

**Selected STEM and Workforce-related Provisions in the
Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022
July 28, 2022**

Agency	Program	Summary	Funding Information
Dept. of Energy	SEC. 10104. ADVANCED SCIENTIFIC COMPUTING RESEARCH PROGRAM	<p>Amends Section 304 of the Department of Energy Research and Innovation Act by adding the following new provision:</p> <p>(j) COMPUTATIONAL SCIENCE GRADUATE FELLOWSHIP: The Secretary shall support the Computational Science Graduate Fellowship program in order to facilitate collaboration between graduate students and researchers at the National Laboratories, and contribute to the development of a diverse and inclusive computational workforce to help advance research in all areas of computational science relevant to the mission of the Department, including quantum computing.</p>	<p>Includes the following authorization levels:</p> <p>FY23: \$15,750,000 FY24: \$16,537,500 FY25: \$17,364,375 FY26: 18,232,594 FY27: \$19,144,223</p>
Dept. of Energy	SEC. 10104. ADVANCED SCIENTIFIC COMPUTING RESEARCH PROGRAM.	<p>Amends Title IV of the National Quantum Initiative Act, by adding the following new section:</p> <p>“SEC. 404. DEPARTMENT OF ENERGY QUANTUM USER EXPANSION FOR SCIENCE AND TECHNOLOGY PROGRAM:</p> <p>The Secretary of Energy shall establish and carry out a program, to be known as the ‘Quantum User Expansion for Science and Technology program’ or ‘QUEST program’, to encourage and facilitate access to United States quantum computing hardware and quantum computing clouds for research purposes to enhance the United States quantum research enterprise; to educate the future quantum computing workforce; and to accelerate the advancement of United States quantum computing capabilities.”</p>	<p>Includes the following authorization levels:</p> <p>FY23: \$30,000,000 FY24: \$31,500,000 FY25: \$33,075,000 FY26: \$34,728,750 FY27: \$36,465,188</p>
Dept. of Energy	SEC. 10109. ACCELERATOR RESEARCH AND DEVELOPMENT	As part of the activities authorized under section 209 of the Department of Energy Organization Act (42 U.S.C. 7139), the Director shall carry out a research program—	Includes the following authorization levels:

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		<p>“(1) to advance accelerator science and technology relevant to the Department, other Federal agencies, and United States industry;</p> <p>(2) to foster partnerships to develop, demonstrate, and enable the commercial application of accelerator technologies;</p> <p>(3) to support the development of a skilled, diverse, and inclusive accelerator workforce; and</p> <p>‘(4) to provide access to accelerator design and engineering resources.”</p>	<p>FY23: \$19,080,000 FY24: \$20,224,800 FY25: \$21,438,288 FY26: \$22,724,585 FY27: \$24,088,060</p>
Dept. of Energy	SEC. 10111. INCREASED COLLABORATION WITH TEACHERS AND SCIENTISTS	<p>Amends the Department of Energy Research and Innovation Act by adding the following new section:</p> <p>“SEC. 312. INCREASED COLLABORATION WITH TEACHERS AND SCIENTISTS: The Director shall support the development of a scientific workforce through programs that facilitate collaboration between and among teachers at elementary schools and secondary schools served by local educational agencies, students at institutions of higher education, early-career researchers, faculty at institutions of higher education, and the National Laboratories, including through the use of proven techniques to expand the number of individuals from underrepresented groups pursuing and attaining skills or undergraduate and graduate degrees relevant to the mission of the Office of Science.”</p>	<p>Includes the following authorization levels:</p> <p>FY23: \$40,000,000 FY24: \$40,000,000 FY25: \$40,000,000 FY26: \$40,000,000 FY27: \$40,000,000</p>
Dept. of Energy	SEC. 10111. INCREASED COLLABORATION WITH TEACHERS AND SCIENTISTS	<p>Sec. 10111 also amends the Department of Energy Science Education Enhancement Act by adding the following new sections:</p>	<p>Includes the following authorization levels:</p> <p>FY23: \$2,000,000 FY24: \$2,000,000</p>

