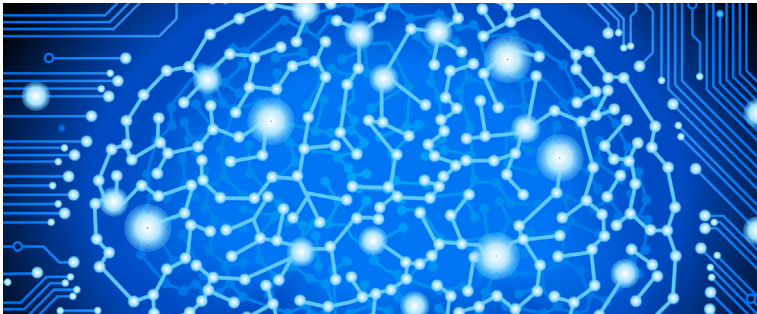


techVISION21

Inside June 2018 VIEW

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FY 2018 Omnibus: Surprisingly Good for R&D

Despite the severe cuts to R&D proposed in President Trump's Fiscal Year 2018 budget, the Consolidated Appropriations Act of 2018—signed by the President on March 23 and funding government for the remainder of FY 2018—was far more generous than expected, providing some of the largest increases in R&D funding in years. With Congress raising spending caps for two years, and showing no stomach for large cuts to Federal R&D programs, a steady funding state or some modest increases could be in the cards for FY 2019.

Congress appropriated \$176.8 billion for Federal R&D for FY 2018, an increase of more than \$20 billion or 12.8 percent over FY 2017 spending. Pure research funding (not including development and R&D facilities) rose to \$83.2 billion, an all-time inflation-adjusted high. Here are some highlights:

Department of Agriculture: The National Institute of Food and Agriculture, a main vehicle for agricultural research grants, received \$1.4 billion, \$45 million over FY 2017.

Department of Commerce: NIST received \$1.2 billion, up \$245 million over FY 2017, which includes funding for the Manufacturing Extension Partnership. The Economic Development Administration, which offers grants for technology-based economic development projects, received \$262.5 million, up \$25.5 million over FY 2017.

Department of Defense: The Omnibus provides \$88.3 billion for research, development, test and evaluation (RDT&E), \$16 billion more than FY 2017. DOD 6.1, 6.2 and 6.3 (basic and applied research, and advanced technology development) received \$14.9 billion, \$1.5 billion above FY 2017, an increase of 11.2 percent.

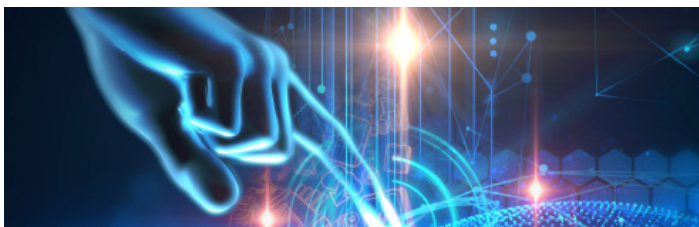
Department of Energy: Despite the Trump Administration's targeting DOE for major budget cuts, Congress increased funding for most of the department's R&D programs. This includes \$2.3 billion for the Office of Energy Efficiency and Renewable Energy, DOE's principal office for advancing clean energy technologies, an increase of \$232 million over FY 2017. This includes \$37.8 million for the Clean Cities program, which has funded clean energy transportation projects. The Clean Energy Manufacturing Innovation Institutes (CEMI) received full funding, the Manufacturing Demonstration Facility got \$20 million, and the Critical Materials Institute received \$25 million. The budget language suggests that DOE will fund another CEMI.

FY 2018 Appropriations: Select Department of Energy Programs
(thousands)

	FY 2017 Enacted	FY 2018 Omnibus	Percent Increase
Vehicle Technologies	306,959	337,500	9.9
Bioenergy Technologies	205,000	221,545	8.0
Hydrogen/Fuel Cell Technologies	101,000	115,000	13.8
Solar Energy	207,600	241,600	16.3
Wind Energy	90,000	92,000	2.2
Water Power	84,000	105,000	25.0
Geothermal	69,500	80,906	16.4
Advanced Manufacturing	257,500	305,000	18.4
Building Technologies	199,141	220,727	10.8
Office of Science	5,392,000	6,259,903	16.1
ARPA-E	306,000	353,314	15.4
Electricity Delivery/Energy Reliability	230,000	248,329	7.9

National Institutes of Health: NIH received \$37 billion, up \$3 billion over FY 2017. The BRAIN Initiative received a whopping 54 percent increase to \$400 million, while the Precision Medicine Initiative increased 26 percent to \$290 million.

