



FY2020 Appropriations Priorities

COMMERCE, JUSTICE, SCIENCE, & RELATED AGENCIES

ABOUT THE ASSOCIATION OF PUBLIC AND LAND-GRANT UNIVERSITIES

APLU is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities.

With a membership of 241 public research universities, land-grant institutions, state university systems, and affiliated organizations, APLU's agenda is built on the three pillars of increasing degree completion and academic success, advancing scientific research, and expanding engagement.

Annually, its 199 U.S. member campuses enroll 4.2 million undergraduates and 1.2 million graduate students, award 1.1 million degrees, employ 1.1 million faculty and staff, and conduct \$42.4 billion in university-based research.

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NATIONAL SCIENCE FOUNDATION (NSF)

APLU FY2020 Request: \$9 billion

(FY2020 PBR = \$7.1B; FY2019 = \$8.075B; FY2018 = \$7.767B)

The NSF funds merit-based research across disciplines and supports science, math and engineering education across the country, including at APLU universities in all 50 states. APLU supports an appropriation of \$9 billion for NSF in FY2020. This represents a \$925 million increase over FY2019 and would help set the agency on a path to the funding levels appropriate to carry out its important mission. Among the priorities this funding recommendation would allow for are a vital boost to NSF's core and interdisciplinary programs, further investment in NSF's 10 Big Ideas, required enhancements in workforce development programs, and much-needed midscale and large research infrastructure projects. Additional support to these efforts will help keep our nation at the forefront of scientific research and innovation.

Despite its importance in supporting the broad U.S. science ecosystem, funding for the NSF has failed to keep pace with our national needs. As national security officials, law enforcement representatives, and policy-makers are all expressing intense concerns that other nations may be usurping the U.S. lead in key fields of science and research, it is clear that our country faces a security and economic imperative to fund the NSF appropriately to restore and secure our global leadership. An appropriation of \$9 billion in FY2020 would be a very positive step to safeguard our preeminence in key areas of research such as artificial intelligence, quantum information sciences, and advanced manufacturing. Our global competitors are making bold investments in these areas. We can relinquish our leadership position to China and possibly other countries, or we can clearly demonstrate that science investments are a top priority for the U.S. The National Science Board's 2018 Science and Engineering Indicators report asserts that at current rates of growth, China will have overtaken the U.S. in science funding support by the end of last year. A lack of action to support basic research means the U.S. will trail in the race to discover new emerging technologies and to prepare the next generation of science and technology workforce. To maintain our position as the global innovation leader, funding for the NSF and other science agencies must be a top priority in FY2020 and in the years ahead.

Strong funding levels for NSF going forward will help develop and empower tomorrow's best and brightest scientific research workforce. We need to ensure that more Americans are contributing to our science, technology, engineering and mathematics (STEM) workforce, rather than sitting on the sidelines. The NSF INCLUDES national network, which APLU is actively helping to lead, is working to broaden

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participation in STEM through access and opportunities for students and researchers from all backgrounds across the nation. Additionally, the NSF fellowship programs are among our nation's most effective domestic science talent development programs. Ensuring that such programs are funded at the highest possible levels is essential to countering the dual-pronged concerns that rival countries are enticing U.S. talent with foreign resources and that those other countries are more effectively developing their own STEM workforces.

To be clear, there is nothing magical about \$9 billion. Rather, it is merely one step forward on what must be a multi-year course to right-set this foundational U.S. science agency. Given that the NSF's current resource constraints required it to turn away nearly \$4 billion in research proposals deemed "very good or higher" in FY2017 and also to leave behind \$2 billion in mid-scale research infrastructure ideas deemed transformational to U.S. science and engineering, it is evident that a funding increase will not go to waste. The Foundation has many worthy research, talent development, and infrastructure opportunities to support.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

Science Mission Directorate

APLU FY2020 Request: \$7.5 billion

(FY2020 PBR = \$6.304B; FY2019 = \$6.905B; FY2018 = \$6.222B)

The NASA Science Mission Directorate is an essential part of meeting the growing challenges to fully understand global changes to the Earth and answer fundamental questions regarding the universe through space exploration. NASA Science includes Earth Science, Planetary Science, Astrophysics, the James Webb Space Telescope and Heliophysics. In order to cover anticipated increases necessary for continued development of WFIRST, James Webb, Mars Sample Return, Europa Clipper, and implementation of recommendations from the Earth Science and Applications from Space 2017 Decadal Survey, APLU recommends funding of at least \$7.5 billion for NASA Science in FY2020.

Aeronautics Research Mission Directorate

APLU FY2020 Request: \$790 million

(FY2020 PBR = \$667M; FY2019 = \$725M; FY2018 = \$685M)

APLU recommends funding of \$790 million for the Aeronautics Research Mission Directorate (ARMD) which supports cutting-edge aviation research. Continued investment in research such as hypersonics, new methods of propulsion, and material science are crucial to push the envelope of civilian aeronautics, and these discoveries are routinely leveraged for the benefit of the space program. This increased funding will help ensure a comprehensive aviation research effort at ARMD, meet recommendations included in the 2012 National Academies report "Recapturing NASA's Aeronautics Flight Research Capabilities," and maintain the U.S.'s leadership position as the global aeronautics leader.