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	<p>[BROADENING PARTICIPATION IN WORKFORCE DEVELOPMENT FOR TEACHERS AND SCIENTISTS and</p> <p>EXPANDING OPPORTUNITIES FOR HIGHLY SKILLED SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) PROFESSIONALS:]</p>	<p>“SEC 3167A. BROADENING PARTICIPATION IN WORKFORCE DEVELOPMENT FOR TEACHERS AND SCIENTISTS:</p> <p>Requires the Secretary to develop a plan for broadening participation of underrepresented groups in science, technology, engineering, and mathematics in programs supported by the Department</p> <p>“SEC. 3167B. EXPANDING OPPORTUNITIES FOR HIGHLY SKILLED SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) PROFESSIONALS:</p> <p>Requires the Secretary to –</p> <ul style="list-style-type: none"> • Develop a 10-year educational plan to “fund and expand new or existing programs administered by the Office of Science and sited at the National Laboratories and Department user facilities to expand educational and workforce development opportunities for underrepresented individuals, including high school, undergraduate, and graduate students; and recent graduates, teachers, and faculty in STEM fields.” • Develop programs that strengthen the research capacity relevant to Office of Science disciplines at emerging research institutions, • Establish a university-led Traineeship Program to address workforce development needs in STEM fields relevant to the Department, with a focus on “supporting workforce development and research experiences for underrepresented undergraduate and graduate students; and increasing participation from under-represented populations.” 	<p>FY25: \$2,000,000 FY26: \$2,000,000 FY27: \$2,000,000</p>

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Dept. of Energy	SEC. 10718. SMALL BUSINESS VOUCHER PROGRAM	The Secretary, acting through the Chief Commercialization Officer and in consultation with the Directors of each National Laboratory, shall establish a program to provide small business concerns with vouchers to be used at National Laboratories and single-purpose research facilities for research, development, demonstration, technology transfer, skills training and workforce development, or commercial application activities; or any other activities that the applicable Director determines appropriate.	Includes the following authorization levels to carry out this program: FY23: \$25,000,000 FY24: \$25,000,000 FY25: \$25,000,000 FY26: \$25,000,000 FY27: \$25,000,000
Dept. of Energy	SEC. 10731. MICROELECTRONICS RESEARCH FOR ENERGY INNOVATION	<p>MICROELECTRONICS RESEARCH PROGRAM Requires DOE to establish a dedicated research program focused on research, development, and demonstration of next- generation microelectronics. In carrying out the program, the Secretary is required to support— “workforce development through existing authorities and mechanisms available to the Department, including internships, fellowships, individual investigator grants, and other activities the Secretary determines appropriate.”</p> <p>MICROELECTRONICS SCIENCE RESEARCH CENTERS Requires DOE to develop four Microelectronics Science Research Centers, to be located at National Laboratories, Universities, non-profit or commercial research entities, or consortiums to carry out research activities focused on addressing the foundational challenges in design, development, characterization, prototyping, demonstration, and fabrication of microelectronics.</p>	<p>Includes the following authorization levels to carry out the Research Program:</p> <p>FY23: \$75,000,000 FY24: \$100,000,000 FY25: \$100,000,000 FY26: \$100,000,000 FY27: \$100,000,000</p> <p>Includes the following authorization levels for Research Centers:</p> <p>FY23: \$25,000,000 FY24: \$25,000,000</p>

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		<p>These research centers are required to coordinate with other Federal programs focused on microelectronics R&D, and would be required to support technology transfer and workforce development initiatives to support the private sector.</p>	<p>FY25: \$25,000,000 FY26: \$25,000,000 FY27: \$25,000,000</p>
<p>Department of Commerce</p>	<p>SEC. 104. OPPORTUNITY AND INCLUSION</p>	<p>The Secretary of Commerce shall assign personnel to lead and support the activities carried out under this section, including coordination with other workforce development activities of the Department of Commerce or of Federal agencies, as defined in section 551 of Title 5, United States Code, as appropriate.</p> <p>Personnel assigned by the Secretary to carry out the activities under this section shall—</p> <p>(1) assess the eligibility of a covered entity for financial assistance for a project;</p> <p>(2) ensure that each covered entity is carrying out the commitments of the covered entity to economically disadvantaged individuals; and</p> <p>(3) increase participation of and outreach to economically disadvantaged individuals, minority-owned businesses, veteran-owned businesses, and women-owned businesses, in the geographic area of a project and serve as a resource for those individuals, businesses, and covered entities.</p>	<p>No specific authorization level provided</p>
<p>Department of Commerce</p>	<p>SEC. 10235. DR. DAVID SATCHER CYBERSECURITY EDUCATION GRANT PROGRAM.</p>	<p>The Director shall carry out the Dr. David Satcher Cybersecurity Education Grant Program by awarding grants to assist institutions of higher education that have an</p>	<p>No specific authorization level</p>

