

NATIONAL ASSOCIATION OF
GRADUATE- PROFESSIONAL STUDENTS



NAGPS

PRIMER ON THE STATE OF RESEARCH FUNDING

The federal government is an important source of funding for research and development (R&D). Therefore, recent worries of federal budget caps, budget deficits, and government shutdowns have created concerns about the security of federal F&D funding, both within the entire federal budget and within the different agencies of the R&D portfolio.

As you prepare for our upcoming *Advocacy Summit and Legislative Action Days*, we invite you to review this document. Understanding how the federal government funds research, the trends in research funding, and the priorities for fiscal year 2020 (FY2020) will facilitate your meetings with members of Congress in advocating for continued funding for the important research you perform.

FEDERAL RESEARCH AND DEVELOPMENT FUNDING BASICS

Definitions

Research and Development, or R&D, are efforts taken to advance knowledge, improve application of this knowledge, and develop new technologies that aid society. There are two general types of research: basic, which seeks to gain new knowledge; and applied, which seeks to solve a specific problem. Development, in contrast, expands on research and develops this information into new products or solution. In 2018, the Office of Management and Budget (OMB) redefined “development” as “experimental

development,” which excludes ‘pre-production development’ from inclusion with “development.”¹

As discussed in the NAGPS [Primer on Funding](#), government funding of R&D falls under “discretionary spending.” Discretionary spending is the amount of spending that is determined through annual funding cycles and is split into two types: defense and non-defense. Most basic research occurs in federal agencies that are funded by non-defense spending, with military-focused R&D funded through defense spending.

Importance of Federal Research Funding

The degree to which the government funds scientific research has little to do with opinions regarding the importance of science and much more to do with opinions regarding the role of government vs. industry. The Budget Control Act of 2011, which establishes severe spending cuts to discretionary spending, was supported in large part by those who believe that it is more important for industry to fund R&D.

However, conducting basic research requires significant financial risk that the market cannot generally support. When the federal government has decreased R&D funding, industry has been hesitant to invest in turn, as evidenced by corresponding decreases in industry-funded R&D. The most effective and financially profitable investment, then, occurs when the federal government increases support for basic research which allows industry to dominate the lower-risk development phase².

Currently, the federal government is the largest supporter of basic research, funding nearly half (42%) of basic research in the United States, with the business sector funding development.

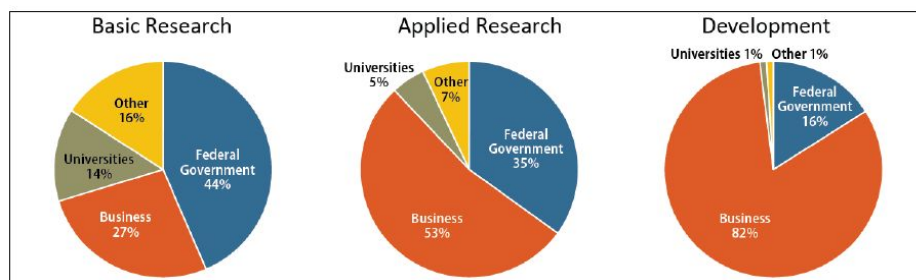


Image from the Congressional Research Service, Federal Research and Development (R&D) Funding: FY2020.

¹ Hourihan, M. (2018, June 13). The Federal Government is Tweaking What Counts as R&D: Q&A. AAAS. Retrieved from <https://www.aaas.org/news/federal-government-tweaking-what-counts-rd-qa>

² Hourihan, M. (2017, October 15). If Government Scales Back Technology Research, Should We Expect Industry to Step In? AAAS. Retrieved from <https://www.aaas.org/sites/default/files/AAAS%20Public%20%26%20Private%20R%26D.pdf?AYBSf.tHhNcjLd1ZMW2RSRpJgve.tbQ1>

THE R&D FUNDING PROCESS

Process and Schedule

A detailed description of the federal budget and the funding process can be found in the NAGPS [Primer on Funding](#). The process described below is specific toward R&D funding.

