

TECHVISION21

INSIDE VIEW



CHIPS Act Overview

The semiconductor provisions of the CHIPS and Science Act includes \$52.7 billion in funding for a CHIPS for America Fund, a CHIPS for America Defense Fund, a CHIPS for America Workforce Fund, and a CHIPS for America International Technology Security and Innovation Fund.

These funds support a variety of specific activities.

IN THIS ISSUE

- CHIPS FOR AMERICA FUND
- CHIPS FOR AMERICA DEFENSE FUND
- CHIPS FOR AMERICA WORKFORCE FUND, NATIONAL SCIENCE FOUNDATION
- CHIPS FOR AMERICA INTERNATIONAL TECHNOLOGY SECURITY AND INNOVATION FUND, DEPARTMENT OF STATE
- TV21 PRESIDENT AND CEO KELLY CARNES BOOK

CHIPS for America Fund

CHIPS for America Fund. The act provides \$50.0 billion to the Department of Commerce for the CHIPS for America Fund for semiconductor incentives intended to develop domestic manufacturing capabilities as well as for R&D and workforce development. This includes \$39 billion to **incentivize investment in facilities and equipment** in the United States for semiconductor fabrication, assembly, testing, advanced packaging, or research and development of semiconductors, and \$11 billion to advance U.S. leadership in semiconductor research and development (R&D) through four programs: **the CHIPS National Semiconductor Technology Center (NSTC), the CHIPS National Advanced Packaging Manufacturing Program (NAPMP), the CHIPS Metrology Program, and the CHIPS Manufacturing USA institutes.**

CHIPS for America Defense Fund

CHIPS for America Defense Fund. Congress provided \$2 billion to the Department of Defense for a CHIPS for America Defense Fund for establishing and operating a **Microelectronics Commons**, a national network for onshore, university-based prototyping, lab-to-fab transition of semiconductor technologies and semiconductor workforce training.

CHIPS for America Workforce Fund, National Science Foundation

CHIPS for America Defense Fund. Congress provided \$200 million to the National Science Foundation to train skilled workers for jobs in the U.S. semiconductor and microelectronics industry.

CHIPS for America International Technology Security and Innovation Fund, Department of State

CHIPS for America International Technology Security and Innovation Fund, Department of State. Congress provided \$500 million to the State Department to support international information and communications technology security and semiconductor supply chain activities, among other things.

