



FY 2023 Appropriations Priorities

Commerce, Justice, Science, & Related Agencies

Agency	Account	APLU FY2023 Request
National Science Foundation		\$11 billion
National Aeronautics and Space Administration (NASA)	Science Mission Directorate	\$9 billion
	Aeronautics Research Directorate	\$1 billion
	Space Technology	\$1.5 billion
	Space Grant Program	\$65 million
National Oceanic and Atmospheric Administration (NOAA)	Oceanic and Atmospheric Research - Operations, Research and Facilities	\$800 million
	Sea Grant	\$140 million
	Marine Aquaculture Program	\$18 million
National Institute for Standards and Technology (NIST)	Manufacturing Extension Partnerships	\$275 million
	National Network for Manufacturing Innovation	\$80 million
Economic Development Administration	Build to Scale (formerly Regional Innovation Strategies Program)	\$50 million

NATIONAL SCIENCE FOUNDATION

APLU FY2023 Request: \$11 billion

FY2023 PBR = \$10.5 billion; FY2022 = \$8.838 billion;

FY2021 = \$8.487 billion

The National Science Foundation (NSF) funds merit-based fundamental research across disciplines and supports science, math, and engineering education at universities throughout the nation. NSF-supported research has yielded groundbreaking discoveries and novel technologies – stimulating new industries and enhancing health and national security. For example, NSF-funded research has supported technological advancements such as artificial intelligence, nanotechnology, 3-D printing, next generation computer chips, MRI scans, and threat detection devices. APLU supports an appropriation of at least \$11 billion for NSF in FY2023.

APLU's request for at least \$11 billion for NSF in FY2023 would also allow the agency to carry out its important mission and provide a vital boost to NSF's core and interdisciplinary

programs, further strategic investments in industries of the future such as AI and quantum, enhance critical workforce development programs hosted by NSF, and infuse funds into much-needed midscale and large research infrastructure projects. There is demonstrated need for immediate increased funding at NSF. Every year, NSF must leave numerous excellent proposals on the table due to insufficient grant funds. For example, NSF's resource constraints required it to turn away approximately \$3.4 billion in research proposals deemed "very good or higher" in the merit review process in FY2018 and also leave behind \$2 billion in mid-scale research infrastructure ideas deemed transformational to U.S. science and engineering. A significant funding increase would lead to new knowledge and technologies, igniting the U.S. economy, improving our nation's health and well-being, and better safeguarding our country from national security threats.

Furthermore, strong funding levels for NSF will develop and empower tomorrow's scientific research workforce. We need to ensure a stronger pipeline of Americans studying science, technology, engineering, and mathematics (STEM) and ultimately contributing to our STEM workforce. NSF funds critical fellowship and traineeship programs that are our nation's most effective domestic science talent development programs. These programs are essential to countering the dual-pronged concerns that international competitors are enticing U.S. educated talent with foreign resources and that other countries are more effectively developing their own STEM workforces.

The growth of the U.S. economy and our leadership around the world depends on our nation's continued ability to lead in scientific discovery and technological innovation. The latest National Science Board Science and Engineering Indicators report shows China's annual increase of R&D spending has averaged 10.6 percent over the last decade while the United States' annual average increase was only 5.4 percent over the same period. As a result, the share of global R&D the United States performs has declined significantly.

There is demonstrated bipartisan support for strategically increasing funding for NSF. Both the House and the Senate have passed legislation to significantly increase NSF funding authorizations and to create a new technology development focused directorate at the agency. If to the U.S. is to remain at the forefront of scientific discovery, continue leading the world in science and engineering, and reclaim our role as the "uncontested leader," we must invest strategically and robustly.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

SCIENCE MISSION DIRECTORATE

APLU FY2023 Request: \$9 billion

FY2023 PBR = \$7.98 billion; FY2022 = \$7.614 billion;

FY2021 = \$7.301 billion

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. New knowledge made possible from the Science Mission Directorate inspires future generations to pursue careers in STEM fields, sustaining U.S.

leadership in groundbreaking discoveries. NASA Science includes four distinct divisions: Earth Science, Planetary Science, Astrophysics, and Heliophysics.