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		<p>enrollment of needy students to expand cybersecurity education opportunities, cybersecurity programs, cybersecurity research, and cybersecurity partnerships with public and private entities.</p> <p>An eligible institution that receives a grant under this section may use the funds awarded through such grant for “increasing research, education, technical, partnership, and innovation capacity, including</p> <ul style="list-style-type: none"> • building and upgrading institutional capacity to better support new or existing cybersecurity programs, including cybersecurity partnerships with public and private entities; • building and upgrading institutional capacity to provide hands-on research and training experiences for undergraduate and graduate students; and • outreach and recruitment to ensure students are aware of such new or existing cybersecurity programs, including cybersecurity partnerships with public and private entities.” 	
Department of Commerce	SEC. 10251. ESTABLISHMENT OF EXPANSION AWARDS PILOT PROGRAM AS A PART OF THE HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.	<p>SEC. 25B. EXPANSION AWARDS PILOT PROGRAM: The Requires the Director to establish an expansion of awards for Hollings Manufacturing Extension Partnership, which must be made for one or more of the following purposes:</p> <p>“(1) To provide worker education, training, development, and entrepreneurship training and to connect individuals or business with such services offered in their community, which may include employee ownership and workforce training, including connecting manufacturers with career and</p>	“RESOURCE OPTIMIZATION.—Of amounts authorized for the Hollings Manufacturing Extension Partnership program under section 25 of the National Institute of Standards and

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		<p>technical education entities, institutions of higher education (including community colleges), workforce development boards, labor organizations, and nonprofit job training providers to develop and support training and job placement services, including apprenticeship and online learning platforms, for new and incumbent workers, programming to prevent job losses when adopting new technologies and processes, and development of employee ownership practices.”</p> <p>(2) To provide services to improve the resiliency of domestic supply chains....</p>	<p>Technology Act (15 U.S.C. 278k), the Secretary shall optimize funding across sections 25 and 25A of such Act, as well as the program established under section 25B of such Act (as added by subsection (a)), to the extent practicable and subject to the availability of appropriations, in order to maximize Center (as such term is defined in such section 25) participation as well as competitiveness, productivity, and technological performance in United States manufacturing.”</p>
Department of Commerce	SEC. 10621. REGIONAL INNOVATION CAPACITY.	<p>Amends the Stevenson-Wydler Technology Innovation Act of 1980 by inserting a new Sec. 28. “REGIONAL TECHNOLOGY AND INNOVATION HUB PROGRAM”</p> <p>Directs the Department of Commerce to create at least 20 geographically distributed “regional technology and</p>	<p>Authorizes \$10 billion for the program from Fiscal Year 2023 through Fiscal Year 2027</p>

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		<p>innovation hubs” in areas that are not leading technology centers.</p> <p>These hubs will focus on technology development, job creation, and expanding U.S. innovation capacity.</p> <p>Among the uses of funds is the “formation of a workforce development strategy, according to the needs for a skilled and technical workforce at all skill and degree levels in the region proposed to be served by the eligible consortia.”</p> <p>Requires any workforce development strategy to include—</p> <p style="padding-left: 40px;">“(i) how the eligible consortia will develop, offer, or improve educational or career training programs and curriculum for a skilled and technical workforce;</p> <p style="padding-left: 40px;">“(ii) the extent to which such programs developed and offered by the eligible consortia will meet the educational or career training needs of a skilled and technical workforce in the region to be served;</p> <p style="padding-left: 40px;">“(iii) how the eligible consortia will provide facilities for students to receive training under such programs developed and offered by the eligible consortia; and</p> <p style="padding-left: 40px;">“(iv) how the eligible consortia will enhance outreach and recruitment for such programs developed and offered by the eligible consortia to populations underrepresented in STEM.”</p> <p>Among the allowable uses of funds awarded to an innovation hub include –</p>	<p>Also authorizes \$1 billion as part of establishing the “Recompete Pilot Program” to support persistently distressed communities.</p>

