 awards over two years.

- **Growing Convergence Research (GCR):** As in FY 2019, NSF would again request \$16 million to identify compelling convergent research challenges and fund exploratory science, engineering, and workforce efforts to tackle these challenges. This funding would be 220 percent above FY 2018 funding. For FY 2020, NSF anticipates making 10 to 12 awards at approximately \$14 million total under a new GCR solicitation issued in February and plans up to \$1.6 million for up to four capacity-building activities in emerging convergent research themes. These could include workshops, ideas labs, or research coordination networks. NSF is also looking to recruit additional experts to serve on a College of Reviewers (CoR) to ensure proper merit review for convergence research.
- **NSF INCLUDES:** NSF would provide \$20 million, an increase of 11 percent over the FY 2018 level, to continue efforts to spur new collaborative paradigms for meeting broadening participation goals. Funding would support ongoing awards made under INCLUDES as well as connections between the INCLUDES National Network and other NSF broadening participation programs.
- **NSF 2026:** As requested in FY 2019, \$6.5 million would be provided to spur development of new Big Ideas as well as support portfolio analysis and evaluation for NSF overall and the Big Ideas specifically. \$5.5 million would support workshops and other initial planning activities related to the winning ideas from the NSF 2026 Idea Machine competition begun in 2018. These new ideas would then be expected to launch as longer-term NSF initiatives or programs in FY 2021 and beyond or to be included as themes in major competitions such as NSF Research Traineeships. \$1 million would be used to assess NSF's long-term research portfolio and evaluate NSF 2026 activities.

## Ongoing Areas of Interest

### Cybersecurity

The Secure and Trustworthy Cyberspace (SaTC) program would be supported at \$128 million in FY 2020, 4.5 percent below the FY 2018 level. Numerous activities are outlined for FY 2020:

- NSF expects to issue a new SaTC solicitation for FY 2020 that includes traditional emphasis areas as well as new aspects such as the use of AI for cybersecurity, security of AI and machine learning, and implications of quantum computing for security, as well as technologies for protecting the internet of things.
- NSF expects to issue a center-scale solicitation in FY 2020.
- NSF plans to support Research Coordination Networks to foster international collaboration in cybersecurity as well as industry-academic partnerships.
- NSF is also considering a Dear Colleague Letter to bring together CISE researchers with those typically supported by SBE to look at socio-technical advances in cybersecurity and privacy.
- NSF plans numerous workshops on topics such as cybersecurity as it relates to blockchain, smart infrastructure, and autonomous systems.
- The Cybercorps Scholarships for Service (SFS) program would stay flat with its FY 2018 level at \$55 million. SFS will increase K-12 outreach, including support for cybersecurity summer camps.

### **Innovation Corps (I-Corps™)**

The I-Corps program would be funded at \$33 million, 0.5 percent above the FY 2018 level. NSF would continue to fund I-Corps Nodes, Sites, and Teams. NSF plans to scale up the program by developing outreach to entrepreneurs, university spinoffs, awardees of other agencies, state and local governments, and non-profit groups. NSF intends to roll out a new National I-Corps Network model in FY 2019 and FY 2020 that is currently under development. Existing nodes and sites will continue to be supported.

### **Improving Undergraduate STEM Education (IUSE)**

The president's budget request would include \$93 million for the Improving Undergraduate STEM Education (IUSE) umbrella, a 6 percent decrease below the FY 2018 level. IUSE is an NSF-wide effort to improve undergraduate STEM education that includes individual programs in EHR and individual research directorates.

### **Science, Technology, Engineering, and Mathematics (STEM) Education**

Beyond programs discussed above, many NSF STEM programs would see flat funding or relatively small cuts compared to FY 2018 funding levels. Broadening participation programs such as the Louis Stokes Alliances for Minority Participation (LSAMP) and Advancement of Women in Academic Science and Engineering Careers (ADVANCE) programs would be flat funded, while the Alliances for Graduate Education and the Professoriate (AGEP) would receive a 6 percent cut. NSF's main K-12 and informal education programs Discovery Research preK-12 (DRK-12) and Advancing Informal STEM Learning (AISL) would see funding changes in different directions as DRK-12 would grow 7 percent to \$95 million for support in innovative areas such as computer science and engineering education as well as using digital platforms and ensuring a well-prepared teacher workforce. In contrast, AISL would be cut 5 percent with emphases on broadening participation in STEM, public participation in research, cyberlearning, computational literacy, and learning in rural and urban environments.