AERONAUTICS RESEARCH MISSION DIRECTORATE

APLU FY2023 Request: \$1 billion

FY2023 PBR = \$971.5 million; FY2022 = \$880.7 million;

FY2021 = \$828.7 million

The Aeronautics Research Mission Directorate (ARMD) supports cutting-edge aviation research. Additional investment in research such as hypersonics, new methods of propulsion, and material science are crucial to push the envelope of civilian aeronautics. NASA aeronautics has made decades of contributions to aviation. Every U.S. commercial aircraft and U.S. air traffic control tower has NASA-developed technology that improves efficiency and safety. Research conducted by ARMD directly benefits today's air transportation system, the aviation industry, and the passengers and businesses who rely on aviation every day. Increased funding will help ensure a comprehensive aviation research effort at ARMD and maintenance of the U.S.'s leadership position as the global aeronautics leader.

SPACE TECHNOLOGY DIRECTORATE

APLU FY2023 Request: \$1.5 billion

FY2023 PBR = \$1.44 billion; FY2022 = \$1.1 billion; FY2021 = \$1.1 billion

The Space Technology Directorate supports innovative research and technology development, including through grants to researchers at our nation's research universities, needed for current and future NASA missions. The scientific knowledge gained from the Space Technology Directorate has led to advancements that extend far beyond NASA, improving 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.

NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM (SPACE GRANT)

APLU FY2023 Request: \$65 million

FY2023 PBR = \$57 million; FY2022 = \$54.5 million; FY2021 = \$51 million

Space Grant is a national network of colleges and universities that expands opportunities for Americans to understand and participate in NASA's aeronautics and space projects by enhancing science and engineering education, research, and public outreach efforts. The Space Grant national network includes over 850 affiliates from universities, colleges, industry, museums, science centers, and state and local agencies. These affiliates belong to one of 52 consortia in all 50 states and the District of Columbia. The consortia fund nearly 4,000 fellowships and scholarships for students pursuing careers in STEM, as well as curriculum

enhancement and faculty development. Member colleges and universities also administer pre-college and public service education projects in their states.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH (OAR)

APLU FY2023 Request: \$800 million

FY2023 PBR = \$666 million; FY2022 = \$599.4 million;

FY2021 = \$570.6 million

The NOAA Oceanic and Atmospheric Research, Operations, Research and Facilities account supports basic research that improves understanding of ocean and atmospheric processes to advance weather predictions and forecasts, ocean acidification and climate change impacts, and sea level changes/dynamics. The NOAA Research network consists of, among other activities, grants program through the Climate Program Office, external research at Sea Grant universities and programs, and Cooperative Institutes with academia. Recent OAR research forecasts energy demand scenarios, seasonal wildfires, and large storm events; assessing local impacts of projected sea-level rise; improving seasonal precipitation and drought predications; and understanding atmospheric rivers and other causes of coastal and inland extreme flooding. Research is translated into information used by private businesses and public sector managers across all levels of business and government.

The Office of Oceanic and Atmospheric Research (OAR) Cooperative Institutes (CI) and extramural research via Sea Grant universities increase the effectiveness of oceans and climate observations, monitoring, modeling, and exploration. Cooperative Institutes, established through an open competition, serve both scientific and educational missions, and represent strong partnerships between NOAA and the 57 CI-affiliated universities and research institutions spread across 23 states and the District of Columbia. Whether co-located within NOAA laboratories or aligned in geographical consortia nationwide, CIs represent collaborations between scientists in a variety of settings. Through NOAA-sponsored fellowships at partner academic institutions, CIs also provide teaching, training, and mentoring to the nation's future scientists and scientific workforce. These long-term, collaborative research partnerships foster and promote NOAA's scientific discovery and educational capabilities now and in the future. The CIs also provide the public and government with data to make real-time decisions and to shape long-term policies that enhance public health and protect both commercial and national security interests.

APLU urges support for OAR at \$800 million to ensure that NOAA's predictive capabilities are fulfilled through continuous improvement of analytical capabilities, networks of experts supported by OAR, and facilities that make advancements possible.