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		<p>“(A) WORKFORCE DEVELOPMENT ACTIVITIES.— Workforce development activities including activities relating to the following:</p> <p>“(i) The creation of partnerships between industry, workforce, nonprofit, and educational institutions, which may include community colleges, to create and align technical training and educational programs, including for a skilled technical workforce.</p> <p>“(ii) The design, development, and updating of educational and training curriculum and programs, including training of trainers, teachers, or instructors tied to demonstrated regional skilled and technical workforce needs.</p> <p>“(iii) The procurement of facilities and equipment, as required to train a skilled and technical workforce.</p> <p>“(iv) The development and execution of programs, including traineeships and apprenticeships, to rapidly provide training and award certificates or credentials recognized by regional industries or other organizations.</p> <p>“(v) The matching of regional employers with a potential new entrant, under-employed,</p>	

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		<p>underrepresented, reentering, or incumbent workforce, as well as the securing of commitments from employers to hire workers who successfully complete training programs, or who are awarded certificates or credentials.</p> <p>“(vi) The expansion of successful training programs at a scale required by the region served by the regional technology and innovation hub, including through the use of online education and mentoring.</p> <p>“(vii) The development and expansion of programs with the goal of increasing the participation of persons historically underrepresented in STEM and manufacturing in the workforce development plans of the regional technology and innovation hub.</p> <p>“(viii) The provision of support services for attendees of training programs developed, updated, or expanded pursuant to this subsection, including career counseling.</p> <p>“(ix) The implementation of outreach and recruitment for training programs developed, updated, or expanded pursuant to this subsection, particularly at local educational institutions, including high schools and community colleges.”</p>	

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		<p>...</p> <p>“(D) INFRASTRUCTURE-RELATED ACTIVITIES.—The building of facilities and site connectivity infrastructure necessary to carry out activities described in subparagraphs (A), (B), and (C), including activities relating to the following:</p> <p>“(i) Establishing a center with required tools and instrumentation for workforce development.</p> <p>“(ii) Establishing a facility for technology development, demonstration, and testing.</p> <p>“(iii) Establishing collaborative incubators to support technology commercialization and entrepreneur training.”</p>	
Department of Commerce	Sec. 102. CREATING HELPFUL INCENTIVES TO PRODUCE SEMICONDUCTORS (CHIPS) FOR AMERICA FUND	<p>Creates a CHIPS for America Fund which supports several programs, including for Commerce R&D and workforce development programs specifically:</p> <p>NATIONAL SEMICONDUCTOR TECHNOLOGY CENTER: A public-private partnership to conduct advanced semiconductor manufacturing R&D and prototyping; invest in new technologies; and expand workforce training and development opportunities.</p> <p>CREATION OF A MANUFACTURING USA INSTITUTE: A partnership between government, industry, and academia to</p>	The CHIPS for America Fund provides a \$39 billion appropriations, of which \$11 billion is for Commerce Workforce and Development programs, including, with respect to the Technology Center, appropriates the following funding:

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		research virtualization of semiconductor machinery, develop ATP capabilities, and design and disseminate training.	<p>FY22: \$2 billion FY23: \$2 billion FY24: \$1.3 billion FY25: \$1.1 billion FY26: \$1.6 billion</p> <p>And with respect to the USA Institute and Microelectronics R&D, appropriates jointly:</p> <p>FY22: \$500 million FY23: \$2 billion FY24: \$1.3 billion FY25: \$1.1 billion FY26: \$1.6 billion</p>
National Science Foundation	SEC. 102. (d) CREATING HELPFUL INCENTIVES TO PRODUCE SEMICONDUCTORS (CHIPS) FOR AMERICA WORKFORCE AND EDUCATION FUND.	<p>There is established in the Treasury of the United States a fund to be known as the “Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Workforce and Education Fund” (referred to in this subsection as the “Fund”) for the National Science Foundation for microelectronics workforce development activities to meet the requirements under section 9906 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (15 U.S.C. 4656).</p> <p>ADVANCED MICROELECTRONICS RESEARCH AND DEVELOPMENT: Section 9906 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal</p>	<p>Appropriates \$200 million for a CHIPS Workforce and Education Fund over the course of 5 years as follows:</p> <p>FY23: \$25 million FY24: \$25 million FY25: \$50 million FY26: \$50 million FY27: \$50 million</p>

