



## GOVERNMENT CONTRACTS INSIGHTS

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*August 29, 2022 - Grants*

# CHIPS AND SCIENCE ACT MAKES AVAILABLE BILLIONS OF DOLLARS FOR THE UNITED STATES SCIENCE AND TECHNOLOGY SECTORS

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Infusing billions of dollars into the U.S. semiconductor industry and appropriating billions more for scientific research and development, what is now colloquially referred to as the [CHIPS and Science Act of 2022](#) was signed into law by President Biden on August 9, 2022. According to the White House, the Act aims to “strengthen American manufacturing, supply chains, and national security, and invest in research and development, science and technology, and the workforce of the future,” to help America “win the race for the 21st century.” [1] The Act has two parts, the first, cleverly named Creating Helpful Incentives to Produce Semiconductors (“CHIPS” Act), authorizes more than \$50 billion in federal funding to bolster domestic semiconductor and microchip manufacturing and

research. The second and larger division, the Research and Development, Competition, and Innovation Act (now just called the “Science Act”), infuses \$170 billion in new research and innovation funding to a variety of federal agencies. Many of those funds, in turn, will be available to contractors and grantees searching for additional monies to support research and development initiatives.

### **The CHIPS Act**

The CHIPS Act provides \$52.7 billion over five years to accelerate semiconductor research, development, manufacturing, and workforce development. The funding has been allocated to select agencies as follows:

Agency/Program	Five-Year Authorization
<p><b>Department of Commerce (Commerce)</b></p> <ul style="list-style-type: none"> <li>• Incentives program to bolster domestic manufacturing capacity including funds for:               <ul style="list-style-type: none"> <li>• Legacy chip production</li> <li>• Industry loans and loan guarantees</li> </ul> </li> <li>• Creation of National Semiconductor Technology Center, National Advanced Packaging Manufacturing Program, and associated research and workforce development programs</li> </ul>	<p><b>\$50 billion total including:</b></p> <p>\$2 billion</p> <p>\$6 billion</p> <p>\$11 billion</p>
<p><b>Department of State</b> – Establishing a new program to coordinate the development of secure and trusted emerging technologies with foreign governments</p>	<p>\$500 million</p>
<p><b>National Science Foundation (NSF)</b> – Funding to promote growth of the domestic semiconductor workforce</p>	<p>\$200 million</p>
<p><b>Other Programs</b></p> <ul style="list-style-type: none"> <li>• CHIPS for America Defense Fund (sponsoring university-based prototyping of semiconductor technologies, including for defense applications)</li> <li>• Wireless Supply Chain Innovation (sponsoring leap-ahead technologies that spur movement towards open-architecture and software-based wireless technologies)</li> <li>• Advanced tax credit for companies investing in semiconductor manufacturing</li> </ul>	<p>\$2 billion</p> <p>\$1.5 billion</p> <p>~ \$24 billion*</p>

**\* Estimate only; tax credit not included in \$52.7 billion appropriation.**

One somewhat controversial aspect of the CHIPS Act is the claw-back provision included in the tax credit incentive. The Act creates a 25 percent tax credit for investments in semiconductor manufacturing, including the manufacturing of specialized tooling required

for chip production. The claw-back provision prevents recipients of these incentive funds from expanding or building new manufacturing capacity or making other “significant transactions” that support semiconductor industries in “countries of concern” (currently defined to include China, Russia, Iran, and North Korea) for ten years, lest they face enforcement action by Commerce to recover all incentives provided. Details remain murky, however, as Commerce will need to enact implementing regulations to define relevant terms and determine the details around how these guardrails will work.

Priorities for implementation are emerging. On August 25, 2022, President Biden issued an [Executive Order](#) that set forth the administration's priorities, to be reached through collaboration between the White House; State, local, tribal, and territorial governments; the private sector; research universities; labor unions; and our allied countries. These priorities include:

- Protecting taxpayer resources by ensuring that funding recipients will be held accountable for compliance with funding opportunity requirements;
- Meeting economic, sustainability, and national security needs, including by building domestic microelectronic manufacturing capacity;
- Ensuring long-term leadership in the microelectronics sector, through support for research and innovation;
- Catalyzing private-sector investment in production, breakthrough technologies, and worker and workforce development;
- Generating benefits impacting a wide range of stakeholders, including the traditionally underserved, through creation of well-paying, high-skilled union jobs and opportunities for startups, small businesses, and minority-owned, veteran-owned, and women-owned businesses and by partnering with State, local, tribal, and territorial governments and with institutions of higher education; and
- Strengthening and expanding regional manufacturing and innovation ecosystems, including by investing in suppliers, manufacturers, workforce development, basic and translational research, and related infrastructure and cybersecurity throughout the microelectronics supply chain.

The Executive Order also established a Steering Council to coordinate CHIPS Act-related policy. The Council will be co-chaired by the Assistant to the President for Economic Policy, the Assistant to the President for National Security Affairs, and the Director of the Office of Science and Technology Policy. Other Steering Committee members will include a wide cross-section of government agency representatives, including the Secretaries of State, Treasury, Defense, Commerce, Labor, and Energy; the Director of the Office of Management and Budget; the Administrator of the Small Business Administration; the Director of National Intelligence; the Assistant to the President for Domestic Policy; the Chair of the Council of Economic Advisers; the National Cyber Director; and the Director of the National Science Foundation.