*Source: The full NSF FY 2020 Budget Request can be viewed at*

<https://www.nsf.gov/about/budget/fy2020/toc.jsp>.

**National Science Foundation**  
*(in millions of \$)*

	FY 2018 Actual	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2018	FY 2020 Request vs. FY 2019
<b>NSF, total</b>	<b>7,818.43</b>	<b>8,075.00</b>	<b>7,066.00</b>	<b>-752.43 (9.6%)</b>	<b>-1,009 (12.5%)</b>
<b>Research and Related Activities</b>	<b>6,380.38</b>	<b>6,520.00</b>	<b>5,662.96</b>	<b>-717.42 (11.2%)</b>	<b>-857.04 (13.1%)</b>
Biological Sciences	756.60		683.36	-73.24 (9.7%)	
Computer and Information Science and Engineering	960.80		883.04	-77.76 (8.1%)	
Engineering	977.90		881.42	-96.48 (9.9%)	
Geosciences	907.80		787.05	-120.75 (13.3%)	
Mathematical and Physical Sciences	1,503.41		1,255.82	-247.59 (16.5%)	
Social, Behavioral, and Economic Sciences	250.69		230.08	-20.61 (8.2%)	
International Science and Engineering	48.98		46.24	-2.74 (5.6%)	
Office of Polar Programs	501.72		403.39	-98.33 (19.6%)	
Integrative Activities	471.05		491.04	19.99 (4.2%)	
US Arctic Research Commission	1.43		1.52	0.09 (6.3%)	
<b>Education and Human Resources</b>	<b>903.97</b>	<b>910.00</b>	<b>823.47</b>	<b>-80.4 (8.9%)</b>	<b>-86.53 (9.5%)</b>
<b>Major Research Equipment and Facilities Construction</b>	<b>186.3</b>	<b>295.74</b>	<b>223.23</b>	<b>36.93 (19.8%)</b>	<b>-72.51 (24.5%)</b>
<b>Agency Operation and Award Management</b>	<b>328.51</b>	<b>329.54</b>	<b>336.89</b>	<b>8.38 (2.6%)</b>	<b>7.35 (2.2%)</b>
<b>National Science Board</b>	<b>4.30</b>	<b>4.37</b>	<b>4.10</b>	<b>-0.2 (4.6%)</b>	<b>-0.27 (6.2%)</b>
<b>Office of Inspector General</b>	<b>15.09</b>	<b>15.35</b>	<b>15.35</b>	<b>0.26 (1.7%)</b>	--

\*The amounts shown for FY 2018 actual and FY 2019 enacted are taken from the NSF budget request.

## U.S. Department of Agriculture



The discretionary programs within USDA's National Institute of Food and Agriculture would be down \$80 million (5.4 percent) compared to FY 2019 enacted level. USDA's Agricultural Research Service (discretionary) would be down \$431 million (26 percent).

**Quick Take:** Although both ARS and NIFA budget requests are below the FY 2019 enacted level, NIFA's competitive research program, the Agriculture and Food Research Initiative would receive a significant increase of \$85 million (20.5%) above the FY 2019 enacted level.