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		<p>Year 2021 (15 U.S.C. 4656) is amended to expand workforce development activities and grow the domestic semiconductor workforce. It is also amended to incentivize and expand geographically diverse participation in graduate, undergraduate, and community college programs relevant to microelectronics, including through the development and dissemination of curricula and research training experiences; and the development of workforce training programs and apprenticeships in advanced microelectronic design, research, fabrication, and packaging capabilities.</p>	
National Science Foundation	SEC. 10311: PREK–12 STEM EDUCATION	<p>NATIONAL ACADEMIES STUDY: The Director shall enter into an agreement with the National Academies to conduct a study to identify and address barriers to innovations in PreK–12 STEM education.</p> <p>SUPPORTING PREK–12 INFORMAL STEM OPPORTUNITIES: The Director of the National Science Foundation shall make awards, through existing programs where appropriate to institutions of higher education and nonprofit organizations (or consortia of such intuitions or organizations) on a merit reviewed, competitive basis for research on effective approaches to engaging students in PreK–12, including students from groups historically underrepresented in STEM and rural students.</p> <p>NATIONAL STEM TEACHER CORPS PILOT: To elevate the profession of STEM teaching by establishing a National STEM Teacher Corps pilot program to recognize outstanding STEM teachers in our Nation’s classrooms, rewards them for their accomplishments, elevates their public profile, and creates rewarding career paths to which all STEM teachers can</p>	No specific authorization level

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National Science Foundation	SEC. 10312. UNDERGRADUATE STEM EDUCATION	<p>aspire, both to prepare future STEM researchers and to create a scientifically literate public.</p> <p>RESEARCH ON STEM EDUCATION AND WORKFORCE NEEDS: The Director shall make awards, on a competitive basis, to four-year institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations) to support research and development activities to understand and increase the size and diversity of the STEM workforce.</p> <p>INNOVATIONS IN STEM EDUCATION AT COMMUNITY COLLEGES: The Director shall make awards on a merit-reviewed, competitive basis to institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations) to advance research on the nature of learning and teaching at community colleges and to improve outcomes for students who enter the workforce upon completion of their STEM degree or credential or transfer to 4-year institution.</p> <p>IMPROVING ACCESS TO STEM EDUCATION AT CAREER AND TECHNICAL EDUCATION INSTITUTIONS: The Director shall make awards, on a competitive basis, to institutions of higher education (including postsecondary vocational institutions) to support career and technical education in STEM and computer science related fields.</p>	No specific authorization level
National Science Foundation	SEC. 10313. GRADUATE STEM EDUCATION	<p>GRADUATE RESEARCH FELLOWSHIP PROGRAM UPDATE: Section 10 of the National Science Foundation Act of 1950 (42 U.S.C. 1869) is amended—</p> <p>(A) in subsection (a), by inserting “and as will address national workforce demand in critical STEM fields” after “throughout the United States”;</p>	The Graduate Research Fellowship Program has authorized funding for each of the following fiscal years: FY23: \$416,300,000

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		<p>(B) in subsection (b), by striking “of \$12,000” and inserting “of at least \$16,000”; and</p> <p>(C) by adding at the end the following: “(c) OUTREACH.—The Director shall ensure program outreach to recruit fellowship applicants from fields of study that are in areas of critical national need from all regions of the country, and from historically underrepresented populations in STEM.”.</p> <p>(3) CYBERSECURITY SCHOLARSHIPS AND GRADUATE FELLOWSHIPS.—The Director shall ensure that students pursuing master’s degrees and doctoral degrees in fields relating to cybersecurity are eligible to apply for scholarships and graduate fellowships under the Graduate Research Fellowship Program under section 10 of the National Science Foundation Act of 1950 (42 U.S.C. 1869).</p>	<p>FY24: \$454,140,000 FY25: \$491,990,000 FY26: \$529,830,000 FY27: \$567,680,000</p>
National Science Foundation	SEC. 10314. STEM WORKFORCE DATA.	SKILLED TECHNICAL WORKFORCE PORTFOLIO REVIEW: Not later than 1 year after the date of enactment of this Act, the Director shall conduct a full portfolio analysis of the Foundation’s skilled technical workforce investments across all Directorates in the areas of education, research, infrastructure, data collection, and analysis.	No specific authorization level
National Science Foundation	SEC. 10315. CYBER WORKFORCE DEVELOPMENT RESEARCH AND DEVELOPMENT	The Director shall make awards on a merit-reviewed, competitive basis to institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations) to carry out research on the cyber workforce.	No specific authorization level
National Science Foundation	SEC. 10316. FEDERAL CYBER SCHOLARSHIP-FOR-SERVICE PROGRAM (aka CyberCorps)	Section 302(b)(1) of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7442(b)(1)) is amended by striking the semicolon at the end and inserting the following “and cybersecurity-related aspects of other related fields as appropriate, including artificial intelligence, quantum computing and aerospace.”	Authorized funding for FY23: \$70,000,000 FY24: \$72,000,000 FY25: \$78,000,000 FY26: \$84,000,000 FY27: \$90,000,000