NATIONAL SEA GRANT COLLEGE PROGRAM

APLU FY2023 Request: \$140 million

FY2023 PBR = \$76.3 million; FY2022 = \$76 million; FY2021 = \$69.5 million

Over 126 million residents — 40 percent of the population of the United States — live in coastal counties. These counties employ 56 million people, resulting in \$3.4 trillion in wages annually, and produce more than \$8.3 trillion in goods and services that support coastal and non-coastal communities. Weather- and climate-related hazards impacting these communities have increased at an alarming rate. The total cost of all U.S. billion-dollar disasters over just the last five years (2015-2019) exceeds \$525 billion. A joint federal, state, and local investment, Sea Grant provides solutions for the issues affecting our nation’s coastal communities (including the Great Lakes, Gulf of Mexico and communities on the Atlantic, Caribbean, and Pacific coasts), yielding quantifiable economic, social, and environmental benefits. Sea Grant is a unique university-based program within NOAA that awards over 90 percent of its appropriated funds to coastal states through a competitive process to address issues identified as critical by coastal communities throughout the United States.

The Sea Grant College Program awards grants and contracts to initiate and support programs at Sea Grant colleges and other institutions for research, education, and advisory services in any field related to the conservation and development of marine resources. In 2020, the Sea Grant program helped generate an estimated \$520 million in economic benefits; created or supported 11,000 jobs; created or sustained 1332 businesses; provided 34 state-level programs with funding that assisted 285 communities improve their resilience; helped over 11,000 people adopt safe and sustainable fishing practices; helped restore or protect an estimated 4.2 million acres of habitat; and supported the education and training of nearly 2000 undergraduate and graduate students.¹ Sea Grant fosters cost-effective partnerships among state universities, state and local governments, NOAA, and coastal communities and businesses, leveraging nearly \$3 for every \$1 appropriated by Congress.

The frequency of “sunny day” flooding alone has doubled since 2000 in the United States. Exacerbated by sea level rise, these events overwhelm sewage treatment plants and public utilities, disrupt transportation corridors, reduce property values of homes and businesses, and threaten public health. Fluctuating water levels in the Great Lakes have resulted in millions of dollars of damage and economic impacts. The program will protect lives, sustain critical infrastructure, protect, and restore critical natural resources, enhance economic opportunity and support more rapid economic recovery after events.

¹ <https://seagrant.noaa.gov/Portals/o/Documents/Handouts/Seagrant-MainFactsheet-Oct2021-508.pdf>

MARINE AQUACULTURE PROGRAM

APLU FY2023 Request: \$18 million

FY2023 PBR = \$13.2 million; FY2022 = \$13.5 million; FY2021 = \$13 million

Aquaculture supplies more than 50 percent of all the world's human consumption of seafood. The Sea Grant Marine and Great Lakes Aquaculture program develops innovations in the aquaculture industry, technology transfer, and support America's expanding aquaculture industry. Pressures from a changing climate, rising sea levels, changes in ocean chemistry, and an ever-dynamic industry increase demands for aquaculture breeding, production, and sustainable harvests. Sea Grant's \$13 million investment in FY 2020 resulted in over \$80 million in economic impact because of economic return from developments in aquaculture stocks and management. New solutions, made possible with an investment in the Marine Aquaculture Program of \$18 million in FY23, will result in greater coastal employment, grow the number of aquaculture related workforce, and create opportunities for growth of aquaculture-based businesses.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

MANUFACTURING EXTENSION PROGRAM (MEP)

APLU FY2023 Request: \$275 million

FY2023 PBR = \$275 million; FY2022 = \$158 million; FY2021 = \$150 million

APLU requests \$275 million for the Manufacturing Extension Program (MEP) for FY2023. This program improves the competitiveness of U.S.-based manufacturing by making manufacturing technologies, processes, and services more accessible to small and medium-sized manufacturers. MEP centers are based at university, non-profit, or state-based organizations throughout the nation providing manufacturers with expertise to help them reduce costs, create new products, develop the next-generation workforce, find new markets, and achieve business success. Universities play critical roles in the MEP program. Some host MEP centers, serving as a front door to university technology assets. Many universities conduct applied research to solve problems, evaluate potential products, perform testing, or provide a critical flow of talent into small and medium sized manufacturers.

