WSU EXTERNAL AFFAIRS
AND GOVERNMENT RELATIONS

OFFICE OF FEDERAL RELATIONS

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Assistant Vice President for Federal Engagement & Advocacy and Executive Director of WSU-DC
What is the CHIPS & Science Act of 2022

Two major sections:

Division A Summary - CHIPS and ORAN Investment
An investment to help production of semiconductors and address supply chain issues for more domestic production.

Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)
An authorization at historic levels for federal science agencies including:
Division A Summary - CHIPS and ORAN Investment

*An investment to help production of semiconductors and address supply chain issues for more domestic production.*

DIVISION A of the CHIPS Act of 2022 is the only portion of the statute that has appropriated funding.

What does that mean?

- $52.7 billion in allocated over 5 years in emergency supplemental appropriations to establish four Treasury funds to implement “CHIPS for America” semiconductor provisions enacted as part of the fiscal 2021 National defense Authorization Act (NDAA).

- These are direct funding and tax credits to support issues around production of semiconductors and address supply chain.

- This funding must be used to implement the Commerce Department semiconductor incentive—to develop domestic manufacturing capability—and research and development (“R&D”) and workforce development programs authorized by the FY21 National Defense Authorization Act (NDAA -Sec. 9902 & 9906).
Division A – Direct Funding sections to consider for WSU

Section 9902 of the act authorizes the Secretary of Commerce to provide financial assistance to “covered entities” to incentivize investment in facilities and equipment in the United States for semiconductor fabrication, assembly, testing, advanced packaging, or research and development of semiconductors. Covered entities include “a private entity, a consortium of private entities, or a consortium of public and private entities with a demonstrated ability to substantially finance, construct, expand, or modernize a facility relating to fabrication, assembly, testing, advanced packaging, or research and development [R&D] of semiconductors.”
Division A – Direct Funding sections to consider for WSU

Section 9906(c) directs the Secretary of Commerce, in collaboration with the Secretary of Defense, to establish a National Semiconductor Technology Center to conduct research and prototyping of advanced semiconductor technology to strengthen the economic competitiveness and security of the domestic supply chain.

The center is to be operated as consortium, with participation from the private sector, the Department of Energy, and the National Science Foundation. The center’s work is to emphasize advanced test, assembly, and packaging capability in the domestic semiconductor ecosystem; materials characterization, instrumentation, and testing for next-generation microelectronics; virtualization and automation of maintenance of semiconductor machinery; and metrology for security and supply chain verification.

WSU may be eligible to participate in a consortium of we are doing this type of research.
Division A – Interesting sections for WSU:

**DOC National Semiconductor Technology Center (NSTC):** A public-private partnership to conduct advanced semiconductor manufacturing R&D and prototyping; invest in new technologies; and expand workforce training and development opportunities.

**CHIPS for America Workforce and Education Fund:** $200 million to kick start development of the domestic semiconductor workforce, which faces near-term labor shortages, by leveraging activities of the National Science Foundation.

**CHIPS for America Defense Fund:** $2 billion for the DoD to implement the Microelectronics Commons, a national network for onshore, university-based prototyping, lab-to-fab transition of semiconductor technologies—including DoD-unique applications—and semiconductor workforce training.
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE) authorizes, in dollar terms, the largest five-year investment in public R&D in the nation’s history.

“Funding for CHIPS and Science must not stop with the appropriations for chip manufacturing,” Sen. Cantwell said.

“America needs access to better chips, but it also needs the research and the workforce to put those chips to use”.

September 29, 2022

Senator Maria Cantwell, Chair, Senate Committee on Commerce, Science, and Transportation
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

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<thead>
<tr>
<th>NSF</th>
<th>Five Year Authorization</th>
<th>Increase in Authorized Funding</th>
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<tbody>
<tr>
<td>NSF</td>
<td>$81 Billion*</td>
<td>$36 Billion</td>
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<tr>
<td>NSF Tech Directorate</td>
<td>$20 Billion</td>
<td>$20 Billion</td>
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<tr>
<td>NSF Core Activities</td>
<td>$61 Billion</td>
<td>$16 Billion</td>
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- The National Science Foundation (NSF) is the funding source for approximately 24 percent of all federally supported basic research conducted by America's colleges and universities.

- In FY 2021, NSF invested $182.5 million statewide, funding 481 competitive NSF awards. WSU competed for and won $20.195 million in funding for 59 research programs across the system in Pullman, Tri-Cities, Vancouver, Everett, Olympia and Prosser.

- Basic research supported by NSF allowed for the emergence of fields of research such as Artificial Intelligence, voice recognition, quantum, data science, encryption, gene editing and autonomous systems.

- New Tech Directorate will accelerate domestic development of national and economic-security critical technologies such as artificial intelligence, quantum computing, advanced manufacturing, 6G communications, energy, and material science.

