

growth, retention, and development of that workforce;

(2) examine paths to entry and re-entry into the cyber workforce;

(3) understand trends of the cyber workforce, including demographic representation, educational and professional backgrounds present, competencies available, and factors that shape employee recruitment, development, and retention and how to increase the size, diversity, and capability of the cyber workforce;

(4) examine and evaluate training practices, models, programs, and technologies; and

(5) other closely related topics as the Director determines appropriate.

(c) Requirements

In carrying out the activities described in subsection (b), the Director shall—

(1) collaborate with the National Institute of Standards and Technology, including the National Initiative for Cybersecurity Education, the Department of Homeland Security, the Department of Defense, the Office of Personnel Management, and other Federal departments and agencies, as appropriate;

(2) align with or build on the National Initiative on Cybersecurity Education Cybersecurity Workforce Framework wherever practicable and applicable;

(3) leverage the collective body of knowledge from existing cyber workforce development research and education activities; and

(4) engage with other Federal departments and agencies, research communities, and potential users of information produced under this subsection.

(Pub. L. 117–167, div. B, title III, §10315, Aug. 9, 2022, 136 Stat. 1530.)

§ 18996. Cybersecurity workforce data initiative

The Director, acting through the National Center for Science and Engineering Statistics established in section 1862p of this title 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 that—

(1) assesses the feasibility of providing nationally representative estimates and statistical information on the cybersecurity workforce;

(2) utilizes the National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework (NIST Special Publication 800–181), or other frameworks, as appropriate, to enable a consistent measurement of the cybersecurity workforce;

(3) utilizes and complements existing data on employer requirements and unfilled positions in the cybersecurity workforce;

(4) consults key stakeholders and the broader community of practice in cybersecurity workforce development to determine data requirements needed to strengthen the cybersecurity workforce;

(5) evaluates existing Federal survey data for information pertinent to developing national estimates of the cybersecurity workforce;

(6) evaluates administrative data and other supplementary data sources, as available, to describe and measure the cybersecurity workforce; and

(7) collects statistical data, to the greatest extent practicable, on credential attainment and employment outcomes information for the cybersecurity workforce.

(Pub. L. 117–167, div. B, title III, §10317, Aug. 9, 2022, 136 Stat. 1531.)

§ 18997. Microelectronics workforce development activities

(a) Creating helpful initiatives to produce personnel in needed growth industries

(1) In general

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.

(2) Purposes

Activities carried out under this section shall be for the purpose of supporting the growth, retention, and development of a diverse and sustainable microelectronics workforce to meet the requirements of the programs established in section 4656(c)(2)(C) of title 15 in support of the evolving needs of industry, academia, government, and Federal laboratories.

(3) Uses of funds

Awards made under this section shall be used to support activities, such as—

(A) development of industry-oriented curricula and teaching modules for topics relevant to microelectronics, including those that provide meaningful hands-on learning experiences;

(B) dissemination of materials developed in subparagraph (A), including through the creation and maintenance of a publicly-accessible database and online portal;

(C) development and implementation of training, research, and professional development programs for teachers, including innovative pre-service and in-service programs, in microelectronics and related fields;

(D) support for learning activities and experiences that provide physical, simulated, or remote access to training facilities and industry-standard processes and tools, including equipment and software for the design, development, manufacturing, and testing of microelectronics;

(E) increasing the integration of microelectronics content into STEM curricula at all education levels;

(F) Growing¹ academic research capacity in microelectronics by incentivizing the hiring of faculty in fields critical to microelectronics;

(G) support for innovative industry pathway programs that connect high school, vo-

¹ So in original. Probably should not be capitalized.

cational, military, college, and graduate programs; and

(H) providing informal hands-on microelectronics learning opportunities for PreK-12 students in different learning environments, including competitions.

(4) Advanced microelectronics traineeships

(A) In general

The Director shall make awards to institutions of higher education or nonprofit organizations (or consortia of such institutions and organizations) to establish traineeship programs for graduate students who pursue microelectronics research leading to a masters or doctorate degree by providing funding and other assistance, and by providing graduate students with opportunities for research experiences in government or industry related to the students' microelectronics studies.