The federal budget cycle is a lengthy process, and the budget for a single fiscal year can take two years to formulate, appropriate, and execute. Therefore, at any time, the federal government is working with or under three separate budgets: the one in the executive branch, the one in the legislative branch, and the one that is currently funding the government.

The process can be broken down into three phases: (1) agency planning, (2) Budget review by the Office of Management and Budget (OMB), and (3) Congressional appropriations. The execution of the budget on October 1, the start of the fiscal year.

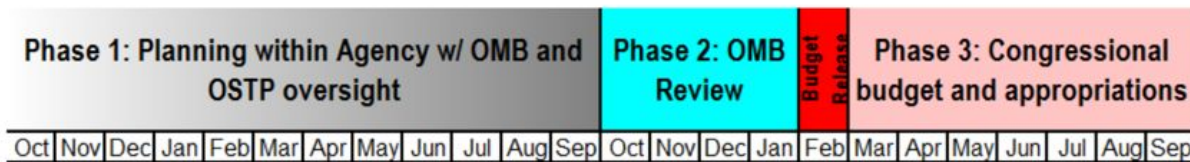


Image from AAAS, The Federal Budget Process 101

During the creation of the President’s budget proposal (Phase 1 and 2), the OMB provides guidance for federal agencies, with the Office of Science and Technology Policy (OSTP) providing additional budget guidance for science programs by specifying research priorities. The agencies submit their requests to the OMB for review in early fall. Negotiations, or “passbacks” occur between the agencies and the OMB until January, when the President submits the budget to Congress, which is delivered in February. The congressional Budget committees set spending targets for discretionary spending, and congressional Appropriations committees - divided into twelve subcommittees - must pass twelve appropriation bills (302(b) allocations) that divide up the discretionary spending (Phase 3), which the President must sign in order to “keep the government open,” or continue to fund the programs and agencies within each bill.

Each subcommittee is responsible for different general areas, and research funding is spread across nearly all of them, with science agencies dispersed across multiple subcommittees. For example, the budget for the National Institutes of Health (NIH) is controlled by the Labor, Health and Human Services and Education subcommittee bill

whereas funding for the National Science Foundation (NSF) comes through the Commerce, Science, and Justice bill.

In FY2018, the bulk of R&D funding was allocated to eight federal agencies (96.3%), with approximately two-thirds of that going to the Department of Defense (DOD) and the Department of Health and Human Services (HHS), which funds the National Institutes of Health (NIH)³. The other federal agencies include the Department of Energy (DOE), National Aeronautics and Space Administration (NASA), National Science Foundation (NSF), Department of Agriculture (USDA), Department of Commerce (DOC), and Department of Veterans Affairs (VA)

Congress can bundle multiple appropriation bills into an omnibus (“for all”, containing all the spending bills) or a minibus (containing several spending bills) to approve a budget. This helps to ensure that party conflicts and disagreements over spending priorities and deficits do not result in too much partisanship; a program popular with one party is coupled with one popular in the other party. This is why the bill containing funding for education has been paired with the one funding defense.

FISCAL YEAR 2020 (FY2020)

The President’s FY2020 Budget Request

President Trump’s FY2020 budget proposal was released behind schedule on March 11, primarily due to delays caused by the 2018-2019 government shutdown. President Trump proposed approximately \$134.1 billion for R&D, a decrease of \$1.7 billion (1.2%; 5.2% adjusted for inflation) from FY2018. This proposed cut in funding was directed toward research (basic, \$1.5 billion, 4%; applied, \$4.3 billion, 10.5%), cuts that were offset somewhat by a proposed increase in development (\$4.5 billion, 8.3%).⁴

³ Sargent Jr., John F. (2019, August 13). Federal Research and Development (R&D) Funding: FY2020. Congressional Research Service. Retrieved from <https://fas.org/sgp/crs/misc/R45715.pdf>.