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National Science Foundation	SEC. 10317. CYBERSECURITY WORKFORCE DATA INITIATIVE.	The Director, acting through the National Center for Science and Engineering Statistics and in coordination with the Director of the National Institute of Standards and Technology and other appropriate Federal statistical agencies, shall establish a cybersecurity workforce data initiative.	No specific authorization level
National Science Foundation	SEC. 10318. MICROELECTRONICS WORKFORCE DEVELOPMENT ACTIVITIES.	CREATING HELPFUL INITIATIVES TO PRODUCE PERSONNEL IN NEEDED GROWTH INDUSTRIES: The Director shall make awards to institutions of higher education, non-profit organizations, or consortia thereof, for research, development, and related activities to advance innovative approaches to developing, improving, and expanding evidence-based education and workforce development activities and learning experiences at all levels of education in fields and disciplines related to microelectronics.	No specific authorization level
National Science Foundation	SEC. 10319. INCORPORATION OF ART AND DESIGN INTO CERTAIN STEM EDUCATION	The National Science Foundation Authorization Act is amended to include STEM education.	No specific authorization level
National Science Foundation	SEC. 10321. PROGRAMS TO ADDRESS THE STEM WORKFORCE.	The Director shall issue undergraduate scholarships, including at community colleges, graduate fellowships and traineeships, postdoctoral awards, and, as appropriate, other awards, to address STEM workforce gaps, including for programs that recruit, retain, and advance students to a bachelor's degree in a STEM discipline concurrent with a secondary school diploma, such as through existing and new partnerships with State educational agencies.	No specific authorization level

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National Science Foundation	SEC. 10322. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM UPDATE	The Foundation should increase the number of scholarships awarded under the Robert Noyce Teacher Scholarship program by 50 percent. To increase the diversity of participants, the Director shall support symposia, forums, conferences, and other activities to expand and enhance outreach to— (1) historically Black colleges and universities; (2) Tribal Colleges or Universities; (3) minority-serving institutions; (4) institutions of higher education that are located near or serve rural communities, including EPSCoR institutions; (5) labor organizations; (6) emerging research institutions; and (7) higher education programs that serve or support veterans.	Authorized appropriations for FY23: \$73,700,000 FY24: \$80,400,000 FY25: \$87,100,000 FY26: \$93,800,000 FY27: \$100,500,000
National Science Foundation	SEC. 10328. RESEARCH AND DISSEMINATION TO INCREASE THE PARTICIPATION OF WOMEN AND UNDERREPRESENTED MINORITIES IN STEM FIELDS.	The Director shall make awards on a competitive, merit-reviewed basis, to institutions of higher education or non-profit organizations (or consortia of such institutions or organizations), to enable such entities to increase the participation of women and underrepresented minorities in STEM studies and careers.	There are authorized to be appropriated to carry out this section \$5,000,000 for each of fiscal years 2023, 2024, 2025, 2026, and 2027.