National Science Foundation: NSF received \$7.8 billion, up \$295 million over FY 2017.



President Trump's FY 2019 Budget Proposal, Severe Cuts for Some

In February, the Trump Administration released its FY 2019 budget proposal, which included severe cuts for some Federal R&D and technology programs. In addition, while the budget proposed steady funding for some programs based on FY 2017 enacted levels, the proposed FY 2019 funding levels would, in some cases, now represent a cut, due to the generous FY 2018 Omnibus funding levels passed in March.

For example, the Trump FY 2019 budget proposes to eliminate the Commerce Department's Economic Development Administration, and Federal funding for the Manufacturing Extension Partnership. At the Department of Energy, the budget proposes to eliminate the Advanced Research Projects Agency-Energy (ARPA-E) and the Critical Materials Institute, provides no funding for the Clean Energy Manufacturing Innovation Institutes (CEMI), and would cut the Office of Science by \$869 million below FY 2018 levels. Programs at the Office of Energy Efficiency and Renewable Energy would take severe cuts below FY 2018, for example, the vehicle technologies program would be cut by 80 percent, bioenergy technologies by 83 percent, solar by 72 percent, wind by 64 percent and advanced manufacturing by 75 percent. And while the budget proposes to eliminate the CEMIs, the CEMIs' research agenda—such as composite materials, sensors and modeling for manufacturing, and wide bandgap semiconductors—would shift to a focus on early-stage applied R&D carried out by public-private research consortia, with a strong role for universities and national laboratories. However, the mood of the Congress, reflected in R&D funding levels in the FY 2018 Omnibus, strongly suggests these severe cuts are not in the cards.

The President's FY 2019 budget proposal does signal some areas of Administration R&D priority. These include: trusted microelectronics and semiconductors, hypersonics, cyber security R&D, detection of weapons of mass destruction and biodefense, earth observation from space, commercial space, artificial intelligence, high performance computing, and select areas of autonomous and unmanned systems. These areas of priority were also delineated in the August 2017 Memorandum to Heads of Executive Departments and Agencies on FY 2019 Administration Research and Development Priorities, signed by OMB Director Mick Mulvaney and OSTP Deputy Assistant to the President Michael Kratsios. Additional areas of priority highlighted in the memorandum include biometrics, energy storage, gene editing and quantum computing.



Trump Administration Seeks Improvements in Tech Transfer; Time to Speak-up

The U.S. Department of Commerce's National Institute of Standards and Technology (NIST) and the White House Office of Science and Technology Policy (OSTP) are co-leading the Lab-to-Market Cross Agency Priority goal, part of the President's Management Agenda.

As part of this initiative, NIST published a Request for Information (RFI) to gather feedback on the current state of federal technology transfer, and the public's ability to engage with federal laboratories and access federally funded R&D and facilities through collaborations, licensing and other mechanisms. NIST seeks comments on issues such as core Federal technology transfer principles and practices, systemic challenges to technology transfer and potential solutions, and other ways to significantly improve Federal technology transfer. Comments are due by July 30, 2018. The RFI can be accessed at: <https://www.federalregister.gov/documents/2018/05/01/2018-09182/request-for-information-regarding-federal-technology-transfer-authorities-and-processes>

NIST kicked off this new initiative with an Unleashing American Innovation Symposium on April 19, at which Federal government, university and industry representatives shared their perspectives. NIST hosted several events across the country to gather stakeholder experiences, opinions and recommendations on May 17 in San Jose, May 21 in Denver and May 31 in Chicago, and will host one on June 14 in Gaithersburg, Maryland.

Trump Administration Elevates its Focus on Artificial Intelligence

The Trump Administration has designated artificial intelligence (AI) as an R&D priority, and taken steps to elevate AI on the Federal government's agenda. On May 10, the White House convened 100 senior government officials, technical experts from academia, heads of industrial research labs, and business leaders in an Artificial Intelligence for American Industry Summit to discuss policies to maintain U.S. leadership in AI in areas such as R&D, workforce development, regulation and sector specific applications.

