

CHIPS and Science Act Summary

R&D Authorized Funding Levels

The CHIPS and Science Act authorizes significant funding increases for the National Science Foundation (NSF), the Department of Energy’s (DOE) Office of Science (OS), Department of Commerce and the National Institutes of Science and Technology (NIST). The funding, however, is an authorization; therefore, the academic and research communities will need to urge the administration and Congress to adopt these recommendations in future budget requests and appropriations bills. A high-level summary of the authorized funding levels is below.

| Agency | Five-Year Authorization | Increase over Baseline |
|---|-------------------------|------------------------|
| National Science Foundation | \$81 billion | \$36 billion |
| • NSF Tech Directorate | \$20 billion | \$20 billion |
| • NSF Core Activities | \$61 billion | \$16 billion |
| Department of Energy | \$65 billion | \$6.5 billion |
| • Office of Science | \$50.3 billion | \$4.5 billion |
| • Lab Infrastructure (split between OS and non-SC labs) | \$14.7 billion | \$2 billion |
| Department of Commerce | \$11 billion | \$11 billion |
| • Regional Technology Hubs | \$10 billion | \$10 billion |
| • RECOMPETE Pilot | \$1 billion | \$1 billion |
| National Institute of Standards and Technology | \$10 billion | \$5 billion |
| • NIST Research | \$6.9 billion | \$2.8 billion |
| • Manufacturing USA | \$829 million | \$744 million |
| • Manufacturing Extension Partnership | \$2.3 billion | \$1.5 billion |
| Total | \$167 billion | \$58.5 billion |

Expanding Opportunities and STEM Workforce Development

The legislation includes several important initiatives to help advance innovation, increase diversity and grow the future scientific workforce.

Expanding Opportunities and STEM workforce development

- At the DOE OS, the legislation directs the department to expand funding opportunities for highly skilled science, technology, engineering and mathematic (STEM) professionals, especially at Minority Serving Institutions (MSIs), Historically Black Colleges and Universities (HBCUs) and emerging research institutions.
- The legislation calls for the DOE and NSF to develop new programs to strengthen the research capacity at emerging research institutions, including MSIs. At the NSF, the

legislation directs the agency to establish not more than five MSI centers of innovation to leverage success in STEM education and research training of underrepresented minority students as models for other institutions.

- The legislation directs the NSF to strengthen its undergraduate and graduate STEM education programs via awards to four-year institutions to support activities to increase the size, diversity, capability and flexibility of the STEM workforce. For the graduate and postdoctoral students, the legislation directs the agency to strengthen its mentoring programs, including innovative approaches to career advancements.
- The legislation directs the NSF to broadly disseminate to the extramural research community best practices on identifying and addressing any cultural or institutional barriers to the recruitment, retention or advancement of groups historically underrepresented in STEM studies and careers. The agency shall also provide educational opportunities, including workshops, for STEM professionals to learn about current research on effective practices for unbiased recruitment, evaluation and promotion of undergraduate and graduate students and research personnel.
- For early career researchers, the legislation directs the NSF to establish a 2-year pilot program to make awards to this future workforce to carry out an independent research program at an institution of higher education for two years. Special emphasis for those at an MSI.

Research Security

While the Senate-passed United States Innovation and Competition Act (USICA) of 2021 bill included several research security provisions that would have negatively impacted the academic community, the conference agreement is mostly free of problematic language. The following research security related provisions are included in the package:

OSTP

- The legislation directs OSTP to publish and widely distribute a uniform set of guidelines for federal research agencies regarding foreign talent recruitment programs. The provision also directs agencies to require researchers to disclose participation in foreign talent recruitment programs and would prohibit awards in cases where covered individuals are participating in malign foreign talent recruitment programs.