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National Science Foundation	SEC. 10329. ACTIVITIES TO EXPAND STEM OPPORTUNITIES.	<p>NATIONAL SCIENCE FOUNDATION SUPPORT FOR INCREASING DIVERSITY AMONG STEM FACULTY AT INSTITUTIONS OF HIGHER EDUCATION: The Director of the Foundation shall make awards to institutions of higher education (or consortia thereof) for the development and assessment of innovative reform efforts designed to increase the recruitment, retention, and advancement of individuals from underrepresented minority groups in academic STEM careers, which may include implementing or expanding successful evidence-based practices.</p> <p>NATIONAL SCIENCE FOUNDATION SUPPORT FOR BROADENING PARTICIPATION IN UNDERGRADUATE STEM EDUCATION: The Director of the Foundation shall make awards to institutions of higher education (or a consortium of such institutions) to implement or expand research-based reforms in undergraduate STEM education for the purpose of recruiting and retaining students from minority groups who are underrepresented in STEM fields.</p>	<p>There are authorized to be appropriated to carry out this subsection \$8,000,000 for each of fiscal years 2023 through 2027.</p> <p>There are authorized to be appropriated to carry out this subsection \$15,000,000 for each of fiscal years 2023 through 2027.</p>
National Science Foundation	SEC. 10348. FOOD-ENERGY-WATER RESEARCH.	The Director shall make awards on a competitive basis to institutions of higher education or non-profit organizations (or consortia of such institutions or organizations) to, among other activities, grow the scientific workforce capable of studying and managing the food-energy water system, through education and other professional development.	No specific authorization level

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<p>National Science Foundation</p>	<p>Subtitle G – Directorate for Technology, Innovation, and Partnerships</p>	<p>The purposes of the Directorate established under section 10381 are to— (1) support use-inspired and translational research and accelerate the development and use of federally funded research; (2) strengthen United States competitiveness by accelerating the development of key technologies; and (3) grow the domestic workforce in key technology focus areas, and expand the participation of United States students and researchers in areas of societal, national, and geostrategic importance, at all levels of education.</p> <p>SEC. 10384. REQUIREMENTS. In carrying out the activities under the Directorate, the Director shall ensure the programmatic work of the Directorate and Foundation— (1) utilizes the full potential of the United States workforce by avoiding undue geographic concentration of research and development and education funding across the United States, and encourages broader participation in the key technology focus area workforce by populations historically underrepresented in STEM; and (2) incorporates a worker perspective through participation by labor organizations and workforce training organizations.</p> <p>SEC. 10393. SCHOLARSHIPS AND FELLOWSHIPS: The Director, acting through the Directorate, shall fund undergraduate scholarships (including at community colleges), graduate fellowships and traineeships, and postdoctoral awards in the key technology focus areas.</p> <p>SEC. 10395. SCALING INNOVATIONS IN PREK–12 STEM EDUCATION: Taking into consideration the recommendations under section 10311(a)(4) of subtitle B, the Director shall make awards, on a competitive, merit-reviewed basis, to establish multidisciplinary Centers for Transformative</p>	<p>Authorized funds for the Directorate are for each of the following fiscal years: FY23: \$1,500,000,000 FY24: \$3,350,000,000 FY25: \$3,550,000,000 FY26: \$3,800,000,000 FY27: \$4,100,000,000</p> <p>Of amounts authorized for the Directorate for Technology, Innovation, and Partnerships, \$100,000,000 shall be authorized to carry out Sec. 10393</p>
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**Selected STEM and Workforce-related Provisions in the
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Agency	Program	Summary	Funding Information
		Education Research and Translation to support research and development on widespread and sustained implementation of STEM education innovations.	
National Science Foundation	RURAL STEM EDUCATION RESEARCH SEC. 10512. NATIONAL SCIENCE FOUNDATION RURAL STEM ACTIVITIES.	<p>(a) PREPARING RURAL STEM EDUCATORS: The Director shall make awards on a merit- reviewed, competitive basis to institutions of higher education or nonprofit organizations (or a consortium thereof) for research and development activities to advance innovative approaches to support and sustain high-quality STEM teaching in rural schools.</p> <p>(b) BROADENING PARTICIPATION OF RURAL STUDENTS IN STEM: The Director shall make awards on a merit-reviewed, competitive basis to institutions of higher education or nonprofit organizations (or a consortium thereof) for research and development of programming to identify the barriers rural students face in accessing high-quality STEM education and development of innovative solutions to improve the participation and advancement of rural students in prekindergarten through grade 12 in STEM studies.</p>	<p>There are authorized to be appropriated to the Director— \$8,000,000 to carry out the activities under subsection (a) for each of fiscal years 2023 through 2027; and</p> <p>\$12,000,000 to carry out the activities under subsection (b) for each of fiscal years 2023 through 2027</p>
National Science Foundation	RURAL STEM EDUCATION RESEARCH SEC. 10513. OPPORTUNITIES FOR ONLINE EDUCATION.	The Director shall make competitive awards to institutions of higher education or nonprofit organizations (or a consortium thereof, which may include a private sector partner) to conduct research on online STEM education courses for rural communities.	No specific funding level