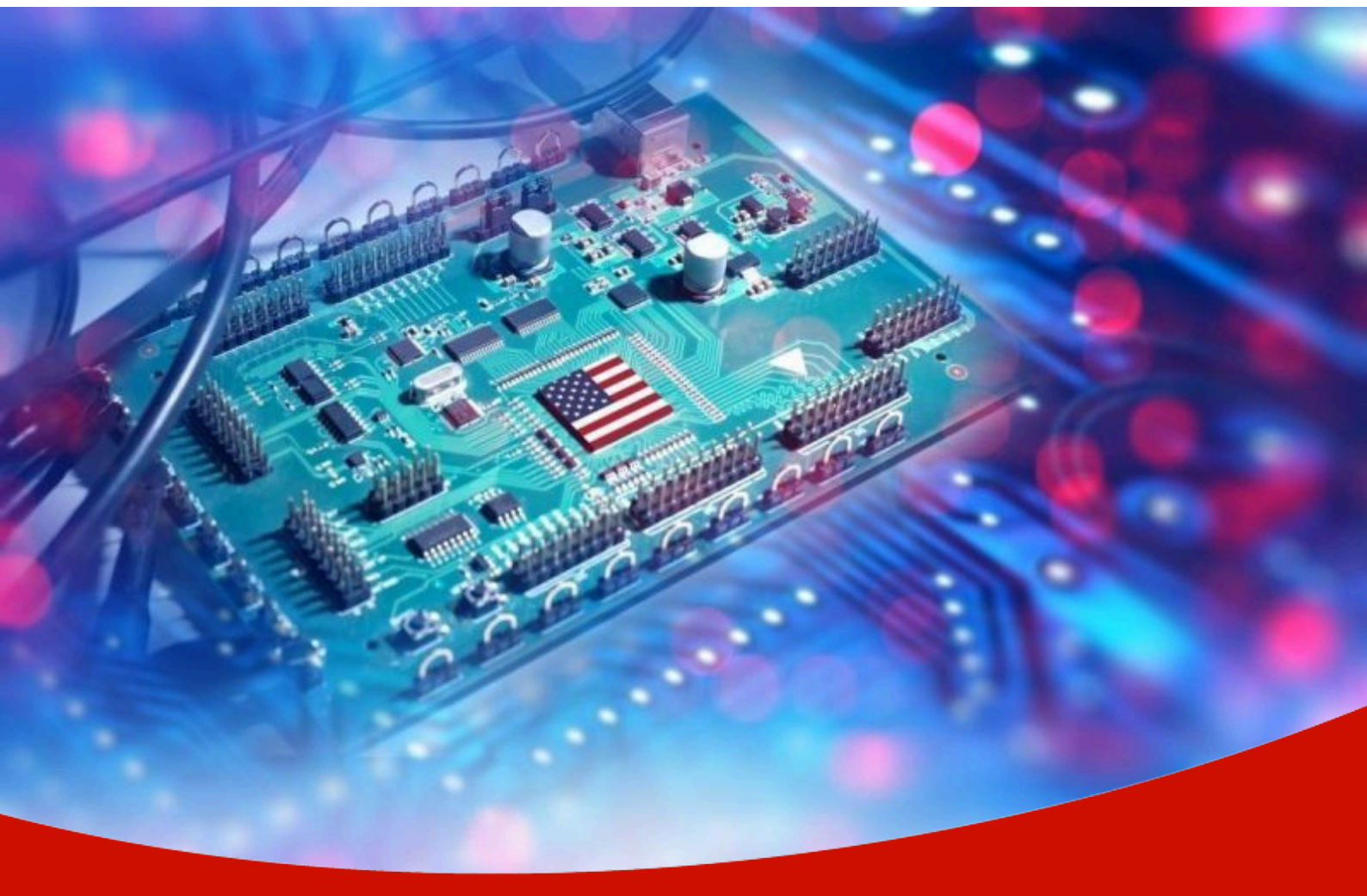
CHIPS for America Fund Incentive Competitions

Current Competitions

None

Closed Competitions

Commercial Fabrication Facilities. On June 18, 2024, the Commerce Department closed its opportunity for Statements of Interest in its Commercial Fabrication Facilities competition to support the construction, expansion, or modernization of (a) commercial facilities for the front- and back-end fabrication of leading-edge, current-generation, and mature-node semiconductors; (b) commercial facilities for wafer manufacturing; and (c) commercial facilities for materials used to manufacture semiconductors and semiconductor manufacturing equipment. CHIPS for America has proposed funding for 20 projects in 31 locations totaling up to \$33.6 billion under this competition. The projects are in various stages of the award process.



Specific Incentive Proposed Funding

Hemlock Semiconductor (Hemlock, MI). Up to \$325 million for the construction of a new manufacturing facility dedicated to the production and purification of hyper-pure semiconductor-grade polysilicon

Infinera (Bethlehem, PA). Up to \$93 million for the construction of a state-of-the-art advanced test and packaging facility focused on meeting the increasing demand for indium phosphide photonic integrated circuits.

Wolfspeed (Siler City, NC; Marcy, NY). Up to \$750 million, split across construction of a new silicon carbide wafer manufacturing facility in Siler City, NC, and expansion of its automated 200mm silicon carbide power device fab facility in Marcy, NY.

Edwards Vacuum (Genesee County, NY). Up to \$18 million for production of semiconductor-grade dry vacuum pumps.

HP Inc. (Corvallis, OR). Up to \$50 million to support the expansion and modernization of its existing “lab-to-fab” ecosystem.

Texas Instruments (Lehi, UT; Sherman, TX). Up to \$1.6 billion to support construction of new state-of-the-art facilities, split across facilities in Texas and Utah.

SK hynix (West Lafayette, IN). Up to \$450 million to build a memory packaging plant for artificial intelligence (AI) and an advanced packaging R&D facility.

Amkor Technology, Inc. (Peoria, AZ). Up to \$400 million to build a full end-to-end advanced packaging for applications in high-performance computing, artificial intelligence, communications, and automotive, end markets.