(B) Use of funds

Institutions of higher education or nonprofit organizations (or consortia of such institutions and organizations) shall use award funds provided under subparagraph (A) for the purposes of—

(i) paying tuition and fees, and providing stipends, for students receiving traineeships who are citizens, nationals, or aliens lawfully admitted for permanent residence;

(ii) facilitating opportunities for scientific internship programs for students receiving traineeships in microelectronics at private industry, nonprofit research institutions, or Federal laboratories; and

(iii) such other costs associated with the administration of the program.

(5) Microelectronics skilled technical workforce programs

The Director shall make awards under the Scientific and Advanced-Technology Act of 1992 (42 U.S.C. 1862h-j) to support programs for skilled technical workers in STEM disciplines that are aligned with skilled workforce needs of the microelectronics industry and lead to an associate's degree, or equivalent certification, by providing funding and other assistance, including opportunities for internships and other hands-on experiences in industry related to the students' microelectronics studies.

(6) Microelectronics research experiences through existing programs

The Director shall seek to increase opportunities for microelectronics research for students and trainees at all levels by encouraging proposals in microelectronics through existing programs including—

(A) research experiences for undergraduates pursuant to section 1862p-6 of this title;

(B) postdoctoral fellowship programs established pursuant to section 1862p-11 of this title;

(C) graduate fellowships established pursuant to section 1869 of this title;

(D) informal STEM education programs established pursuant to section 1862q of this title;

(E) the Robert Noyce Teacher Scholarship Program established pursuant to section 1862n-1 of this title;

(F) major research instrumentation programs established pursuant to section 1862o-14 of this title; and

(G) low-income² scholarship program established pursuant to section 1869c of this title.

(7) Industry partnerships

In carrying out the activities under this section, the Director shall encourage awardees to partner with industry and other private sector organizations to facilitate the expansion of workforce pipelines and enable access to industry-standard equipment and software for use in undergraduate and graduate microelectronics education programs.

(8) Interagency coordination

In carrying out activities under this section, the Director shall collaborate with the Subcommittee on Microelectronics Leadership of the National Science and Technology Council, established in subsection (a) of section 4656 of title 15 and the National Semiconductor Technology Center established in subsection (c) of section 4656 of title 15, and other relevant Federal agencies to maintain the effectiveness of microelectronics workforce development activities across the agencies.

(b) National Network for Microelectronics Education

(1) In general

The Director, in coordination with the Secretary of Commerce, shall on a competitive, merit-reviewed basis, make awards to institutions of higher education and non-profit organizations (or consortia of such institutions and organizations) to establish partnerships to enhance and broaden participation in microelectronics education.

(2) Activities

Awards made under this subsection shall be used for the following:

(A) To conduct training and education activities funded by awards under paragraph (1) and in coordination with the Network Coordination Hub established in paragraph (3), including curricula design, development, dissemination, and assessment, and the sharing of information and best practices across the network of awardees.

(B) To develop regional partnerships among associate-degree-granting colleges, bachelor-degree-granting institutions, workforce development programs, labor organizations, and industry to create a diverse national technical workforce trained in microelectronics and ensure education and training is meeting the evolving needs of industry.

(C) To develop local workforce pipelines that align with capacity investments made by industry and the Federal government, including vocational and high school training programs, community college degrees and

² So in original. Probably should be preceded by "the".

certificates, veteran post service opportunities, and mentoring.

(D) To facilitate partnerships with employers, employer consortia or other private sector organizations that offer apprenticeships, internships, or applied learning experiences in the field of microelectronics.

(E) To develop shared infrastructure available to institutions of higher education, two-year colleges, and private organizations to enable experiential learning activities and provide physical or digital access to training facilities and industry-standard tools and processes.

(F) To create and disseminate public outreach to support awareness of microelectronics education and career opportunities, including through outreach to PreK–12 schools and STEM-related organizations.

