



August 19, 2021

The Honorable Maria Cantwell
Chair
Committee on Commerce, Science, and
Transportation
United States Senate
254 Russell Senate Office Building
Washington, D.C. 20510

The Honorable Roger Wicker
Ranking Member
Committee on Commerce, Science, and
Transportation
United States Senate
560 Dirksen Senate Office Building
Washington, DC 20515

The Honorable Eddie Bernice Johnson
Chair
Committee on Science, Space, and
Technology
United States House of Representatives
2321 Rayburn House Office Building
Washington, DC 20515

The Honorable Frank Lucas
Ranking Member
Committee on Science, Space, and
Technology
United States House of Representatives
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairwoman Cantwell, Ranking Member Wicker, Chairwoman Johnson, and Ranking Member Lucas,

On behalf of the Association of Public and Land-grant Universities (APLU), thank you for your leadership to make a bold investment in our nation's research and development ecosystem, and for passing the U.S. Innovation and Competition Act (S. 1260), the NSF for the Future Act (H.R. 2225) and the DOE Science for the Future Act (H.R. 3593) through your respective chambers. As Congress negotiates final legislation, I write today to share APLU's views on critical policy provisions we urge be retained in any final agreement.

As you know, APLU is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities. Annually, APLU's 201 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 \$46.8 billion in university-based research.

Large-scale investment in U.S. R&D could hardly be more urgent. Over the past several decades, federal investment in research and development has flatlined as a share of the economy even as our global competitors have jumpstarted innovation and economic growth through such investment. When measured as a share of the economy, U.S. investment in these areas is just a third of what it was at its peak.

U.S. leadership in research and development now is arguably more important than ever before. As population growth slows, breakthrough technologies that boost productivity will become more important to boosting economic growth and lifting living standards for all Americans. We need to look no further than the dawning sectors of the future – from biotechnology to robotics,

artificial intelligence to cybersecurity – to see that U.S. primacy in these areas has massive ethical and geopolitical implications.

New NSF Directorate

To boost the long-term competitiveness of the U.S., we must continue to invest in curiosity-driven fundamental research that has been a hallmark of our nation’s S&T leadership. The National Science Foundation (NSF) is a vital part of our nation’s S&T ecosystem in supporting fundamental research and the people (researchers and students) who are creating new knowledge that will transform the future. The primary mission of NSF must be protected and funded robustly.

Yet we also recognize the need to advance more research into the marketplace through use-inspired research designed to solve practical problems. Both the House and Senate approaches recognize this need through the creation of a new directorate at the National Science Foundation. APLU supports this exciting vision and believes the new directorate is a natural and essential extension of the “broader impacts” review criteria that NSF has promoted for many years.

It is imperative to give NSF as much flexibility as possible to launch this new directorate. Rigid metrics and predetermined outcomes may prove challenging as NSF is asked to set up a new kind of research entity more focused on technological and market outcomes. It is essential that pressure for “quick wins” be tempered with the patience and time necessary to establish the needed infrastructure to make lab-to-marketplace success stories.

We appreciate the directive both bills give to allow NSF the authority to develop and test alternative merit review processes and to encourage new research consortia between academia and industry.

Institutional Diversity

APLU appreciates both the House and Senate’s desire to promote geographic, demographic, and institutional diversity in the research projects funded by NSF and the new directorate. As the National Science Board noted in their Vision 2030 report, “Talent is the treasure on which America’s S&E enterprise and the nation’s prosperity, health, and security depend. Today, S&E knowledge and skills matter not only for scientists and engineers engaged in R&D, but also for a range of jobs across the economy that historically did not require such skills.” We cannot know from what states or size institutions our nation’s next research leaders will come. Failing to provide opportunity for more institutions and researchers to make unique contributions will hamper realizing our long-term potential.

Both bills contain provisions to support research development at Historically Black Colleges and Universities and Minority Serving Institutions. While NSF has current programs in this area, investments in these institutions have been woefully inadequate. We request capacity-building provisions be retained in any final agreement.