GlobalWafers (St. Peters, MO; Sherman, TX). Up to \$400 million split establishing a new facility to produce 300mm silicon-on-insulator wafers in St. Peters, Missouri, and establishing the first 300mm silicon wafer manufacturing facility for advanced chips in the United States.

Rogue Valley Microdevices (Palm Bay, FL). Up to \$6.7 million for construction of a pure play microelectromechanical systems (MEMS) and sensor foundry facility.

Entegris (Colorado Springs, CO). Up to \$75 million for a state-of-the-art manufacturing center to support production of FOUPs and liquid filter membranes, and to support production of advanced liquid filters and purifiers as well as fluid handling solutions.

Rocket Lab (Albuquerque, NM). Up to \$23.9 million to expand production of space-grade solar cells that power spacecrafts and satellites.

Absolics (Covington, GA). Up to \$75 million for construction of a 120,000 square-foot facility in Covington, Georgia and development of substrates technology for use in semiconductor advanced packaging.

Micron (Clay, NY; Boise, ID). Up to \$6.14 billion split across Boise, ID and Clay, NY projects), including the construction of the first two fabs of planned four fab “megafab” focused on leading-edge DRAM chip production, and development of a high-volume manufacturing (HVM) fab.

Samsung Electronics (Taylor, TX; Austin, TX). Up to \$6.4 billion split across Austin, TX and Taylor, TX projects, including construction of two leading-edge logic foundry fabs focused on mass production of 4nm and 2nm process technologies, a R&D fab dedicated to development and research on technology generations ahead of nodes currently in production, and an advanced packaging facility producing 3D High Bandwidth Memory and 2.5D packaging in Taylor, TX, and expansion of existing facilities in Austin, TX, to support the production of leading fully depleted silicon-on-insulator (FD-SOI) process technologies.

TSMC Arizona (Phoenix, AZ). Up to \$6.6 billion to support three greenfield leading-edge fabs which will manufacture the world's most advanced semiconductors—4nm FinFET process technologies, 2nm nanosheet process technology/3nm process technologies, and 2nm or more advanced process technologies.

Intel Corporation (Chandler, AZ; New Albany, OH; Hillsboro, OR; Rio Rancho, NM). Up to \$8.5 billion split across construction of two new leading-edge logic fabs and modernization of one existing fab in Chandler, AZ; the creation of a new regional chipmaking ecosystem in New Albany, OR, anchored by the construction of two leading-edge logic fabs; expansion and modernization of technology development facilities in Hillsboro, OR, that will utilize the world's first High NA EUV lithography equipment; and the modernization of two fabs into advanced packaging facilities in Rio Rancho, NM.

GlobalFoundries (Burlington, VT; Malta, NY). Up to \$1.5 billion in proposed incentives to support the revitalization of an existing fabrication facility that is expected to commercialize new 200 mm technologies, which would create the first U.S. facility capable of high-volume manufacturing of next-generation Gallium Nitride on Silicon for use in electric vehicles, power grid, 5G and 6G smartphones, and other critical technologies in Burlington, VT, and construction of a new, large-scale 300 mm fab in Malta, NY, as well as expansion of an existing fab.

Microchip Technology, Inc. (Gresham, OR; Colorado Springs, CO). Up to \$162 million split across projects in Gresham, OR, and Colorado Springs, CO, including modernization and expansion of fabs in both locations to significantly increase U.S. production of microcontroller units and other specialty semiconductors built on mature-nodes critical to America's automotive, commercial, industrial, defense, and aerospace industries.

BAE Systems, Inc. (Nashua, NH). Up to \$35 million to modernize tools and quadruple production of chips for critical defense programs, including the F-35 fighter jet program.

Small-Scale Supply Chain Projects. On June 18, 2024, the Commerce Department closed its opportunity for Statements of Interest in its competition to support projects for the construction, expansion, or modernization of commercial facilities for semiconductor materials and manufacturing equipment for which the capital investment falls below \$300 million.