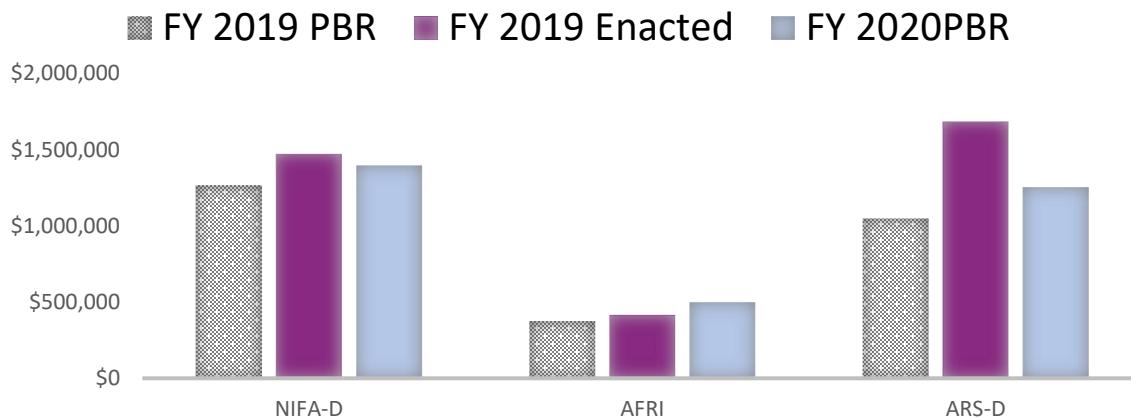
**Major Cuts/Eliminations:** Steep cuts are proposed throughout ARS with numerous projects proposed for elimination and three human nutrition research centers proposed for termination. Within NIFA, capacity programs would experience a decrease while several other program areas are proposed for elimination (aquaculture, Capacity Building for Non-Land Grant Colleges of Agriculture) or steep decreases.

**New Initiatives/Priorities:** The ARS request would provide a significant increase of 43 percent for the transfer of operational responsibility and start-up costs for the new National Bio and Agro-Defense Facility from the Department of Homeland Security to USDA: a total of \$92.8 million is provided, compared to the \$52.6 million FY 2019 enacted level. The NIFA request proposed a new \$50 million competitive grants program for infrastructure to fix aging facilities at land-grants. Additionally, \$15.5 million and \$9.5 million would be provided for the proposed relocation of the Economic Research Service (ERS) and NIFA, respectively, which was originally announced in summer 2018 and is currently in the proposal review stage.

### The Bottom Line

A mixed bag. While champions for competitive research will welcome the significant increase to AFRI and the new infrastructure funding, many will see lower requests for capacity and ARS lines. The good news is, after the 2018 Farm Bill, support for agricultural research is at a high and will likely result in the rejection of proposed cuts for ARS facilities and laboratories, as well as key NIFA programs.

## USDA NIFA, AFRI, ARS (IN THOUSANDS)



## **Proposed Reductions and Terminations**

### **Agricultural Research Service**

The budget request would provide a 25.6 percent reduction for ARS compared to the FY 2019 enacted level. This includes almost a 50 percent reduction to the **Human Nutrition Research program**, which would be funded at \$45 million and the proposed closure of three human nutrition research centers. While other ARS research areas would receive decreases, the **Livestock Protection** program area would see a \$6 million increase for research program improvements at NBAR. Although the Trump Administration does not propose a long list of ARS closures as it has in years past, included in the budget request are **multiple project eliminations within the various program areas**.

### **National Institute of Food and Agriculture**

Numerous programs throughout NIFA would receive decreases. Specifically, the budget request follows a similar pattern and would again include decreases for **Smith-Lever (b) and (c), Hatch Act, and McIntire-Stennis Cooperative Forestry**, all of which received a funding bump in FY 2019. The **Hispanic-Serving Institutions Grant Program** would see a slight decrease of \$63,000.

The FY 2020 budget request also proposes significant reductions and eliminations to signature NIFA programs. The **Sustainable Agriculture Research Education and Extension (SARE)** program would receive a \$16 million decrease and the **Crop Protection and Pest Management** activities would be eliminated. Several additional programs were proposed for elimination, including: Animal Health and Disease Research Program; Global Change; UV-B Monitoring; Aquaculture Research; Minor Crop Pest Management; Potato Research; Alfalfa and Forage Research; Aquaculture Centers; Supplemental and Alternative Crops; Sun Grants; Farm Business Management and Benchmarking; Capacity Building for Non-Land Grant Colleges of Agriculture; Multicultural Scholars, Graduate Fellowship and Institution Challenge Grants; Secondary and 2-year Post-Secondary Education; Veterinary Services Grant Program; Children, Youth, and Families at Risk Program; Food and Animal Residue Avoidance Database; 1890 Facilities Program; Agriculture in the Classroom; New Technologies for Agricultural Extension; Farm Safety and Youth Farm Safety Education and Certification; Renewable Resources Extension Act; Women and Minorities in STEM; Food and Agriculture Service Learning; Methyl Bromide Transition Program; Organic Transition Program; and the Food and Agriculture Defense Initiative.

