



STEM EDUCATION, RESEARCH AND RELATED PROPOSALS IN THE FY 2017 BUDGET

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On May 5th, President Donald Trump signed into law the final budget for FY 2017—more than seven months into the fiscal year the package funds. The deal is an Omnibus, an agreement that wraps together a number of appropriations bills, and ensures that federal operations will be supported through September 30, 2017. Despite the Trump administration’s request to slash funding for many agencies involved with STEM education and research, Congress’s agreement staves off major cuts, actually increasing funding levels for some. For example, the National Institutes of Health (NIH) and NASA science programs actually receive substantial increases in the proposal, and the Environmental Protection Agency avoids major cuts.

Overall, federal spending on research and development (R&D) will grow by 5% under the deal. According to AAAS, total R&D spending will grow to \$155.8 billion for FY 2017. That number includes everything spent on basic and applied science as well as the development of new technologies and the construction of facilities. The split is \$72.9 billion for civilian activities and \$82.9 billion for military programs. Parsed another way, spending on basic research would grow by 4.1% to \$34.9 billion, while funding for applied research would rise by 6.3% to \$40.2 billion.

As for STEM education, the news is mixed—advocates hoping for substantial STEM education investments via the Department of Education’s Student Support and Academic Enrichment Grant program were disappointed that the program only received \$400 million, but that is more than was expected given the pressures appropriators faced in challenging fiscal times. K-12 STEM education advocates also asked for sufficient investments in federal professional development programs and while funds used to support K-12 professional development were cut a bit, it was far less than the White House will hope to see in the FY 2018 process. Programs at other agencies largely survived as well. The following details programs of interest to the STEM education and research communities.

FY 2017 STEM Spending for Selected Federal Investments

Department of Agriculture

National Institute Of Food And Agriculture Research And Education Activities

- The agreement provides \$849,518,000 for the National Institute of Food and Agriculture's research and education activities.
- The agreement provides an increase of \$25,000,000 for the Agriculture and Food Research Initiative- a total of \$375 million.
- USDA's Agricultural Research Service got a 2.3% increase, to \$1.17 billion. Much of that funding is consumed by the department's own extensive system of research laboratories, which often lean toward more applied research, or distributed to states based on a funding formula.
- The agreement continues to direct that not less than 15 percent of the competitive research grant funds be used for USDA's agricultural research enhancement awards program, including USDA-EPSCoR

Extension Activities

- The agreement provides \$477,391,000 for the National Institute of Food and Agriculture's extension activities, which include outreach to women in STEM, k-12 education, etc....
- An overall increase of \$1.5 million from 2016 enacted levels.
- The agreement also provides \$3,000,000 for the Rural Health and Safety Education Program

The following table reflects the amounts of notable STEM ED programs provided by the agreement:

<i>National Institute of Food and Agriculture</i>	
<i>Extension Activities</i>	
<i>(Dollars in Thousands)</i>	
	Amount
Extension Services at 1890 Institutions	45,620
Extension Services at 1994 Institutions	4,446
Women and Minorities in STEM Fields	400
New Technologies for Agricultural Extension	1,550
Children, Youth, and Families at Risk	8,395
Federally Recognized Tribes Extension Program	3,039
Total, Section 3(d)	85,528
Necessary Expenses of Extension Activities:	
Agriculture in the K-12 Classroom	552
Total, Extension Activities	\$477.391

Rural Development

- The agreement provides \$225,835,000 for Rural Development (RD), a \$166 million increase from 2016 enacted levels.
- The agreement includes a general provision directing that \$500,000 made available for 'Rural Development, Salaries and Expenses' shall be used to develop an implementation plan for increasing access to education in the fields of science, technology, engineering, and mathematics (STEM) in rural communities through the Distance Learning and Telemedicine program. The agreement directs that the implementation plan also address the availability of, access to, and quality of access to STEM education in rural communities. The agreement further directs that it be developed not later than six months after the date of enactment of this Act and in close cooperation with land-grant colleges and universities.