Proposed Funding

CHIPS R&D Competitions

Current Competitions

CARISSMA. On October 30, 2024, the Commerce Department issued a Notice of Funding Opportunity (NOFO) for a “CHIPS AI/AE for Rapid, Industry-informed Sustainable Semiconductor Materials and Processes “(CARISSMA) competition to fund cutting-edge artificial intelligence (AI) and autonomous experimentation (AE) technologies to support the long-term viability of next-generation semiconductor manufacturing. CHIPS for America anticipates that the total Federal funds available under CARISSMA will be up to approximately \$100 million with individual awards ranging from approximately \$20 million to \$40 million. Expected participants include teams of universities and other research entities with significant experience in artificial intelligence-powered autonomous experimentation (AI/AE); semiconductor industry partners; emerging research institutions; and civil society organizations focused on environmental sustainability or human health and safety. Concept papers are due on **January 13, 2025**, an informational webinar was held on **November 8, 2024**, A one-day hybrid meeting for potential applicants was held on **November 15, 2024**.

NAPMP. On October 18, 2024, the Commerce Department issued a NOFO for the CHIP NAPMP to provide approximately \$1.6 billion for awards across five R&D areas with the potential for follow-on funding for prototyping activities. The areas are equipment, tools, processes, and process integration; power delivery and thermal management; connector technology, including photonics and radio frequency (RF); chiplets ecosystem; and co-design/electronic design automation (EDA).

Future Competitions

Competitions for the CHIPS for America NSTC Prototyping facility, the NAPMP Advanced Packaging Piloting Facility, and the CHIPS for America Administrative and Design Facility are still forthcoming. The Department and Natcast expect to announce information in the coming months about the process for selecting these affiliated technical centers.

Closed Competitions

The CHIPS for America Extreme Ultraviolet (EUV) Accelerator, National Semiconductor Technology Center. On October 31, 2024, the Department of Commerce and Natcast, the operator of the NSTC, announced NY CREATES' Albany NanoTech Complex in Albany, New York, is expected to operate the EUV Accelerator supported by a proposed federal investment of an estimated \$825 million. The EUV Accelerator will focus on advancing state of the art EUV technology and the R&D that relies on it, providing NSTC members access to technologies, capabilities, and critical resources. Natcast and NY CREATES have signed a nonbinding Memorandum of Understanding (MOU) and expect the final contract to have an expected term of 10 years.

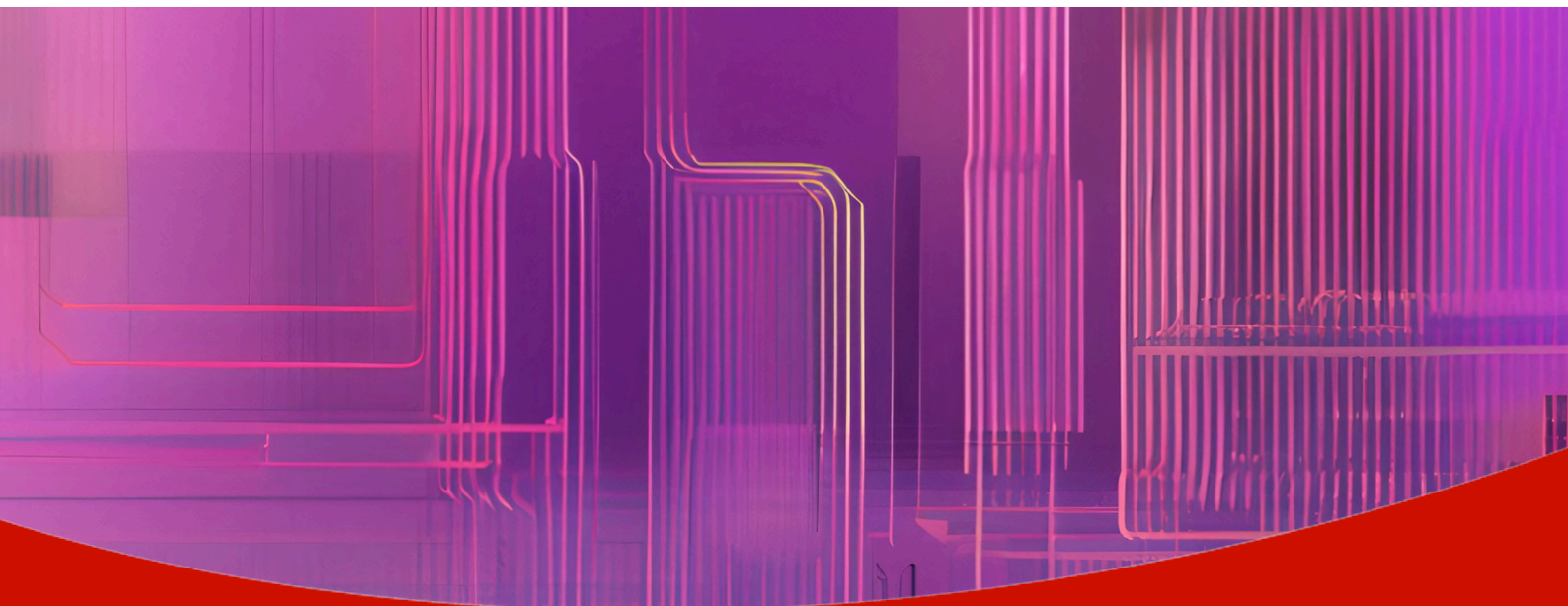
Design and Collaboration Facility (DCF), National Semiconductor Technology Center. On November 11, 2024, the Department of Commerce and Natcast, the operator of the NSTC, announced Sunnyvale, California as the expected location for the CHIPS for America Design and Collaboration Facility (DCF). The DCF is expected to play an important role in advancing semiconductor design research, workforce development, investment, and collaboration across the semiconductor value chain. The DCF is expected to drive more than \$1 billion in research funding over the next 10 years. It will serve as the center for advanced semiconductor research in chip design, electronic design automation, chip and system architecture, and hardware security and will be integral to the country's semiconductor workforce development efforts.