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Agency	Program	Summary	Funding Information
National Science Foundation	RURAL STEM EDUCATION RESEARCH SEC. 10514. NATIONAL ACADEMIES EVALUATION.	<p>Not later than 12 months after the date of enactment of this division, the Director shall enter into an agreement with the National Academies under which the National Academies agree to conduct an evaluation and assessment that evaluates and makes recommendations for action at the Federal, State, and local levels for improving STEM education.</p> <p>The evaluation and assessment should assess the core research and data needed to understand the challenges rural areas are facing in providing quality STEM education and workforce development and make recommendations for action at the Federal, State, and local levels for improving STEM education, including online STEM education, for students in prekindergarten through grade 12 and workforce development in rural areas.</p>	There are authorized to be appropriated to the Director to carry out this section \$1,000,000 for fiscal year 2023.
National Science Foundation	SEC. 10522. AGENCY RESPONSIBILITIES	In consultation with outside stakeholders and the heads of Federal research agencies and the Interagency Working Group on Inclusion in STEM, the Director of the Office of Science and Technology Policy shall develop a uniform set of policy guidelines for Federal research agencies to carry out a sustained program of outreach activities to increase clarity, transparency, and accountability for Federal research agency investments in STEM education and research activities at HBCUs, TCUs, and MSIs, including such institutions in rural areas.	No specific authorization level

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Agency	Program	Summary	Funding Information
National Science Foundation	SEC. 10523. RESEARCH AT THE NATIONAL SCIENCE FOUNDATION.	The Director shall make awards, on a competitive basis, to institutions of higher education or nonprofit organizations (or consortia thereof) to— (1) conduct research described in subsection (b) with respect to HBCUs, TCUs, and MSIs; and (2) identify and broadly disseminate effective models for programs and practices at HBCUs, TCUs, and MSIs that promote the education and workforce preparation of minority students pursuing STEM studies and careers in which such students are underrepresented.	No specific authorization level
National Science Foundation	SEC. 10613. QUADRENNIAL SCIENCE AND TECHNOLOGY REVIEW	<p>SEC. 206B. QUADRENNIAL SCIENCE AND TECHNOLOGY REVIEW: (1) QUADRENNIAL REVIEWS REQUIRED: Not later than December 31, 2023, and every four years thereafter, the Director of the Office of Science and Technology Policy shall complete a review of the science and technology enterprise of the United States (in this section referred to as the ‘quadrennial science and technology review’).</p> <p>In each quadrennial science and technology review, the Director of the Office of Science and Technology Policy shall:</p> <p>... (4) assess the global competition in science and technology and identify potential threats to the leadership of the United States in science and technology and opportunities for international collaboration;</p> <p>(5) assess and make recommendations on the science, technology, engineering, mathematics, and computer science workforce of the United States...</p>	No specific authorization level

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Agency	Program	Summary	Funding Information
National Science Foundation	SEC. 10661. QUANTUM NETWORKING AND COMMUNICATIONS.	QUANTUM INFORMATION SCIENCE WORKFORCE EVALUATION AND ACCELERATION: Requires the Director to enter into agreement with the National Academy of Sciences, Engineering, and Medicine to conduct a study to evaluate and make recommendations for the quantum information science workforce.	There are authorized to be appropriated to the Director \$8,000,000 for each of fiscal years 2023 through 2026 to carry out this section
NASA	SEC. 10851. OFFICE OF STEM ENGAGEMENT.	The Administrator shall establish an Office of STEM Engagement for the purpose of advancing progress toward the STEM education goals of the United States by enhancing STEM literacy, increasing diversity, equity, and inclusion in STEM, and preparing the STEM workforce for the future.	No specific authorization level
OSTP	SEC. 10505. CULTURAL AND INSTITUTIONAL BARRIERS TO EXPANDING THE ACADEMIC AND FEDERAL STEM WORKFORCE	Not later than 12 months after the date of enactment of this Act, the Director, in consultation with the interagency working group on inclusion in STEM and utilizing existing guidance already developed by Federal research agencies where applicable, shall broadly disseminate to entities that receive Federal research funding best practices for conducting periodic climate surveys of STEM departments and divisions and providing educational opportunities, including workshops, for STEM professionals.	No specific authorization level