Both bills also contain provisions to create a pilot program focused on “Emerging Research Institutions” (ERI). The pilot program would require large research institutions to partner with

smaller research institutions and dedicate 25 percent of multi-institute collaborations over \$1 million to the ERI for building research capacity and supporting faculty and students. This is a promising model to be explored. We believe that the ERI definition should be appropriately narrowed to focus on institutions with an existing STEM undergraduate and graduate program.

APLU believes that all capacity building programs should leverage NSF's tradition of supporting proposals of the highest merit through peer review to ensure the highest possible return on federal investment. Furthermore, as Congress defines programs to expand research capacity across a larger set of potential grantees, NSF needs appropriate flexibility to design specific program attributes and enhance opportunities for success.

APLU members are working with rural communities across North America to improve educational options, economic vitality, and quality of life. Land-grant universities, for example, deliver trusted, science-based information and educational programs for individuals, families, and communities through their Cooperative Extension efforts. We request the language recognizing Cooperative Extension as a trusted partner found in the Rural STEM Education portion of the Senate bill and Commerce Department Technology HUBs be retained in any final agreement. We also thank the House for passage of the Rural STEM Education Research Act (H.R. 210), which contains similar provisions as S. 1260.

APLU is supportive of the formal authorization of the NSF Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) program in the House bill (H.R. 2225). APLU currently co-leads the NSF INCLUDES [Aspire Alliance](#), which is a multi-institutional collaboration currently involving over 80 community colleges and universities. Working at the individual, institutional, regional, and national levels, the project provides the higher education and research community with promising practices to broaden student participation in STEM programs, foster career pathways toward the professoriate, and tools to effectively recruit, hire, and retain STEM faculty from underrepresented groups.

Supporting the Next Generation

APLU appreciates the strong support for scholarships, fellowships, and traineeships throughout the bills. The provisions in H.R. 2225 to increase stipends for the Graduate Research Fellowship Program and the National Research Traineeship programs are greatly needed. Support for graduate students through mentoring and professional development, especially in light of the translational research emphasis envisioned in the new NSF directorate, is also necessary. Students from all backgrounds should be encouraged to pursue graduate degrees in STEM fields and should be provided the resources to explore both academic and non-academic careers. We also support the House proposal that NSF examine the effects of traineeships, fellowships, and teaching and research assistantships on outcomes for graduate students.

We thank both the House and Senate for legislation to support early-career researchers in both S. 1260 and H.R. 144, Supporting Early-Career Researchers Act. Support is especially needed for those who have been particularly hard hit by research delays due to the COVID pandemic, such as women and individuals from underrepresented minority groups. We must support this generation of researchers who may be facing uncertain career prospects.

The COVID pandemic has also shown the significant need to provide greater grant flexibility and other supports to researchers with caregiving responsibilities for small children or a sick family member. The instructions to the Office of Science Technology Policy to provide guidance to federal agencies on this topic in S. 1260 are welcomed by many in the academic community.

Infrastructure

Access to leading-edge scientific equipment and infrastructure are vitally needed to help our nation's scientists and engineers create new knowledge and innovations to improve human health, address the challenges of climate change, and support our economic and national security.

We support the expansion of current infrastructure programs at NSF such as the Mid-Scale Research Infrastructure program, as proposed in H.R. 2225. Demand for NSF infrastructure programs are high. For example, for the Midscale Research Infrastructure (RI)-1 grant opportunity, NSF received 247 pre-proposals totaling \$2.6 billion, invited just 42 to make full proposals, and ultimately was only able to fund 10 awards in 2019.

We also appreciate the support for the investment in testbeds including fabrication facilities and cyber infrastructure for advanced technologies called for in S. 1260.