Closed Competitions ctd

CHIPS Manufacturing USA institutes. Applications to establish and operate a CHIPS Manufacturing USA institute focused on digital twins for the semiconductor industry closed on September 9, 2024. Funding of \$285 million is expected to support development, validation, and use of digital twins for semiconductor manufacturing, advanced packaging, assembly, and test processes.

CHIPS Materials and Substrates R&D, CHIPS Metrology Program. Eight teams were selected to submit full applications to establish and accelerate domestic capacity for advanced packaging substrates and substrate materials, a key technology for manufacturing semiconductors. The due date for applications was July 3, 2024. Funding of approximately \$300 million is anticipated in awards up to \$100 million each over up to 5 years per award.

Small Business Innovation Research (SBIR), CHIPS Metrology Program. On September 19, 2024, nearly \$5 million was awarded to 17 small businesses in amounts of up to \$283,500 with up to an additional \$6,500 available to each for Technical and Business Assistance (TABAs); each will be considered for a SBIR Phase II award up to \$1.9 million and up to \$50,000 in TABA funding in Spring 2025. Topics eligible for funding included measurement services, tools, and instrumentation; innovative manufacturing metrologies; novel assurance and provenance technologies and advanced metrology R&D testbeds.



CHIPS for America Workforce Fund, National Science Foundation

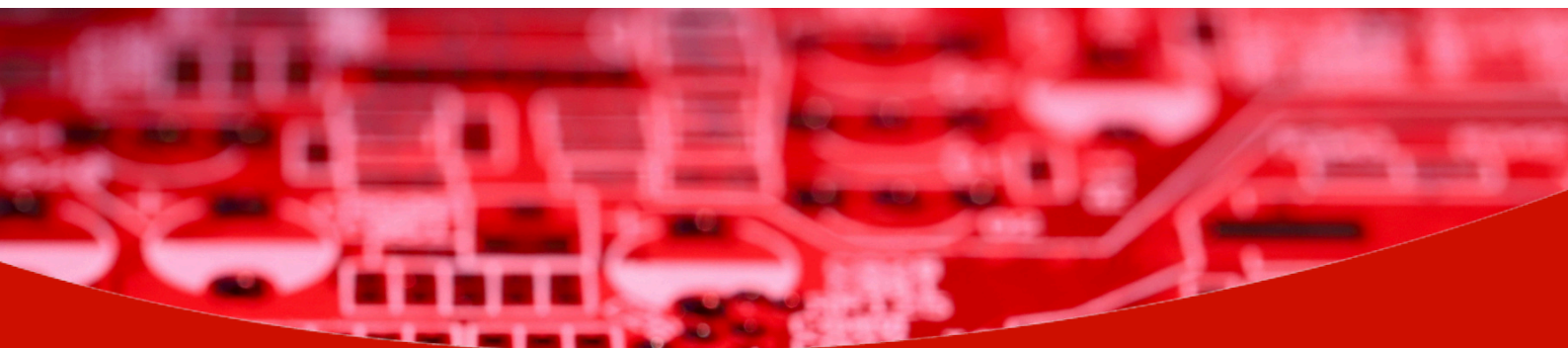
Network Coordination Hub, National Network for Microelectronics Education (NNME). On October 28, 2024, the National Science Foundation (NSF) and Department of Commerce (DOC) closed their opportunity for applications to the competition for \$30 million in funding to establish the Network Coordination Hub that will manage the National Network for Microelectronics Education (NNME) and lead its national strategy to train skilled workers for jobs in the U.S. semiconductor and microelectronics industry.

CHIPS for America International Technology Security and Innovation Fund

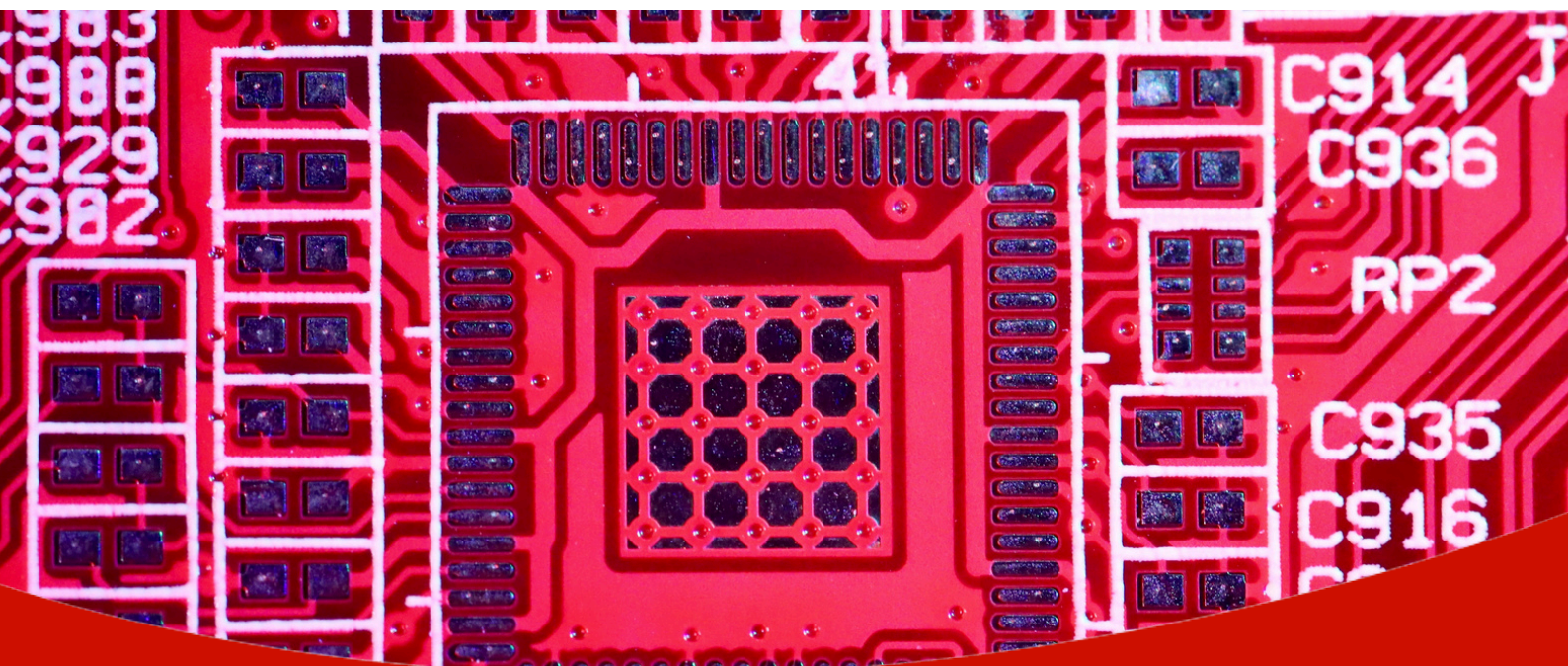
The CHIPS for America Act provided \$500 million to the State Department for a CHIPS for America International Technology Security and Innovation Fund to support international information and communications technology security and semiconductor supply chain activities, among other things.