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Space Technology Directorate

APLU FY 2020 Request: \$973 million

(FY2020 PBR = \$1.014B; FY2019 = \$927M; FY2018 = \$760M)

The Space Technology Directorate supports innovative research and technology development, including through grants to researchers at APLU institutions, needed for current and future NASA missions. The scientific knowledge gained from the Space Technology Directorate has led to advancements that improve the lives of all Americans, such as the development of cutting-edge medical devices including pacemakers and Lasik eye surgery, increased agricultural production, and development of improved military protective armor. APLU recommends funding this important directorate at \$973 million.

National Space Grant College and Fellowship Program

APLU FY 2020 Request: \$50 million

(FY2020 PBR = \$0; FY2019 = \$44M; FY2018 = \$40M)

The National Space Grant College and Fellowship Program is a national network of universities working together to support and expand science and engineering education related to aerospace. APLU recommends funding Space Grant at \$50 million for FY2020 and supports Congress' directive in FY2016 and the House Appropriations Committee FY2016 bill which caps the administrative fees of each program within the Education Office at five percent.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

Office of Oceanic and Atmospheric Research (OAR)

APLU FY 2020 Request: \$556 million

(FY2020 PBR = \$309M; FY2019 = \$525M; FY2018 = \$508M)

The Office of Oceanic and Atmospheric Research (OAR) provides the research foundation for understanding the complex systems that support our planet. NOAA funds crucial science related to our oceans and atmosphere that provides decision makers with critically important data and services which enhance the nation's economy, security, and environment. Further, OAR supports critical environmental research that helps communities better predict, plan for, and rebound from severe weather events. This research helps communities build resiliency, reducing impact and recovery time after a catastrophic event. APLU supports \$556 million for OAR in FY2020.

National Sea Grant College Program (including Marine Aquaculture Program)

APLU FY2020 Request: \$93.5 million

(FY2020 PBR = \$0; FY2019 = \$80M; FY2018 = \$76.5M)

The National Sea Grant College Program is a nationwide network of 32 university-based programs that work with coastal communities. Sea Grant engages this network of the nation's top universities in conducting scientific research, education, training, and extension projects designed to foster science-based decisions about the use and conservation of our aquatic resources. The program addresses national priorities at the local level, while identifying citizens' needs to help guide state and national research agendas. APLU urges Congress to provide \$93.5 million for the National Sea Grant College Program in FY2020.

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NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

Manufacturing Extension Program (MEP)

APLU FY2020 Request: \$154 million

(FY2020 PBR = \$5M*; FY2019 = \$140M; FY2018 = \$140M)

**Funding to close the program.*

The Manufacturing Extension Program (MEP) focuses on increasing the competitiveness of the U.S. industrial base in every state by serving as a catalyst for strengthening American manufacturing. In turn, this helps transform the sector into a more efficient and powerful engine of innovation. The MEP centers are non-profit, university or state-based organizations which provide manufacturers with an array of services that focus on growth, productivity, and efficiency. As a public-private partnership, MEP delivers a high return on investment to taxpayers. The Upjohn Institute for Employment Research conducted a [study](#) of MEP, issued in April 2018, and found that the program generates a 14.5:1 return on investment. APLU urges Congress to fund the MEP program in FY2020 at \$154 million.

National Network for Manufacturing Innovation (NNMI)

APLU FY2020 Request: \$25 million

(FY2020 PBR = \$15M; FY2019 = \$15M; FY2018 = \$15M)

The NIST National Network for Manufacturing Innovation (NNMI), also known as Manufacturing USA, is a network of 14 manufacturing institutes where industry, universities, and government partners can collaborate to develop and accelerate the commercialization of innovative manufacturing technologies. These institutes also train the workforce needed to work in advanced manufacturing industries. NNMI helps fuel our nation's position as a global leader in advanced manufacturing. APLU recommends \$25 million for NNMI in FY2020 to help support the program's mission and fund an additional institute.

Economic Development Administration (EDA)

Regional Innovation Program

APLU FY2020 Request: \$35 million

(FY2020 PBR = \$0; FY2019 = \$23.5M; FY2018 = \$21M)

The Regional Innovation (RI) Program funds local organizations that are growing jobs and economies through science, technology, innovation and entrepreneurship. The program utilizes competitive grants to encourage and support the development of products into businesses. Universities often successfully compete for RI Program funds, which helps them conduct proof of concept testing for early stage technologies and aids them in growing their regional economies with targeted innovation. Increased resources for the program are instrumental to cultivating entrepreneurship, growing new startups, and bringing new products and ideas to market, efforts that are crucial in building and maintaining the U.S. competitive edge.