

April 29, 2021

An open letter to President Biden and the 117th Congress:

As you work to address some of the greatest challenges facing our country today, the undersigned scientific organizations would like to thank you for your efforts thus far and encourage your continued support for the federal investments necessary to enable the scientific advancements essential to confronting the United States' most pressing issues. Critical issues such as the COVID-19 pandemic, natural hazards, the need for clean, reliable sources of energy, food and water, quality health care, as well as the continually evolving threats to national security, can all be ameliorated by leading-edge science and technology. **These scientific solutions are within our grasp today** and can be accelerated by increased support of research, education and engineering in the physical sciences and the deployment of the advancements generated by these investments.

In particular, the physical sciences' contribution to the COVID-19 pandemic has stressed the importance of our nation's investments in the science and engineering research ecosystem. From the identification of the virus structure using DOE light source facilities, to the development of a novel vaccine in less than a year based on technologies that spawn from basic research, the S&E R&D community response to this crisis is a testimony of what the nation can achieve. However, this effort strained the R&D community, forcing a reduction in progress in other urgent areas that will have profound consequences for our nation's future if no action is taken. **This is the time to re-build American global leadership and unlock the potential that R&D has to accelerate solutions to today's pressing challenges.**

We applaud the elevation of the Director of the Office of Science and Technology Policy (OSTP) to a Cabinet level position. As OSTP works to serve as a key bridge between the Federal Government and the scientific community, this endows the scientific enterprise with an appropriately prominent voice at the highest level of government.

This document outlines several cornerstone policy issues facing the scientific enterprise in early 2021 as we welcome in a new year, a new President and a new Congress. **We strongly urge Congress and the Administration to act on these foundational issues immediately.** This is essential for the country's economy, position as a world leader and, indeed, the health and welfare of the American people. As members of the science community, our organizations remain deeply committed to pursuing solutions to these challenges and hope to partner with you in pursuit of long-term, sustainable solutions. We respectfully offer the following recommendations in pursuit of these goals.

Physical Science Funding

As soon as possible, the Federal Government should provide supplemental funding of at least \$26 billion, as outlined in the RISE Act, for the federal science agencies in any future COVID relief legislation. Scientists and STEM students across the U.S. need immediate support due to the ongoing disruptions to the operation of laboratories, suspension of field research, closure of user facilities, discontinuities in or loss of data sets and travel restrictions. These disruptions in operations are not only harming research productivity but are significantly disrupting the STEM talent pipeline. Researchers at key career-stages, like recent graduates and early career faculty, have been the most affected by the pandemic and we are risking losing talented individuals to other fields at a time when the nation is already facing a STEM workforce shortage. Accordingly, *Federal agencies should immediately be encouraged to allow maximum flexibility regarding fulfillment of current research and student funding agreements.*

Looking to the future, *additional robust and sustained funding increases for research and education programs at federal agencies are critical to our nation's future recovery and success.*

Equity

Participation in research is a high-impact practice for workforce strengthening and diversification. Yet, historically, the majority of federal research funding has been distributed to a fraction of our country's research universities. *Agencies should enable and incentivize national laboratories and top research universities to create meaningful lasting partnerships that strengthen the research capacity at emerging research institutions, including minority-serving institutions (MSIs), tribal colleges and universities (TCUs), historically black colleges and universities (HBCUs), and the colleges and universities with smaller research activities, which are often in underserved states.* To facilitate a large participant pool these partnerships should not be limited geographically. Additionally, *agencies should strongly encourage research proposals directly from emerging research institutions and Agencies should track statistics on awards to emerging research institutions.*

Support cultural change activities and programs within physics departments at colleges and universities. It has been shown that problems of scientific identity, disproportionate financial strain, and promoting departmental excellence in empowering underrepresented students will secure a new generation of diverse scientists.

Research the need to change the legal authorizations of certain Federal Agencies to award grants designed to facilitate an equitable research environment in a manner similar to that of the NSF. Support any statutory changes needed to ensure that all agencies can provide student support for low-income, talented domestic students to pursue successful careers in promising STEM fields as appropriate.

Education

Develop and fund programs that encourage and assist States and school districts with retaining and supporting high-quality K-12 science teachers. Given the potential steep budget cuts that States are facing, we are concerned about the loss of physics teachers at all levels. If school districts must reduce the size of their teaching staff for financial reasons, many stakeholders believe that some of the first teachers to lose their jobs would be science teachers. Considering that there is already a massive shortage of physics teachers nationwide, we cannot afford to lose any physics teachers.

Ensure the development of the next generation of scientific experts. The STEM workforce must be equipped to enable scientific and technological advances, apply science for the benefit of all people, and inform scientific evidence-based decision-making. Several existing initiatives support the goal of maintaining a robust STEM education pipeline. Continuing to support the following initiatives, among others, would help ensure that the pipeline is robust and productive:

- Supporting Effective Instruction State Grants (Title II, Part A)
- Student Support and Academic Enrichment Grants (Title IV, Part A)
- 21st Century Community Learning Centers (Title IV, Part B)
- NASA's Office of STEM Engagement
- NSF's Education & Human Resources (EHR) Programs
- NOAA's Office of Education.

Immigration and Visas

Support and implement policies that allow international STEM students applying for an F-1 visa to indicate they would like to stay in the United States after graduation and provide them a clear path to a green card should they choose to stay and work here. To retain a position of global leadership, the United States must secure its position as a coveted destination for the world's scientific talent by providing a welcoming atmosphere and many avenues to prosperity for those scientific minds who would come to this country for study and work. We support the language regarding STEM doctoral students included in the first draft of the *U.S. Citizenship Act of 2021* released in February 2021.

Research Security

Reaffirm Presidential Directive NSDD-189 which states that fundamental research is defined as research that is meant to be published in the open literature and that the products of fundamental research should remain unrestricted "to the maximum extent possible." This will help achieve an appropriate balance between national security and the research requirements of open science.

Infrastructure

The Federal Government must invest in research infrastructure, including observational and computing infrastructure. This will immediately create construction jobs and stimulate the economy, as well as enable future scientific breakthroughs and discoveries vital to continuing American prosperity and security. Infrastructure investment would accelerate the construction of world-class facilities, creating computing capabilities and scientific instruments that would help the U.S. stay ahead of competition in Europe and Asia, and ensure the U.S. remains the most attractive country in the world for scientific discovery, innovation and education. This is also an opportunity to build research capacity at traditionally non-research-intensive institutions.

American Association of Physicists in Medicine

American Association of Physics Teachers

American Crystallographic Association

American Institute of Physics

American Meteorological Society

American Physical Society

AVS: Science & Technology of Materials, Interfaces, and Processing

Attachment
Policy Priority Documents from AIP Member Societies
and Endorsing Scientific Organizations

APS –

<https://www.aps.org/about/governance/letters/upload/Congratulations-to-President-Elect-Biden-on-Election-46th-President.pdf>

AMS -

[https://www.ametsoc.org/ams/assets/File/aboutams/statements_pdf/AMS Statement on Priorities Weather Water Climate.pdf](https://www.ametsoc.org/ams/assets/File/aboutams/statements_pdf/AMS_Statement_on_Priorities_Weather_Water_Climate.pdf)