The program has grown from a pilot project of just three MEP Centers to one center in every state and Puerto Rico — building a network of organizations to provide manufacturers with a wide array of comprehensive and critical services for their manufacturing business. As a public-private partnership, MEP delivers a high return on investment to taxpayers. For example, according to the MEP National Network 2021 survey, over 125,746 jobs were created or retained by the more than 34,300 manufacturers interacting with MEP Centers across the country. In addition, these MEP Center clients reported that MEP assistance led to \$14.4 billion in sales, \$1.5 billion in cost savings, and \$5.2 billion in new client investments.²

² [MEPNN FY21 Impacts Overview \(nist.gov\)](https://www.nist.gov/MEPNN/FY21-Impacts-Overview)

NATIONAL NETWORK FOR MANUFACTURING INNOVATION (NNMI)
APLU FY2023 Request: \$80 million
FY2023 PBR = \$97.5 million; FY2022 = \$16.5 million;
FY2021 = \$16.5 million

The NIST National Network for Manufacturing Innovation (NNMI), also known as Manufacturing USA, is a network of 16 manufacturing institutes where universities, industry, and government partners collaborate to develop and accelerate the commercialization of innovative manufacturing technologies and helps fuel our nation's position as a global leader in advanced manufacturing. Each institute focuses on certain technologies such as 3-D printing, digital manufacturing, smart manufacturing, and advanced robotics manufacturing.

According to Manufacturing USA's November 2021 report, in 2020 the 16 manufacturing innovation institutes collaborated with over 1,240 manufacturers, conducted more than 500 applied research and development technology projects, and trained more than 70,000 people in advanced manufacturing.³

It is estimated that in 2028 manufacturers will need to fill 4.6 million jobs in the United States. Meeting this demand means recruiting more people into manufacturing by raising awareness of the career possibilities in technology and programming – making workforce training a large component of Manufacturing USA's mission⁴. Many of the institutes provide workforce training opportunities to new and existing manufacturing workers so that they can develop the skills they will need in the new advanced manufacturing economy. For example, ACMI, a NNMI Institute in partnership with the University of Tennessee, created an advanced composites internship program based on experiential learning, mentorship, professional development, and industry collaboration that has provided 119 opportunities for students with 40 partners at 25 different locations such as member companies, national labs, and universities. In addition, NIIMBL, a NNMI in partnership with the University of Delaware created a program to introduce talented African American, Latinx, and Native American students to exciting careers in the biopharmaceutical industry and connected participating companies with prospects for internships and future recruitment.

APLU requests \$TBD for NNMI in FY2023 to help support the program's mission and fund at least two new institutes.

³ [Manufacturing USA Highlights Report 2021 \(nist.gov\)](https://www.nist.gov/manufacturing-usa-highlights-report-2021)

⁴ [Manufacturing Workforce Development | Manufacturing USA](#)

ECONOMIC DEVELOPMENT ADMINISTRATION (EDA)

BUILD TO SCALE (B2S)

APLU FY2023 Request: \$50 million

FY2023 PBR = \$47 million; FY2022 = \$45 million; FY2021 = \$38 million

EDA's Build to Scale program (B2S) provides competitively awarded grants to universities, startups, nonprofits, and entrepreneurship-focused organizations that further technology-based economic development initiatives. B2S supports high quality job growth, improves economic opportunities, and supports the next generation of industries. Through B2S grants, universities and partner organizations leverage federal funds to equip entrepreneurs with the skills to accelerate enterprise growth and access human capital; facilitate connections for startups with new and existing capital providers and enable investors to support regional innovation; and establish replicable and scalable best practices for coordinated public and private economic development initiatives.

There is demonstrated need to increase federal support for this program. In 2021, the EDA awarded 50 grants totaling \$36.5 million, but the awardees leveraged an additional \$40 million in matching funds from a variety of private and public sector sources, making this program a successful partnership between the federal government and grantees. APLU requests at least \$50 million for this program to increase the number of awards the EDA can administer and reach the authorized amount for this program.

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 244 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 202 U.S. member campuses enroll 4.2 million undergraduates and 1.2 million graduate students, award 1.2 million degrees, employ 1.1 million faculty and staff, and conduct \$48.7 billion in university-based research.