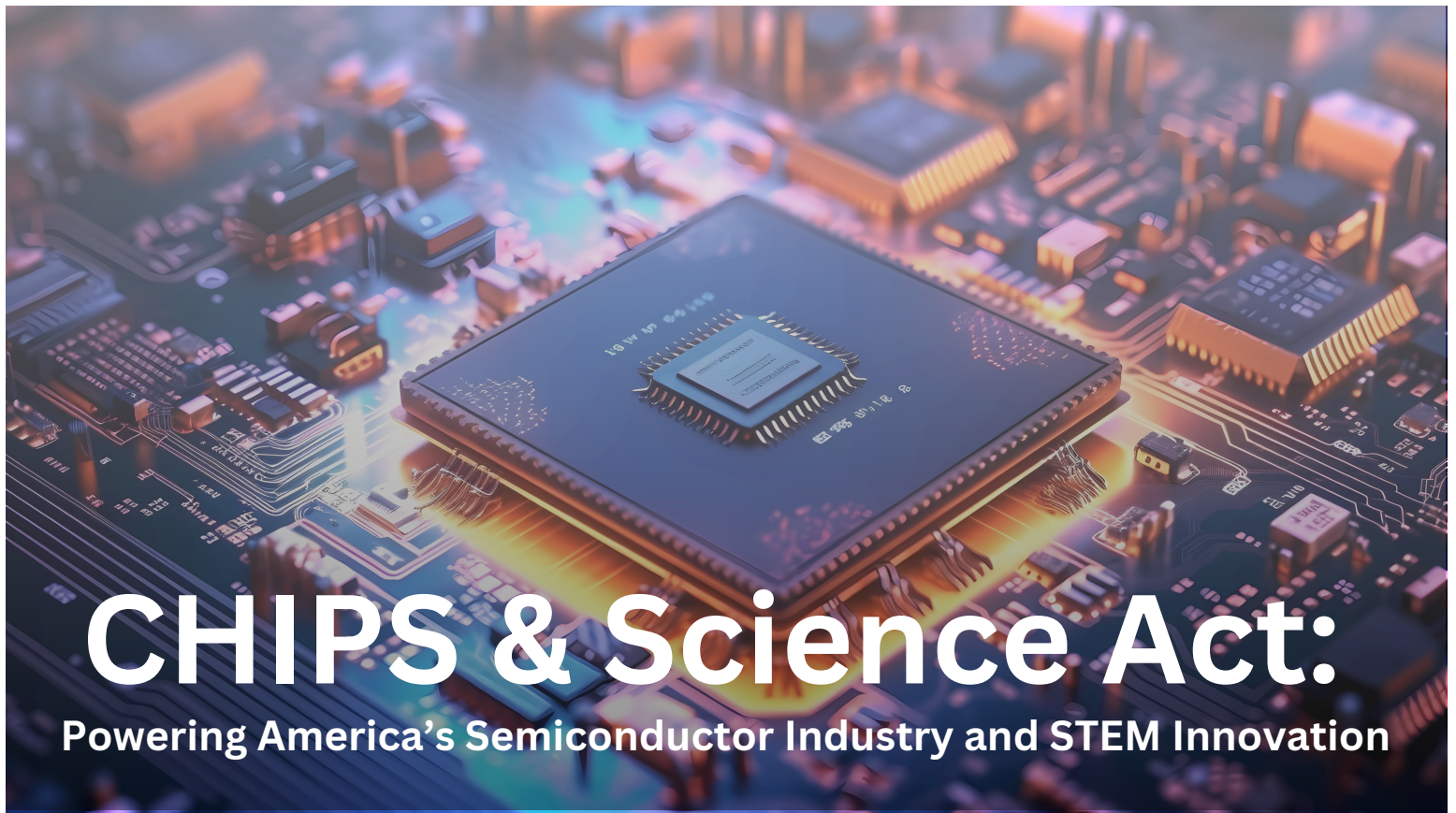




TWO-YEAR ANNIVERSARY OF THE CHIPS AND SCIENCE ACT





CHIPS & Science Act:

Powering America's Semiconductor Industry and STEM Innovation

The [statement](#) from President Joe Biden on the two-year anniversary of the CHIPS and Science Act highlights the significant progress made in revitalizing the U.S. semiconductor industry. In the two years since the Act's implementation, over \$30 billion in investments has been announced for semiconductor manufacturing in the United States, leading to the creation of over 115,000 jobs in the sector. The Act aims to increase America's share of global semiconductor production to nearly 30% by 2032, up from just over 10% when the Act was introduced. This initiative is crucial for strengthening global supply chains and ensuring the U.S. maintains its leadership in critical technologies such as advanced manufacturing, artificial intelligence, quantum computing and more.