NSF

- The legislation directs the NSF to establish a research and development information sharing analysis organization (by providing a grant to an external entity) that would provide institutions and funding recipients information regarding security threats and best practices to protect their research.
- It permits NSF, on an annual basis, to request from a recipient institution a disclosure, in the form of a summary document, of the current financial support, the value of which is \$50,000 or more (including gifts and contracts), received directly or indirectly from a foreign source associated with a foreign country of concern. The original version included in the Senate-passed USICA, would have required institutions to provide true copies of these agreements rather than a summary.

Research Security Provisions Not Included

- The Senate-passed USICA included a provision that would have directed the Committee on Foreign Investments in the United States (CFIUS) to review any gifts or contracts between universities and foreign entities valued at \$1 million or more.
- The Senate-passed USICA included a provision that would have lowered the Sec. 117 reporting threshold from \$250,000 to \$50K,000
- The Senate-passed USICA included a provision that would have required universities to ensure that any faculty and staff report any gifts (no matter the monetary value) from, or contracts entered into, with a foreign source, and then maintain this information in a searchable publicly available database.

Established Program to Stimulate Competitive Research (EPSCoR)

The Senate-passed USICA included a provision that directed NSF to set aside 20 percent of the agency's budget for the EPSCoR program. Currently, there is no mandated set aside for the program, but NSF does allocate approximately 3 percent of its budget to this program. Since California is not an EPSCoR state, UC campuses would be placed at a disadvantage. The conference agreement makes significant adjustments to the Senate language.

EPSCoR

- Instead of 20 percent set aside, the legislation includes a scaling up. In fiscal year (FY) 2023, the threshold would be 15.5 percent and rises each year to 20 percent by FY 2029. The threshold requirement sunsets after FY 2029.
- Instead of a hard set aside for the EPSCoR program, the agency may reach the required threshold by ensuring that research grants go to institutions in EPSCoR states (also known as jurisdiction). Under this formula, the NSF currently provides approximately 14 percent of its budget via EPSCoR jurisdiction.
- The legislation includes new language "to the maximum extent practicable" for the agency to meet the threshold. This provision gives the NSF some flexibility to fall short of the required annual EPSCoR percentage should the target be unachievable.
- It also permits the NSF to count an entire award to a consortium toward meeting the funding requirement if the lead entity is an EPSCoR institution.
- The legislation encourages the NSF to prioritize EPSCoR funding to institutions that: 1) partner with non-EPSCoR institutions to develop administrative, grant management and proposal writing capabilities and 2) partner with emerging research institutions, including MSIs.
- It also requires the NSF to develop a report, no later than December 2026, that reviews the program and recommendations to improve it.

Microelectronics Research

While the Senate and House innovation bills included \$52 billion in emergency appropriations funding to implement the CHIPS Act, which aims to bring manufacturing back to the U.S., the conference agreement included some changes, which benefit UC.

CHIPS for America research funding

- \$2 billion for the Department of Defense to establish microelectronics network centers of excellence (in original CHIPS). This funding is considered applied research. UC will be competitive for these funds.
- \$200 million in new funding for workforce development programs at the NSF. With UC's expertise in not only microelectronics research, but also providing world class undergraduate and graduate/postdoctoral development, UC will be well positioned to compete for these funds.

Additional Provisions of Interest

New Directorate

- The House and Senate bills differed on the definition of the research that shall be conducted under the new NSF Technology, Innovation and Partnership Directorate. The agreement calls for both "use-inspired" (included in COMPETES) and "technology-driven" (included in USICA) research.
- While the House and Senate bills called for the new directorate to address diversity, HBCUs, MSIs and emerging research institutions, the advisory committee established in the agreement does not include these responsibilities.

Helium

- The legislation authorizes a new grant program at DOE to support helium reuse and recycling, including the purchase of equipment and research into helium alternatives.
- The legislation also directs NSF to support infrastructure that reduces helium consumption through the Major Research Instrumentation program.

DOE Cost Share Waiver

- The legislation reinstates the DOE-applied research cost share waiver exemption for universities. This waiver applies to grants and contracts from the Energy Efficiency and Renewable Energy program, the Fossil Energy program and Advanced Research Project Agency-Energy (ARPA-E).