Department of Commerce

National Oceanic And Atmospheric Administration

- NOAA’s Office of Education focuses on building a future workforce and scientifically literate public ready to adapt to a changing environment.
- The deal funds NOAA's Sea Grant program, which supports research at colleges across the country, at \$63 million, along with a separate \$9.5 million line item for marine aquaculture, which is managed by Sea Grant; taken together, these come close to matching the \$73 million appropriated in 2016.

Program	Amount
<i>(in thousands of dollars)</i>	
Bay Watershed Education And Training (BWET) Programs	7,500
Education Partnership Program/Minority Serving Institutions	14,431
NOAA Education Program Base	5,000
Office of Education	26,931

National Aeronautics And Space Administration

- The budget includes \$100,000,000 for Education, which is a \$15 million decrease from the 2016 enacted levels. Programs include \$18,000,000 for the Experimental Program to Stimulate Competitive Research; \$40,000,000 for Space Grant; \$32,000,000 for the Minority University Research and Education Project; and \$10,000,000 for STEM Education and Accountability Projects.

- *The Science Mission Directorate Education and Public Outreach (EPO).*-The recommendation includes \$37,000,000 for STEM education programs, to be derived equally from Planetary Science and Astrophysics. This activity shall continue to be administered by the Astrophysics Division.

National Science Foundation

- This Act includes \$880,000,000 for Education and Human Resources, including:
 - \$35,000,000 for the Historically Black Colleges and Universities Program;
 - \$51,880,000 for STEM+C
 - \$46,000,000 for the Louis Stokes Alliance for Minority Participation
 - \$14,000,000 for the Tribal Colleges and Universities Program
 - \$62,500,000 for the Advanced Information STEM Learning program
 - \$55,000,000 for CyberCorps: Scholarships for Service, including no less than \$7,500,000 for qualified community colleges as directed by the Senate.
- The agreement also directs NSF to establish a Hispanic Serving Institution (HSI) program at no less than \$15,000,000 as authorized in 42 U.S.C. 1862o-12. The agreement encourages NSF to use this program to build capacity at institutions of higher education that typically do not receive high levels of NSF grant funding. The agreement also provides \$30,000,000 as requested for the I-Corps program.
- The following chart outlines NSF’s Major Research Equipment and Facilities Construction. Education and Human Resources Budget

FY 2016 Enacted	FY 2017 Request	Final Bill	Final Bill vs. Enacted	Request vs. Enacted
200,310	193,120	209,000	+8,690	+15,880

Department of Defense

- The Department of Defense is the largest employer of scientists and engineers in the nation. Under the Federal STEM strategic plan, the Department is charged with developing STEM initiatives that are unique to the DoD mission and also help meet national goals of: improving instruction; increasing engagement; growing the pool of STEM degree holders; broadening the participation of historically underserved groups; and improving the graduate school experience.
- DoD STEM represents the Department's mission to attract, inspire, and develop exceptional STEM talent across the educational continuum to sustain the Department's technological edge.
- DoD STEM is under the National Defense Education Program authority, which saw a \$10 million increase from the President’s budget request- A total of \$79 million.
- More info [here](#)

Department of Energy

- The bill states: “The Department is prohibited from funding fellowship and scholarship programs in fiscal year 2017 unless the programs were explicitly included in the budget justification or funded within this agreement. The Department shall follow the provisions of Public Law 114-328 in carrying out the laboratory directed research and development program.”
- Overall, the Office of Science essentially remained flat, despite the President proposing to substantially cut it in 2018.
- The agreement provides \$2,090,200,000 for Energy Efficiency and Renewable Energy (EERE). The Department is encouraged to facilitate training and workforce development programs that assist and support workers in trades and activities required for the U.S. energy efficiency and clean energy sectors.
 - EERE efforts are focused on broadening participation to close the achievement gap in STEM fields. Multiple approaches to STEM jobs are provided to address the needs of the workforce, ranging from entry-level to the highly skilled.
 - More info [here](#)
- *Advanced Scientific Computing Research*.-Within available funds, the agreement provides \$164,000,000 for the exascale initiative, \$80,000,000 for the Argonne Leadership Computing Facility, \$110,000,000 for the Oak Ridge Leadership Computing Facility, \$92,145,000 for the National Energy Research Scientific Computing Center at Lawrence Berkeley National Laboratory, \$10,000,000 for the Computational Sciences Graduate Fellowship program, and \$45,000,000 for ESnet. Within available funds, the agreement provides up to \$20,000,000 for meeting the challenges surrounding memory and storage architecture.
- *Atomic Energy Defense Activities National Nuclear Security Administration*- The agreement provides \$436,500,000 for the Science program:
 - \$49,800,000 for Academia Alliances and Partnerships, of which \$18,959,000 is for the Minority Serving Institution Partnerships Program (MSIPP), including the Tribal College Initiative. The NNSA is directed to account for MSIPP funds within Academia Alliances and Partnerships in its budget request and to clearly specify the source of funding for any other academia programs within the NNSA's budget request, including those that contribute to the Integrated University Program.