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CHIPS AND SCIENCE ACT OVERVIEW

Our Challenge

In recent years, the United States has faced significant challenges in maintaining its leadership in semiconductor manufacturing and technology innovation. The global semiconductor shortage exposed vulnerabilities in supply chains, affecting everything from consumer electronics to critical infrastructure. Additionally, the U.S. has seen a decline in STEM education and workforce development, leading to a skills gap that threatens the nation's economic competitiveness and technological leadership.

Our Approach

The CHIPS and Science Act, signed into law on August 9, 2022, addresses these pressing issues by providing a comprehensive framework to revitalize U.S. semiconductor manufacturing, strengthen supply chains, and enhance STEM education. With a historic investment of funding, the Act aims to restore America's leadership in technology and innovation through targeted funding for manufacturing, research, and workforce development. Key initiatives include substantial incentives for semiconductor manufacturing, the establishment of regional innovation hubs, and robust support for STEM education programs.

Our Call to Action

The urgency to act is clear. As global competition intensifies, particularly from countries like China, the U.S. must swiftly implement strategies to secure its technological future. The CHIPS and Science Act represents a critical opportunity to not only address current supply chain vulnerabilities but also to build a resilient and innovative economy for the future. By leveraging these investments, STEM Ecosystem leaders can play a pivotal role in ensuring that the U.S. remains at the forefront of technological advancement, driving economic growth and creating high-quality jobs across the nation. This introduction sets the stage for understanding the importance of the CHIPS and Science Act and the immediate actions needed to capitalize on its opportunities.



Relevant Resources

- CHIPS and Science Act Text: Access the full text of the bill [here](#).
- White House Fact Sheet: Read the original fact sheet detailing the Act's objectives [here](#) and the two-year progress report [here](#).
- CHIPS and Science Act of 2022: Section-by-Section Summary can be found [here](#).
- Celebrating 2 years of the CHIPS and Science Act: [here](#)

This table provides a clear overview of the key funding allocations, responsible agencies, and purposes under the CHIPS and Science Act.

Relevant Resources	Allocation	Agency	Purpose or Overview
<i>CHIPS for America Fund - Manufacturing Incentives</i>	<i>\$39 billion</i>	<i>Department of Commerce (DOC)</i>	<i>Financial assistance to build, expand, or modernize domestic facilities and equipment for semiconductor fabrication, assembly, testing, advanced packaging, or R&D, including \$2 billion for mature semiconductors.</i>
<i>CHIPS for America Fund - Research and Development</i>	<i>\$11 billion</i>	<i>Department of Commerce (DOC)</i>	<i>Includes the National Semiconductor Technology Center, National Advanced Packaging Manufacturing Program, Manufacturing USA Semiconductor Institute, and Microelectronics Metrology R&D.</i>
<i>CHIPS for America Workforce and Education Fund</i>	<i>\$200 million</i>	<i>National Science Foundation</i>	<i>Develop the domestic semiconductor workforce, addressing near-term labor shortages through NSF activities.</i>
<i>CHIPS for America Defense Fund</i>	<i>\$2 billion</i>	<i>Department of Defense</i>	<i>Implement the Microelectronics Commons, a national network for onshore, university-based prototyping, and semiconductor workforce training.</i>
<i>CHIPS for America International Technology Security and Innovation Fund</i>	<i>\$500 million</i>	<i>Department of Commerce (DOC)</i>	<i>Support international ICT security and semiconductor supply chain activities, including secure telecommunications technologies.</i>



The Importance of the CHIPS and Science Act for STEM Ecosystem Leaders

The CHIPS and Science Act is particularly important to STEM Ecosystem Leaders for several reasons:

Enhancing Cross-Sector Collaboration

STEM Ecosystems focus on cultivating strong cross-sector collaborations to provide rich, connected learning opportunities for young people. The CHIPS and Science Act aligns with this mission by fostering partnerships between academia, industry, and government through initiatives like the Regional Technology and Innovation Hubs. These collaborations can help STEM Ecosystems expand resources, funding, and connections across sectors, breaking down silos in education and workforce development.