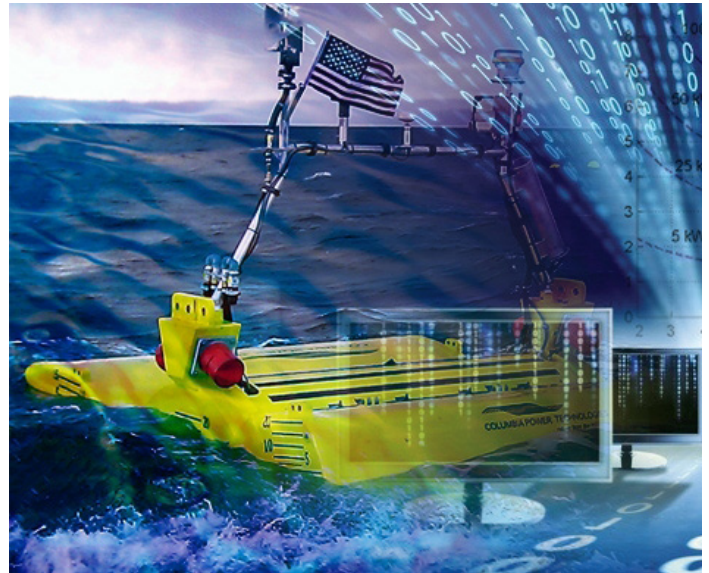
The White House has established a Select Committee on Artificial Intelligence under the National Science and Technology Council to: advise on interagency AI R&D priorities, consider Federal partnerships with industry and academia, establish structures to improve government planning and coordination of AI R&D, and identify opportunities to leverage Federal data and computational resources to support U.S. AI development. The Office of Science and Technology Policy, the National Science Foundation and DARPA chair the Committee, and members include senior R&D officials from across government, as well as representatives from the National Security Council, the Federal CIO and OMB. In addition, OSTP established an Assistant Director for Artificial Intelligence.

The Department of Defense is launching a Joint Artificial Intelligence Center (JAIC), to better coordinate DOD AI efforts, and coordinate with the intelligence community.



Still No Science Advisor

While new science and technology initiatives are emanating from the Executive Office of the President, President Trump has yet to nominate a Science Advisor and Director of the Office of Science and Technology Policy. In the absence of a Science Advisor, the White House point person on science and technology has been Deputy Assistant to the President for Technology Policy Michael Kratsios, a 31 year old with a finance background and degree in political science from Princeton. A recent White House report on first year science and technology highlights of the Trump Administration states that OSTP has built a team of 50 staff members.



Department of Energy Seeks Comments on Draft Marine and Hydrokinetic Technologies Market Report

DOE seeks comments on its draft analysis of the current economic and technical landscapes for 12 maritime markets where applications may exist for marine and hydrokinetic energy technologies: ocean observations, unmanned underwater vehicles/ autonomous underwater vehicles recharge, data centers, high cost utility grids, isolated community grids, canal power, aquaculture, algae, desalination of seawater, seawater mining, shoreline protection, and disaster relief and recovery. DOE is seeking feedback on contents of the draft report, as well as input on the value of each market, and recommendations on next steps and future extensions of analytical efforts to investigate potential future markets. Comments are due July 31, 2018. Access the Request for Information and draft report at: <https://eere-exchange.energy.gov/#Foaldeb84848-ef75-4a63-a69b-cccde11fcdf7>

Federal Funding Opportunities Available and May Accelerate

Federal science and technology agencies continue to issue funding opportunity announcements, which may accelerate as they work to obligate funding by the end of the fiscal year, September 30, given the unexpected boost to budgets from the recent Omnibus appropriation act. Here are a few funding opportunities open now:

Department of Agriculture: Agriculture and Food Research Initiative—Foundational and Applied Science: The Foundational and Applied Science Program supports grants in the six AFRI priority areas to advance knowledge in fundamental and applied sciences important to agriculture. The six priority areas are: plant health and production, and plant products; animal health and production, and animal products; food safety, nutrition and health; bioenergy, natural resources and environment; agriculture systems and technology; and agriculture economics and rural communities. Within each of these categories, USDA has listed its priorities for research. \$182 million to be awarded; award ceiling \$1 million. Letters of intent and proposal due dates vary by program area, most in the late July through September timeframe.