### **International Food Aid**

Consistent with the Trump Administration's focus on domestic priorities, the FY 2020 budget request would eliminate the McGovern-Dole International Food for Education and Child Nutrition Program and funding provided for international food aid. Congress has typically ensured funding for this popular program.

## **New and Signature Initiatives**

The president's FY 2020 budget request would provide \$92.8 million for the new ARS National Bio and Agro-Defense Facility operations and maintenance, which will replace the DHS Plum Island Animal Disease Center.

### **Agriculture and Food Research Initiative**

AFRI is once again directed to focus investments in three areas: sustainable agricultural systems (\$134 million); foundational and applied science (\$316.9 million); and education and workforce development (\$49 million). This is consistent with the priorities outlined in the FY 2018 and FY 2019 requests and is

intended to facilitate system-wide innovation and secure the nation's role as a global leader in food and agricultural production. New in FY 2020 for the foundational and applied science area will be increased support for artificial intelligence and data science through the Food and Agriculture Cyberinformatics and Tools (FACT) program. Within the Sustainable Agricultural Systems RFA will be a new predictive science initiative to yield decision tools and other applications.

#### **Competitive Facility Grants at Land-Grant Universities (1862, 1890, 1994)**

New in the FY 2020 budget request is a \$50 million competitive grant program to address the infrastructure and equipment needs of land-grant universities. The program, which would require a 50 percent match and support 10-15 grants in FY 2020, would prioritize facilities with regional needs and accommodated collaborations with other universities, states, and ARS.

*Source: USDA's FY 2020 Budget Summary and Background Information is available at <https://www.obpa.usda.gov/budsum/fy2020budsum.pdf> and USDA budget explanatory notes can be found at <https://www.obpa.usda.gov/USDA2020CJ.pdf>.*

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

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>Agricultural Research Service (ARS) (Discretionary)</b>	1,684,466	1,253,491	-430,975 (25.6%)
<b>National Institute of Food and Agriculture (Discretionary)</b>	1,471,341	1,391,686	-79,655 (5.4%)
<b>AFRI</b>	415,000	500,000	85,000 (20.5%)
<b>Hatch Act</b>	259,000	243,238	-15,762 (6.1%)
<b>Smith-Lever Act 3(b) and 3(c)</b>	315,000	299,430	-16,000 (5.1%)
<b>McIntire-Stennis</b>	36,000	28,867	-7,133 (19.8%)
<b>Food Safety and Inspection Service (FSIS-Discretionary)</b>	1,049,344	1,045,320	-4,024 (0.4%)
<b>Animal and Plant Health Inspection Service (APHIS- Discretionary)</b>	1,011,136	985,893	25,243 (2.5%)

\*The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.



The president's FY 2020 budget request includes \$983 million in discretionary funding for the U.S. Geological Survey (USGS), which would be a reduction of \$177 million (15 percent) compared to the FY 2019 enacted level.

**Quick Take:** The request would substantially cut USGS programs, although less drastically than proposed in FY 2019. Additionally, significant reorganization and consolidation is proposed.