STEM Ecosystems are built on trusted local partnerships, and the CHIPS and Science Act encourages similar collaborations. By engaging with local businesses, industry partners, and educational institutions, Ecosystem leaders can leverage these relationships to create more impactful and sustainable programs. This approach not only strengthens local communities but also contributes to national economic growth and technological advancement.

Who Are The Cross-Sector Partners?

Semiconductor Companies

- Intel Corporation: Actively expanding U.S. semiconductor manufacturing. [Arizona, New Mexico, Ohio, Oregon, Israel]
- Micron Technology: Investing in U.S. semiconductor facilities. [Idaho, New York]
- Taiwan Semiconductor Manufacturing Company (TSMC): Building a new plant in Arizona.

Technology and Manufacturing Firms

- IBM: Engaged in semiconductor research and development. [Vermont, New York]
- Applied Materials: Provides equipment and services for semiconductor manufacturing. [California, D.C., New York, Montana, Oregon, Arizona, Texas, Virginia, Israel, Canada]
 - Grants for organizations supporting Education, Arts and Culture, Civic Engagement, and the Environment (2 submission deadlines - January 15 and June 15)
 - FY 2023 Grant Awardees [Israel, California, Oregon, Montana, Massachusetts, Texas, Idaho, Arizona have received funds]
- Lam Research: Supplies wafer fabrication equipment and services. [California, Oregon, Ohio, Asia, Europe]

Academic and Research Institutions

- Massachusetts Institute of Technology (MIT): Collaborates on semiconductor research.
- Stanford University: Engages in cutting-edge semiconductor research.

Addressing Workforce Needs

The CHIPS and Science Act is pivotal in addressing the skills gap in the technology and manufacturing sectors, which is crucial for STEM Ecosystems aiming to prepare young people for future careers in STEM fields. By aligning educational programs with industry demands, Ecosystem leaders can ensure that students are equipped with the skills needed to thrive in a rapidly evolving job market.

The Act emphasizes workforce development as a major component, recognizing the need for a skilled and diverse pipeline of workers to support the semiconductor industry. Key initiatives include:

Comprehensive Workforce Development Plans

Applicants for CHIPS funding must submit detailed workforce development plans that address recruitment, training, retention, and upskilling. These plans should involve commitments from regional educational and training entities, focusing on economically disadvantaged individuals.

Partnerships and Collaboration

The Act fosters partnerships among government, industry, labor unions, community organizations, and educational institutions, including community colleges and high schools. This collaboration aims to create pathways for local workforces to operate semiconductor facilities effectively.

Diversity and Inclusion

Efforts are made to attract and retain a diverse workforce, including women, veterans, people of color, individuals with disabilities, and people from rural communities. Supportive services such as transportation, housing, and child care are encouraged to address barriers to workforce participation.

National Semiconductor Technology Center (NSTC)

As a flagship initiative, the NSTC is tasked with scaling proven workforce development programs and developing novel training approaches. This includes creating workforce centers of excellence to align educational credentials with industry requirements and pilot new efforts to engage underserved communities.

Sectoral Partnerships and Innovation

The Act supports creative innovation through sectoral partnerships, with the NSTC playing a central role in coordinating workforce activities. This involves engaging a broad set of stakeholders to ensure the workforce benefits from expertise across government, industry, academia, and labor.

STEM Ecosystem Leaders can play a crucial role in developing a skilled workforce that meets the needs of the semiconductor industry, thereby enhancing U.S. competitiveness and innovation. For additional context on the broader workforce development landscape, the White House fact sheet on investments in semiconductor R&D and workforce provides valuable insights into the ongoing efforts and funding opportunities.