Department of Homeland Security

- *The Science and Technology Directorate (S&T)*- Created by Congress in 2003, S&T conducts basic and applied research, development, demonstration, testing and evaluation activities relevant to DHS, including DHS STEM Ed programs.
 - Overall, the 2017 budget allows for a total of \$430 million for research and development.
 - This includes \$40,500,000, a \$1 million increase from 2016, provided for University Programs. S&T shall prioritize collaborations with qualified research universities to support critical research topics in priority areas, including border security, cybersecurity, and first responder technology.

- More info [here](#)
- *Cybersecurity Education and Awareness*. The bill includes a total of \$14,133,000 for cybersecurity education, of which \$13,698,000 is provided through the Cyber Infrastructure Resilience PPA and \$435,000 is provided through (Mission Support. Any future proposed funding reductions to cybersecurity education will not be considered unless the Directorate provides a clear plan for how the funded activities would be fully realigned within other agencies in a manner that sustains the objectives of this critical effort.

Department of Interior

- Provides for continued tribal education programs, but nothing specific mentioned about STEM education or related programs.

Environmental Protection Agency

- *Research: National Priorities*.-The bill provides \$4,100,000 which shall be used for extramural research grants, independent of the Science to Achieve Results (STAR) grant program, to fund high-priority water quality and availability research by not-for-profit organizations who often partner with the Agency.
- The final bill also kept the 2016 levels on environmental education.

Health and Human Services

- *NIH*
 - Science Education Partnership Awards (SEPA).-*SEPA* fosters important connections between biomedical researchers and K -12 teachers and their students. These connections establish an education pipeline to careers in biomedical sciences, which is one of the most important areas of workforce development in the U.S. economy.
 - The agreement expects SEPA to receive not less than \$18,541,000, the fiscal year 2016 level, and transfers SEPA funding to NIGMS following NIH's transfer of the program earlier this year.
 - The agreement continues supporting biomedical research along with the passage of the 21st Century Cures Act, a measure to boost biomedical innovation.
- *National Institute On Minority Health And Health Disparities (NIMHD)*
 - Research Centers in Minority Institutions (RCMIs).-The agreement continues to support the core mission of RCMIs to develop new investigators from under-represented communities and to conduct world-class biomedical research that emphasizes minority health and health disparities. The agreement expects the RCMIs to receive not less than \$58,461,000, which is the fiscal year 2016 level plus the proportional share of the general increase provided to NIMHD.

Department of State:

- The Act provides \$2,995,465,000 for Development Assistance, which contributes to partnerships on STEM-Ed development initiatives such as WiSci Girls STEAM Camp.
 - More info [here](#)

CONCLUSION

The STEM education community will be examining the FY 2018 budget request across agencies when it is released, which is expected the week of May 22nd. While the President's budget request is important to the annual budget and appropriations process, and his proposals will be considered, Congressional appropriators are charged with writing and passing spending proposals, and the FY 2017 package seems to reject many of the White House's ideas for reducing funding in STEM education and research. Regardless, the community will undoubtedly continue to communicate with friends on Capitol Hill to convey the importance of continued investments in research and education to preserve and nurture US innovation.