### **The Science Act**

The Science Act, heralded as “the largest five-year investment in public R&D in the nation’s history,” provides four federal agencies with nearly \$170 billion to support “curiosity driven” and “use-inspired and translational” research and development. [2] The passage of the Science Act marks the reversal of an unfortunate trend of diminishing federal R&D spending, both as a percentage of GDP and in comparison with other advanced economies. Among the goals of the Science Act, in addition to general advancement of research, are the creation of new technology hubs, increasing participation in research by underrepresented populations and geographies, and bolstering efforts to combat theft of U.S. intellectual property. As with the CHIPS Act, where the Science Act establishes new programs or initiatives, federal agencies will need to promulgate implementing regulations before dispensing the authorized funds.

The following chart illustrates the breakdown of new funding for four recipient agencies:

<b>Agency/Key Programs</b>	<b>Five-Year Authorization</b>	<b>Increase from Prior Appropriations</b>
<b>NSF:</b> <ul style="list-style-type: none"> <li>• NSF Tech Directorate</li> <li>• NSF Core Activities</li> </ul>	<b>\$81 billion</b> \$20 billion \$61 billion	<b>\$36 billion</b> \$20 billion \$16 billion
<b>Commerce</b> <ul style="list-style-type: none"> <li>• Regional Technology Hubs</li> <li>• RECOMPETE Pilot</li> </ul>	<b>\$11 billion</b> \$10 billion \$1 billion	<b>\$11 billion</b> \$10 billion \$1 billion
<b>National Institute of Standards and Technology (NIST)</b> <ul style="list-style-type: none"> <li>• NIST Research</li> <li>• Manufacturing USA</li> <li>• Manufacturing Extension Partnership</li> </ul>	<b>\$10 billion</b> \$6.9 billion \$829 million \$2.3 billion	<b>\$5 billion</b> \$2.8 billion \$744 million \$1.5 billion
<b>Department of Energy (DOE)</b> <ul style="list-style-type: none"> <li>• DOE Office of Science</li> <li>• Additional DOE Science and Innovation</li> </ul>	<b>\$67.9 billion</b> \$50.3 billion \$17.6 billion	<b>\$30.5 billion</b> \$12.9 billion \$17.6 billion
<b>National Aeronautics and Space Administration (NASA)</b>	\$0 billion*	\$0 billion
<b>Total</b>	<b>\$169.9 billion</b>	<b>\$82.5 billion</b>

**\* The Science Act extends authorization and support for several existing NASA programs, including the Artemis Moon Program and International Space Station, but does not authorize new funding.**

The Science Act creates some new opportunities for government contractors and grant recipients. Some of the new and expanded areas of R&D funding are:

- An NSF Directorate for Technology, Innovation, and Partnerships to invest in strategic translational science, including artificial intelligence, quantum computing, advanced manufacturing, 6G communications, energy, materials science, and other critical technologies (\$20 billion);

- NSF studies of ocean acidification activities, including long-term data stewardship and access to ocean and coastal acidification data (\$20 billion);
- NIST work to advance research and standards in quantum information science, artificial intelligence, cybersecurity, advanced communications technologies, and semiconductors (\$6.9 billion);
- Tripled NIST funding for the Manufacturing Extension Partnership, to support small- and medium-sized manufacturers with cybersecurity, workforce training, and supply chain resiliency (\$2.23 billion);
- A NIST National Supply Chain Database to assist the businesses with supplier scouting, with the goal of minimizing supply chain disruptions;
- Commerce to create 20 “regional technology and innovation hubs” in areas that are not leading technology centers, focused on technology development, job creation, and expanding U.S. innovation capacity (\$10 billion);
- DOE basic energy research programs for artificial photosynthesis, energy storage, nuclear matter, and carbon materials and sequestration to advance energy technologies (\$14.5 billion);
- DOE research, development, and demonstration in building technologies, sustainable transportation, advanced manufacturing, industrial emissions reduction technology, advanced materials, and renewable power (\$11.2 billion);
- DOE High Energy Physics Program (\$6.5 billion);
- DOE Advanced Scientific Computing Research Program for high-end computing systems and computer sciences research (\$6 billion);
- DOE Fusion Energy Sciences Program (\$5 billion); and
- DOE Biological and Environmental Research program for earth and environmental systems, including the development of engineered ecosystems (\$4.5 billion).

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## Conclusion

The CHIPS Act marks a shift in federal policy regarding industrial subsidies. Long averse to the potentially market-distorting subsidies favored by other countries, the United States has now embraced the mechanism (at least for this critical sector of the economy). The Science Act is the most comprehensive infusion of resources into research and development in a long while. Significant opportunities for businesses and research institutions will arise from this legislation. We will carefully monitor proposed and final implementing regulations, and track where agencies allocate funding, and what opportunities, inventions and discoveries can be attributed to these programs.

[1] Office of the White House, [FACT SHEET: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China](#) (August 9, 2022).

[2] [The CHIPS and Science Act Fact Sheet](#) as prepared by House Leadership