Department of Commerce, Economic Development Administration: 2018 Regional Innovation Strategies Program: EDA is soliciting proposals for the 2018 i6 Challenge and the 2018 Seed Fund Support (SFS) Grant Competition. The i6 Challenge is designed to increase entrepreneurship and applied research through the process of technology commercialization that results in new businesses, accelerated paths to export, increased FDI and new jobs. Funds support the development of proof-of-concept and commercialization programs which can be physical or virtual, existing or new. Through the SFS Grant Competition, EDA provides funding for technical assistance and operational costs—such as conducting feasibility studies, engaging in planning activities, etc.—that support the formation, launch or scale of cluster-focused seed funds that invest in innovation-based startups with a potential for high growth and job creation. \$21 million to be awarded; \$750,000 grant ceiling for i6, and \$300,000 grant ceiling for SFS. Applications due August 29, 2018

Department of Energy: Industry Partnerships for Cybersecurity of Energy Delivery Systems Research, Development and Demonstration: The National Energy Technology Laboratory is seeking proposals to conduct research, development and demonstrations for innovative approaches to advance cyber resilient energy delivery systems. Areas of interest are: redesign for cyber resilient architecture - electric and oil and natural gas subsectors, cybersecurity for the oil and natural gas environment, cybersecure communications, cybersecure cloud-based technologies in the operation technology environment, and innovative technologies that enhance cybersecurity in the energy sector. \$25 million to be awarded; \$4 million award ceiling. Applications due July 2, 2018.

Department of Energy: Integrated University Program: Enabling Technologies and Innovation & Monitoring, Technology and Verification: DOE seeks to establish two five-year cooperative agreements with consortia of institutes of higher education to allow them to receive and administer funds for student and faculty research, fellowships and scholarships awarded by the National Nuclear Security Administration's Office of Defense Nuclear Nonproliferation Research and Development. The two consortia would focus on: enabling technologies and innovation, and the other on monitoring, technology and verification. Areas of research include computer and engineering sciences for nonproliferation, advanced manufacturing for nonproliferation, novel instrumentation for nuclear fuel cycle monitoring, nuclear and particle physics, and other areas. Within these categories, technologies of interest include machine learning, data fusion, robotics and swarm networks, high performance computing, additive manufacturing, maker communities, and more. \$50 million to be awarded; \$25 million award ceiling. Applications due September 4, 2018.



NASA Space Technology Research Institutes: NASA seeks to establish two university-based research institutes in two technology areas: revolutionary propulsion for rapid deep space transit, and smart deep space habitats. The research institutes can receive a maximum of \$3 million per year for five years, for a maximum award of \$15 million. Notices of intent due July 2, 2018; preliminary proposals due July 30, 2018; invited full proposals due November 5, 2018.

Department of Defense: The Department of Defense—all service branches and headquarters—are issuing funding opportunities on an ongoing basis. In addition, many DOD component laboratories and bureaus have standing Broad Agency Announcements that highlight their areas of interest in which concept papers may be accepted and, potentially, research projects funded. DOD’s interests span a wide range of advanced technologies.

Technology Focus Areas of Recent Department of Defense Solicitations	
<ul style="list-style-type: none">• Training simulation software• Vehicle systems• Robotics• Net-centric systems• Autonomous Teammates• Space technologies	<ul style="list-style-type: none">• Machine learning• Sensors• Data analytics• Quantum computing• Advanced materials• Batteries

Should you have a research or innovative technology development project concept that may be of interest to the Department of Defense, TechVision21 can help you pinpoint potential funding sources, and develop a strategy for promoting your project within DOD and securing funding.

TechVision21 stands ready to help you pursue competitive grant programs and discretionary funding opportunities that match your needs and interests, develop a funding strategy and compelling message, navigate the process, develop a first rate proposal, and engage with public and private sector partners, government program managers, and Congressional appropriators to help achieve your goals and secure funding for your priority projects. Contact TechVision21 at: 202-966-6610, or ABalachandra@TechVision21.com



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