⁴ *ibid.*

Character of Work, Facilities, and Equipment	FY2018 Actual	FY2020 Request	Change, FY2018-FY2020	
			Dollars	Percent
Basic research	36,616	35,164	-1,452	-4.0%
Applied research	40,707	36,443	-4,264	-10.5%
Development	54,565	59,108	4,543	8.3%
Facilities and Equipment	3,877	3,382	-495	-12.8%
Total	135,765	134,097	-1,668	-1.2%

Dollar amounts in millions

Image from the Congressional Research Service, Federal Research and Development (R&D) Funding: FY2020.

Following FY2018 patterns, the FY2020 proposal allocated most of the government's R&D funds to the same eight federal agencies, prioritizing again the DOD and HHS. Compared to the FY2019 budget, this proposal cut funding for all agencies except the DOD (up 13.5%), the VA (up 3.0%), and the Department of Transportation (DOT) (up 3.2%).

HHS would receive nearly half of both basic and applied research funding (47.7% and 45.6%, respectively), with NIH receiving 97% of this. The remainder would be divided between the Centers for Disease Control (CDC) and the Food and Drug Administration (FDA). A large majority (80%) of the NIH's budget provides competitive, peer-reviewed grants and awards to universities and biomedical researchers to support extramural basic research. The FY2020 proposal included \$34.368 billion for the NIH, a reduction of \$4.941 billion (12.6%) from FY2019 enacted levels, with research priorities directed toward the opioid crisis (The Cures Act), pediatric research, supporting future researchers, the HIV epidemic, new technologies, and biomedical research.⁵

Update on Congressional Allocations

The House of Representatives have passed all twelve appropriations bills for FY2020 (see table below for numbers). The Senate delayed movement on the appropriations until after the Budget committee set new sequestration levels (see NAGPS [Primer on Funding](#)) and is expected to release their bills in September. We will update this document as they do so.

⁵ *ibid.*

The appropriations process is regularly updated on the [Congress.gov appropriations website](#) which provides up-to-date information on all appropriations bills, including the subcommittee to which they are currently assigned, voting records, conference reports, and more. Additionally, you can find analysis of the budget and appropriations process at the [Committee for a Responsible Federal Budget](#), and regularly released reports and projections at the [Congressional Budget Office](#) (CBO).

Several organizations track the appropriations process in regards to specific research agencies. The [Federation of American Societies for Experimental Biology](#) tracks the specific funds allocated to the NIH, NSF, and the DOE’s Office of Science (SC); the [Ecological Society of America](#) many of the agencies that fund research into natural resources; the [American Institute of Physics](#) tracks those which are directed to physical sciences programs.

The top-funded federal research agencies and their current appropriations levels for FY2020 are outlined below.

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	FY2019	FY2020			
Agency	Enacted⁶	Proposal⁷	House Approved⁸	Senate Approved	Final Budget
USDA	\$ 23.31	\$ 20.80	\$ 24.31	N/A	N/A
DOC	\$ 11.41	\$ 12.30	\$ 16.43	N/A	N/A
DOD	\$ 685.00 ⁹	\$718.30	\$ 690.2	N/A	N/A
DOE	\$ 35.70	\$ 31.70	\$ 37.1	N/A	N/A
HHS	\$ 90.50	\$ 89.60	\$ 99.0	N/A	N/A
VA	\$ 86.60	\$ 93.10	\$ 94.3	N/A	N/A
NSF	\$ 7.80	\$ 7.10	\$ 8.64	N/A	N/A
NASA	\$ 20.70	\$ 21.00	\$ 22.32	N/A	N/A

⁶ Taken from Press Releases from the House Committee on Appropriations

⁷ Taken from FY2020 President’s Budget from the White House Office of Management and Budget.

⁸ Taken from Press Releases from the House Committee on Appropriations

⁹ Taken from FY2020 President’s Budget from the White House Office of Management and Budget.