The Semiconductor Industry Association's policy blueprint outlines strategies for expanding the workforce pipeline and ensuring high-quality workforce training, which can further inform Ecosystem leaders' initiatives

Expanding Funding and Resources

The Act provides substantial funding for STEM education and workforce development, which can directly benefit the communities within STEM Ecosystems. By tapping into these funding streams, Ecosystem Leaders can enhance educational programs, support teacher training, and develop new curricula that align with industry needs. This access to funding can empower local communities to innovate and improve STEM education outcomes.

Where Is The Money?

Semiconductor Manufacturing and Research

- CHIPS for America Fund: \$52 billion allocated specifically for semiconductor manufacturing and research, including:
 - Incentives for Semiconductor Manufacturing: \$39 billion for manufacturing incentives to build, expand, or modernize semiconductor facilities.
 - National Semiconductor Technology Center (NSTC): A public-private consortium aimed at advanced semiconductor research and prototyping.
 - National Advanced Packaging Manufacturing Program: \$2.5 billion to enhance semiconductor packaging capabilities.

STEM Education and Workforce Development

- NSF STEM Education Programs: Multiple programs designed to improve STEM education, such as:
 - Robert Noyce Teacher Scholarship Program: Supports STEM teacher preparation.
 - Advanced Technological Education (ATE) Program: Focuses on education for high-technology fields.
- Workforce Development Initiatives: Programs aimed at training and education in semiconductor-related fields, particularly for underrepresented groups.

Regional Innovation and Technology Hubs

- Regional Technology and Innovation Hubs Program: \$10 billion to establish hubs that foster collaboration among academia, industry, and government.
- Recompete Pilot Program: Provides economic development support to distressed communities.

Research and Development

- NSF Regional Innovation Engines: Supports innovation ecosystems across the U.S. (Funding)
- Department of Energy (DOE) Initiatives: Focus on advancing energy-related technologies and semiconductor research.

How To Get Involved

1. Engage with Federal Agencies

- **Monitor Announcements:** Regularly check updates from the National Science Foundation (NSF), Department of Commerce, and Department of Energy (DOE) for new funding opportunities. The NSF, for example, has a dedicated [CHIPS and Science page](#) that details funding opportunities and deadlines.
- **Participate in Webinars:** Join informational sessions and webinars hosted by these agencies to stay informed about application processes and funding priorities. These sessions often provide insights into the specifics of grant applications and the types of projects being prioritized.

2. Build Partnerships

- **Collaborate Locally:** Establish partnerships with local universities, community colleges, and industry partners to strengthen your grant applications. These collaborations can help demonstrate a comprehensive approach to addressing workforce needs and aligning with industry demands.
- **Leverage Regional Hubs:** Utilize existing networks and regional innovation hubs, such as those supported by the NSF Regional Innovation Engines program, to form consortia for larger grant opportunities. These hubs are designed to foster inclusive innovation ecosystems across the U.S..
- **Engage with Regional Strategies:** The CHIPS Regional Strategy emphasizes the importance of place-based industrial strategies and regional partnerships to achieve the objectives of the CHIPS and Science Act. By engaging with state and local government partners, as well as small businesses and community services, STEM Ecosystem leaders can support the growth of regional semiconductor industry clusters. This includes investments in human and physical infrastructure, such as education, transit, affordable housing, and childcare, which are crucial for sustaining economic momentum. For more information, visit the [CHIPS Regional Strategy page](#).
- **Connect with Your Regional Engine:** Utilize the [Interactive NSF Engines Award Data](#) to learn more about your regional NSF Engine. The interactive map provides details on award coverage, institutional diversity, key technology areas, and partnerships with industry and government. Engaging with your regional Engine can help you identify potential collaborators and funding opportunities.

Additional Resources

- **CHIPS Incentives Funding Opportunities:** Visit the [CHIPS Program Office](#) at NIST for detailed information on available incentives and how to apply.
- **National Governors Association Resources:** Explore resources from the [National Governors Association](#) for guidance on leveraging federal, state, and private sector funding opportunities.
- **Brookings Institution Insights:** Review the [Brookings report](#) for strategic insights into leveraging the CHIPS and Science Act for workforce development.



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