According to the State Department, ITSI funding will support the following efforts to ensure a more diverse, resilient, and secure global semiconductor supply chain:

- **Securing Critical Material Inputs.** Semiconductor fabricators require access to critical minerals such as aluminum, arsenic, cobalt, copper, and rare earth elements. Several nations around the world have relevant mineral resources, and the Department will lead an effort to bring new, more diverse and resilient mining, refining/processing, and recycling capacity online to support global chip production, including in the United States.



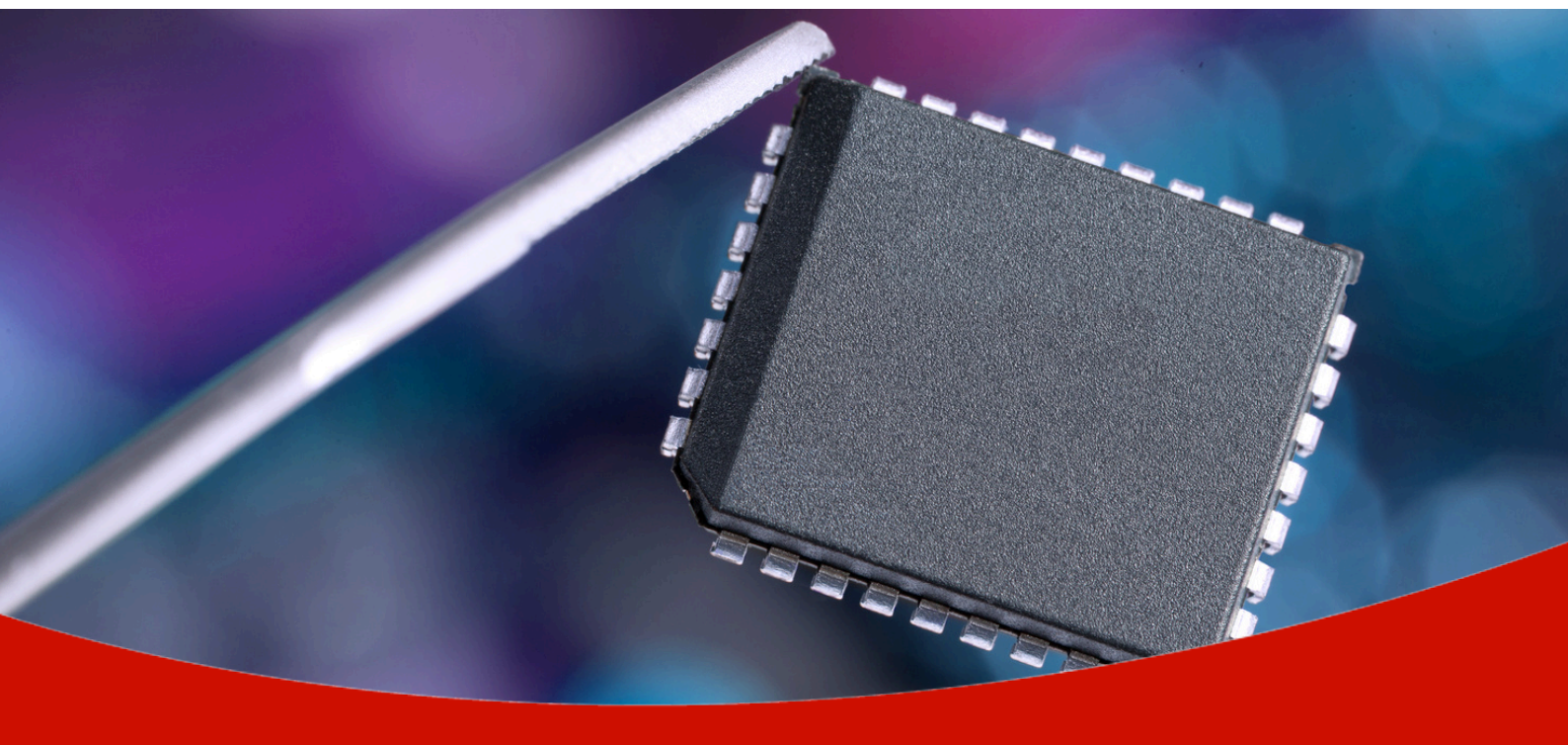
- **Strengthening International Policy Coordination.** In conjunction with the Department of Commerce, the State Department will coordinate with partner economies to support a more resilient and diverse semiconductor supply chain. These activities include developing common or complementary approaches to industry incentives, as well as improving coordination during supply disruptions.
- **Expanding and Diversifying Downstream Capacity in the Indo-Pacific and the Americas.** The ITSI funding will be deployed to promote the expansion of the international assembly, testing, and packaging capacity needed to diversify the global semiconductor supply chain. The United States will engage with like-minded partners to identify key regulatory and policy levers to attract semiconductor supply chain investments, identify workforce and infrastructure development needs, and engage in targeted capacity-building to help fill those gaps. This will also include ensuring countries have the necessary measures in place to safeguard leading-edge chips and technology from diversion and misuse.
- **Protecting National Security.** Some uses of advanced semiconductors can pose national security risks. The mechanisms to mitigate those risks – including collaboration with international partners on export controls and licensing policies – require strengthening. The Department will facilitate the development and close coordination of such policies and practices with supply chain allies and partners.