Technology Commercialization

APLU commends the Senate provisions in S. 1260 to support technology transfer and commercialization through the Academic Technology Transfer Enhancement. The cost of patenting, licensing, and commercializing technology is burdensome for many institutions, especially when filing patents both domestically and internationally. We request this provision be retained in a final agreement. The creation of collaborative innovative resource centers where institutions with firmly established technology transfer programs can provide advice and guidance to other institutions and start-ups is also an exciting idea. However, we have serious concerns about the "supplement not supplant" language added to this section of the bill. No other existing NSF program has such restrictions, and we find federal restrictions on a higher education institution's own budget highly unusual, inappropriate, and unnecessary.

Department of Energy Office of Science

As previously expressed in our [June 14, 2021 letter](#) to the House Science Committee, APLU supports H.R. 3593, the Department of Energy Science for the Future Act. This bill is the first-ever comprehensive reauthorization bill for the Department of Energy's (DOE) Office of Science. The DOE Office of Science is the leading funder of research in the physical sciences and an integral sponsor of critical U.S. scientific infrastructure. We appreciate the well-defined, well-vetted, and bipartisan roadmap for the Office in the bill and support its inclusion in any final competitiveness package.

Research Security

Both the House and Senate bills contain provisions focused on safeguarding federally supported research from attempts by foreign governments to steal intellectual property. APLU's members are deeply committed to safeguarding this research while also engaging in appropriate international scientific collaborations that are a cornerstone of modern scientific practice. APLU also values our university faculty from other countries who provide critical contributions to our U.S. scientific and engineering enterprise and our international students who will be our future contributors.

Congress has already passed new research security provisions into law through both the FY20 and FY21 National Defense Authorization Act, the National Science & Technology Council just published "Recommended Practices for Strengthening the Security and Integrity of America's Scientific and Technological Research Enterprise" in January on this year, and federal agencies are in the process of implementing new funding disclosure regulations and mechanisms. Congress should support ongoing the interagency activity led by the White House Office of Science and Technology Policy to ensure common requirements across federal agencies and unify reporting systems, not create new bureaucratic hurdles that will do little to ensure research security.

As expressed in our [April 20, 2021 letter](#) joint association letter, we remain opposed to the proposed CFIUS review of certain foreign gifts and contracts (Sec 3132 of S. 1260). This provision has the potential to discourage and delay a wide range of legitimate international research partnerships.

In addition, APLU opposes expanding reporting on individual faculty and staff activity under Section 6124 of S. 1260. Federal research agencies have updated policies and are currently engaged in the process of unifying definitions and forms for researchers to disclose all current and pending research support (both foreign and domestic). Federal research agencies, not the Department of Education, are best equipped to do the proper review and vetting of individual researcher's disclosure reports.

Given the large number of research security provisions in both S. 1260 and H.R. 2225, APLU will provide further comment on research security provisions in additional correspondence. APLU institutions recognize their responsibility to appropriately protect federally supported discoveries and technologies on their campuses. They are working to diligently, in consultation with federal agencies, to improve policies and procedures to prevent the exploitation of the U.S. academic environment. We share the government's strong interest in safeguarding the integrity of federally funded research. If Congress feels it is necessary to enact even more regulations in this space, we urge you to ensure new research security regulations are appropriate in scope, not duplicative, and do not needlessly hamper appropriate international education and scientific partnerships.

Administrative Coordination

As a final point, APLU and its member institutions are committed to sound management of federal research investments. We ask that Congress recognize the added administrative costs and burdens associated with managing research security, as well as other requirements in these bills such as public access to research data, and other topics. As these policies are finalized, we must

continue to work together to ensure they are efficiently and effectively implemented and managed.

APLU is excited by the robust, bipartisan support for investing in American science and we look forward to continuing to work with you as negotiations continue towards a final agreement.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter McPherson". The signature is fluid and cursive, with the first name "Peter" being more prominent than the last name "McPherson".

Peter McPherson
President
Association of Public and Land-grant Universities

CC: Senate Majority Leader Charles Schumer
Senate Minority Leader Mitch McConnell
House Speaker Nancy Pelosi
House Minority Leader Kevin McCarthy