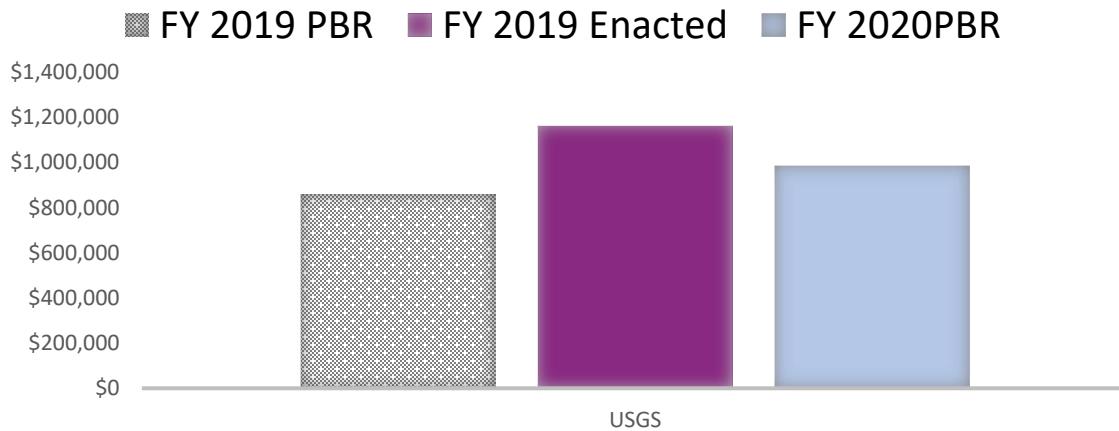
**Major Cuts/Eliminations:** As in President Trump's previous requests, the budget proposes eliminating or reducing programs that provide external funding, such as the Water Resources Research Act program, which supports the Water Resources Research Institutes. The request continues to propose drastic cuts for the Climate Adaptation Science Centers.

**New Initiatives/Priorities:** The FY 2020 budget request proposes reorganizing USGS leadership, including many of those who directly report to the USGS director, to move from the Reston, VA headquarters to Lakewood, CO. The request would also restructure and consolidate seven mission areas to five and reshuffle programs within many of the mission areas.

### The Bottom Line

The proposed topline cuts are less extreme than in the prior Trump Administration budget requests. Extramural programs are targeted for elimination, although Congress will likely ensure funding for signature programs like Water Resources Research Institutes. While authorizers have allowed restructuring of USGS missions in prior years, it's likely that further justifications will be requested for FY 2020 proposed reorganizations.

## USGS TOPLINE (IN THOUSANDS)



## **Proposed Reductions and Terminations**

The president's FY 2020 budget request proposes many of the same reductions and terminations to USGS extramural signature programs as proposed in the FY 2018 and 2019 budget requests. These programs typically receive bipartisan support because of the geographic distribution of the activities.

Like last year, the request proposes a reduction of \$12.3 million or 48.7 percent to the **Regional Climate Adaptation Science Centers**, a funding level that would support only three hubs, rather than the existing eight centers. As part of the reconfiguration, the Climate Adaptation Science Center (CASC) subactivity would be within Ecosystems and include the Climate Adaptation Science Centers, the Climate Research and Development Program, and landscape science from the Land Change Science program. As stated in the budget request, "The CASC would be integrated as both a program and a science center with Regional Climate Adaptation Science Centers becoming hubs of the National Climate Adaptation Science Center and continue to work directly with partners and stakeholders on issues of local concern."

The **Cooperative Research Units**, funded at \$18.4 million in FY 2019, would be eliminated. The **Water Resources Research Act Program**, funded at \$6.5 million in FY 2019, would also be eliminated.

## **New and Signature Initiatives**

This budget request proposed more extensive restructuring than last year's request. The FY 2020 request proposes restructuring all USGS mission areas, except for Natural Hazards, Science Support, and Facilities. The FY 2019 request proposed eliminating funding for the Environmental Health program and realigning the Climate and Land Use account into **Land Resources**, while this year it proposes consolidating the programs from these two mission areas. This would decrease the total number of mission areas from seven to five. Once again, funding for **Environmental Health** would be eliminated, and the programs would be transferred into **Ecosystems** and **Water Resources** to "eliminate several vacant positions and realign programs to leverage existing support staff."

The FY 2020 budget request would relocate select USGS leaders to Lakewood, CO from Reston, VA, including some of the positions that directly report to the USGS director to improve collaboration with other federal agencies and stakeholders. This is part of a larger effort to reorganize the Department of Interior (DOI) along regional boundaries and move some headquarters functions to the West, closer to many DOI lands. The request states that USGS "is currently assessing" which efforts and staff would be relocated.

## **Ongoing Areas of Interest**

The budget request continues prioritizing the Administration's focus on energy and critical mineral security. The **Mineral Resources** program would increase by 5.7 percent with \$10.6 million proposed for the **Earth Mapping Resources Initiative** (Earth MRI), formerly known as 3DEEP. This increase would support work with other agencies and stakeholders to "to develop mechanisms to acquire new topographic, geologic mapping, and geophysical data in order to better understand critical minerals."