* NOTE: 20 % dedicated to EPSCOR states by FY 2029
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

**STEM Programs** - Authorizes a competitive program funding four-year institutions of higher education supporting undergraduate R&D for collaboration and coordination between higher ed and industry. Expands and authorizes graduate STEM programs including:

- Supporting activities to facilitate career exploration for graduate students and postdoctoral researchers.
- Creating a requirement for funding proposals to include individual development plans for graduate students and postdoctoral researchers and provides supplemental funding to facilitate professional development activities. Supports research on the graduate education system.
- Updates the Graduate Research Fellowship Program to increase the number of new graduate fellows supported annually, address workforce demand, increase the cost of education allowance, and recruit a more diverse pool of applicants.
- Requires an evaluation of mechanisms for supporting graduate student education and training.
- Requires a report on the need and feasibility of a program to recruit and train the next generation of artificial intelligence professionals and authorizes NSF to establish a Federal AI scholarship-for-service program, which would run in addition to existing programs such as CyberCorps Scholarship-for-Service.
- Directs NSF director to collect data from award recipients on the demographics of STEM faculty (Sec. 10504.)
- Creates a program that allows institutions of higher education to engage with rural educators on STEM. (Sec. 10512)
- Sets up competitive awards for online education STEM related (Sec.10513.)
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

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<td>$67.9 Billion</td>
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Authorizes R&D in Basic Energy Sciences including:

- materials sciences and engineering,
- chemical sciences,
- physical biosciences,
- geosciences, and other disciplines to provide the foundations for new energy technologies.

*NOTE:* 10% mandate of funding to EPSCOR states
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

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- Authorizes computational material and chemical sciences research and development, including up to six centers.
- Authorizes development of a materials research database.
- Authorizes $50 BB to support R&D in energy storage.
- Authorizes the Director of the Office of Science in supporting a program of basic research and development to bridge scientific barriers to expand knowledge relevant to nuclear matter for the benefit of commerce, medicine, and national security.
- Authorizes up to six bioenergy research centers to conduct fundamental research in plant and microbial systems biology, biological imaging and analysis, and genomics, and to accelerate advanced research and development of advanced biofuels, bioenergy or biobased materials, chemicals, and products that are produced from a variety of regionally diverse feedstocks, and to facilitate the translation of research results to industry.
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

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Other DOE Programs:

- Authorizes $50 million over four years to establish Regional Clean Energy Innovation Programs and encourages partnerships with economic development organizations, institutions of higher education and national labs.
- Establishes a clean energy incubator program – institutions of higher education are eligible as are national labs. Authorizes $15 over four years
- Authorizes appropriations for building technologies, sustainable transportation, advanced manufacturing, industrial emissions reduction technology, advanced materials, and renewable power research, development, and demonstration within the Office of Energy Efficiency and Renewable Energy.
- Authorizes appropriations for grid modernization research, development, and demonstration within the Office of Electricity.
- Authorizes appropriations for advanced materials research, development, and demonstration within the Office of Nuclear Energy.
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

<table>
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<th>DOC</th>
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<tr>
<td>Regional Technology Hubs</td>
<td>$10 Billion</td>
<td>$10 Billion</td>
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<tr>
<td>RECOMPETE PILOT</td>
<td>$1 Billion</td>
<td>$1 Billion</td>
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Regional Technology Hubs:

- Authorizes $10BB from FY 2023-FY 2027 to fund 20 geographically distributed regional technology and innovation hubs in areas NOT leading technology centers.
- DOC will designate no less than 20 “regional technology and innovation hubs,” which are public-private consortiums made up of universities, economic development organizations, industry, rural communities, state and local governments, and nonprofits concentrated within a geographic area.
- The legislation includes language that ensures the geographic distribution of these hubs, with minimum requirements for designating hubs in every Economic Development Administration (EDA) region, and with priorities for low-population and predominantly rural states.
- The Regional Technology and Innovation Hub Program included in the CHIPS and Science Act is particularly notable in that it prioritizes the inclusion of underserved communities and groups historically underrepresented in STEM fields, including women, people of color, and Indigenous communities.
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

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<tr>
<td>NIST</td>
<td>$10 Billion</td>
<td>$5 Billion</td>
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<tr>
<td>NIST Research</td>
<td>$6.9 Billion</td>
<td>$2.8 Billion</td>
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<tr>
<td>Manufacturing USA</td>
<td>$829 Million</td>
<td>$744 Million</td>
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<tr>
<td>Manufacturing Extension Partnership</td>
<td>$2.3 Billion</td>
<td>$1.5 Billion</td>
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Artificial intelligence.

Sec. 10232. supports NIST’s role in the development of safe and trustworthy artificial intelligence and data science, including amending Section 22A of the National Institute of Standards and Technology Act (15 U.S.C. 278h-1) to establish test beds. This section set up means of assistance to institutions of higher education that enter partnerships with for-profit entities to support research to improve the security of computer systems. The partnerships may also include government laboratories and nonprofit research institutions.
Division B Summary – Research and Innovation (NSF, DOC, NIST, NASA, and DOE)

No authorization funding levels.

Requires NASA to carry out experimental aircraft demonstrations, including a subsonic demonstrator to demonstrate the performance and feasibility of advanced, ultra-efficient and low emissions designs, a low-boom supersonic flight demonstrator, and a flight research demonstrator, and require NASA to expand collaboration with industry and academia on experimental aircraft.

Authorize NASA to establish an advanced materials and manufacturing technology program, which includes composite materials, to address U.S. competitiveness in aerospace.

Requires NASA to continue to conduct research and testing to support the safe integration of unmanned aircraft systems ("UAS") into the national airspace system ("NAS") and advise NASA that it is the sense of Congress that it should partner with industry and the Federal Aviation Administration ("FAA") to advance these technologies.

Requires NASA to establish a research and development initiative on reducing greenhouse gas and noise emissions from aircraft, with additional requirements on test flights, technology focus areas, and partnerships with industry and academia. It would also require an annual report on progress of the initiative.
1. Start Reviewing Programs
2. What are WSU Priorities?
3. Campus Priorities?
4. College Priorities?
5. FY 2024 Programmatic Letters