On July 3, 2023, the State Department announced it is directing funds from the International Technology Security and Innovation Fund to help create diverse, resilient, secure, and more transparent semiconductor supply chains. As part of these efforts, the ITSI Funds supported projects in 2023 and 2024 at the Organization for Economic Co-operation and Development (OECD) through the Committee on Industry, Innovation and Entrepreneurship (CIIE) and the Committee on Digital Economy Policy (CDEP)

The U.S. contribution support the OECD's work on semiconductors, including:

- Build a semiconductor exchange network of officials involved in semiconductor industry policymaking where participants exchange information on the current state of the semiconductor ecosystem and recent public and private initiatives in their respective countries.
- Create a government-to-government repository of information on active and planned semiconductor production facilities in participating countries.
- Catalogue public support initiatives relevant for the semiconductor ecosystem.
- Produce an overview of regulatory best practices and factors that make for successful semiconductor ecosystems.
- Develop new approaches to anticipate semiconductor supply gluts, shortages and disruptions, and related management issues.



GET CRITICAL INSIGHTS

TechVision21 President and CEO's book—*Next Generation Innovation: Supercharge Your Business Through Strategic Government Partnerships* offers rich insights drawn from Kelly Carnes' real-world experience as an attorney for technology companies, Senior Advisor to the Secretary of Commerce and Senate-confirmed Assistant Secretary of Commerce for Technology Policy, and her current entrepreneurial effort.



TechVision21 offers assistance to technology visionaries interested in doing well by doing good for the Nation. TechVision21 offers its clients the opportunity to collaborate with an expert team deeply knowledgeable about theories and models of innovation, the history of science and technology policy, and the details of U.S. government programs and budget-making processes. This includes how to access Federal funding to advance clients' research, technology, and policy interests. You can officially purchase a print copy or the e-book from [Amazon](#) today.



Kelly Carnes

President & CEO TechVision21

Bottom Line...

Washington is dishing out hundreds of billions of dollars in grants, loans, and tax credits for R&D, technology development, manufacturing, and clean energy. The funding landscape changes fast with new opportunities coming across government weekly. TechVision21 is ready to help advance your technology and clean energy interests in Washington —meetings with policy makers and program managers, pinpointing funding for projects, identifying key partners, and helping you prepare complex grant proposals. We have years of experience supporting clients in a wide range of technologies.

Do not hesitate to contact TechVision21 at (202) 966-6610 or at kcarnes@TechVision21.com