Within the **Natural Hazards** program, the budget request would provide \$64.3 million for the **Earthquake Hazards** program, a 23 percent decrease compared to the FY 2019 enacted level. Unlike the past two budget requests that have proposed eliminating funding for the **ShakeAlert Earthquake Early**

**Warning** system for the West Coast, the FY 2020 budget request includes operation of ShakeAlert as a USGS priority under the goal of “Protecting our People and the Border.” The request includes \$8.2 million for earthquake early warning, which would be a 49 percent cut to ShakeAlert operations. The **Global Seismographic Network** would remain flat compared to the FY 2019 enacted level. The request notes that USGS anticipates providing over “\$20 million in earthquake hazards applied research grants and cooperative agreements” to universities and other entities in 2020.

Within the **Ecosystems** account, the **Invasive Species** program would decrease by 10.3 percent compared to the FY 2019 enacted level of \$19.3 million. The program would be moved into a new **Biological Threats Research Program**, along with the **Fisheries** and **Wildlife** programs.

Funding for **Core Science Systems** would increase to accommodate transfers from Land Resources, including \$89.0 million from the **National Land Imaging Program**. Within this program, **Landsat** would receive \$32.0 million to further the development of the series 9 ground system.

The **National Cooperative Geological Mapping Program** would remain flat at \$24.4 million.

*Source: USGS’s FY 2020 Budget Justification can be found at  
[https://www.doi.gov/sites/doi.gov/files/uploads/fy2020\\_usgs\\_budget\\_justification.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/fy2020_usgs_budget_justification.pdf).*

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

	FY 2019 Enacted*	FY 2020 Request	FY 2020 Request vs. FY 2019
<b>USGS, total</b>	<b>1,160,596</b>	<b>983,467</b>	<b>-177,129 (15.3%)</b>
<b>Natural Hazards</b>	<b>166,258</b>	<b>145,025</b>	<b>-21,233 (12.8%)</b>
Earthquake Hazards	83,403	64,303	-19,100 (22.9%)
Global Seismographic Network	6,653	6,661	8 (0.1%)
<b>Ecosystems</b>	<b>156,882</b>	<b>141,049</b>	<b>-15,833</b>
National and Regional Climate Adaptation Science Centers†	25,335	12,989	-12,346 (48.7)
<b>Land Resources</b>	<b>158,299</b>	<b>0</b>	<b>-158,299 (100%)</b>
<b>Energy, Minerals, and Environmental Health‡</b>	<b>111,736</b>	<b>86,072</b>	<b>-25,664 (23.0%)</b>
<b>Water Resources</b>	<b>226,308</b>	<b>179,922</b>	<b>-46,386 (20.5%)</b>
Water Resources Research Act Program	6,500	0	-6,500 (100%)
<b>Core Science Systems</b>	<b>117,902</b>	<b>207,193</b>	<b>89,291 (75.7%)</b>

<b>Science Support</b>	<b>102,828</b>	<b>102,910</b>	<b>82</b>
			<b>(0.1%)</b>
<b>Facilities</b>	<b>120,383</b>	<b>121,296</b>	<b>913</b>
			<b>(0.1%)</b>

\*The amounts shown for FY 2019 Enacted are taken from the H.J.Res. 31, Consolidated Appropriations Act 2019 and Conference Report.

†In the request, this program would move from the Land Resources Mission Area into Ecosystems.

‡The budget request lists this as “Energy and Mineral Resources.”

# 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

## 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
- 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 Transportation (DOT)**

- FRA – Federal Railroad Administration
- FWS – Federal Work-Study
- RE&D – Research, Engineering, and Development
- FAA – Federal Aviation Administration
- FMCSA -Federal Motor Carrier Safety Administration
- MARAD – Maritime Administration
- FTA – Federal Transit Authority
- FHWA – Federal Highway Administration
- NHTSA – National Highway Traffic Safety Administration
- PHMSA – Pipeline Hazardous Materials Safety Administration

#### **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
- 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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