(G) To collaborate and coordinate with industry and existing public and private organizations conducting microelectronics education and workforce development activities, as practicable.

(3) Network coordination hub

The Director shall make an award on a competitive, merit-reviewed basis to an institution of higher education or nonprofit organization (or a consortium thereof) to establish a national network of partnerships (referred to in this section as the “National Network for Microelectronics Education”) to coordinate activities, best practice sharing, and access to facilities across the partnerships established in accordance with paragraph (1).

(4) Incentivizing participation

To the extent practicable, the Director shall encourage participation in the National Network for Microelectronics Education through the coordination of activities and distribution of awards described in subsection (a).

(5) Partnerships

The Director shall encourage the submission of proposals that are led by historically Black colleges and universities, Tribal Colleges or Universities, and minority-serving institutions or that include partnerships with or among such institutions to increase the recruitment of students from groups historically underrepresented in STEM to pursue graduate studies in microelectronics.

(6) Outreach

In addition to any other requirements as determined appropriate by the Director, the Director shall require that proposals for awards under this section shall include a description of how the applicant will develop and implement outreach activities to increase the participation of women and other students from groups historically underrepresented in STEM.

(7) Coordination across foundation programs

In carrying out the activities under this section, the Director shall ensure awardees coordinate with, and avoid unnecessary duplication of, the activities carried out under this Section¹ with the activities of the 21st Century Nanotechnology Research and Develop-

ment Act (Public Law 108–153), the National Quantum Initiative Act (Public Law 115–368), and Division E of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, and other related programs, as appropriate.

(8) Interagency coordination

In carrying out activities under this section, the Director shall collaborate with the Subcommittee on Microelectronics Leadership of the National Science and Technology Council, established in subsection (a) of section 4656 of title 15 and the National Semiconductor Technology Center established in subsection (c) of section 4656 of title 15.

(Pub. L. 117–167, div. B, title III, §10318, Aug. 9, 2022, 136 Stat. 1532.)

Editorial Notes

REFERENCES IN TEXT

The Scientific and Advanced-Technology Act of 1992, referred to in subsec. (a)(5), is Pub. L. 102–476, Oct. 23, 1992, 106 Stat. 2297, which enacted sections 1862h to 1862j of this title and amended section 1862 of this title. For complete classification of this Act to the Code, see Short Title of 1992 Amendment note set out under section 1861 of this title and Tables.

Section 1862p–11 of this title, referred to in subsec. (a)(6)(B), was in the original “section 522 of the America COMPETES Act of 2010”, and was translated as meaning section 522 of Pub. L. 111–358, the America COMPETES Reauthorization Act of 2010, to reflect the probable intent of Congress.

The 21st Century Nanotechnology Research and Development Act, referred to in subsec. (b)(7), is Pub. L. 108–153, Dec. 3, 2003, 117 Stat. 1923, which is classified generally to chapter 101 (§7501 et seq.) of Title 15, Commerce and Trade. For complete classification of this Act to the Code, see Short Title note set out under section 7501 of Title 15 and Tables.

The National Quantum Initiative Act, referred to in subsec. (b)(7), is Pub. L. 115–368, Dec. 21, 2018, 132 Stat. 5092, which is classified generally to chapter 114 (§8801 et seq.) of Title 15, Commerce and Trade. For complete classification of this Act to the Code, see Short Title note set out under section 8801 of Title 15 and Tables.

The William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, referred to in subsec. (b)(7), is Pub. L. 116–283, Jan. 1, 2021, 134 Stat. 3388. Division E (§§5001–5501) of the Act, also known as the National Artificial Intelligence Initiative Act of 2020, is classified principally to chapter 119 (§9401 et seq.) of Title 15, Commerce and Trade. For complete classification of this Act to the Code, see Short Title note set out under section 9401 of Title 15 and Tables.

§ 18998. Mandatory cost-sharing

(a) Waiver

The cost-sharing requirements under section 1862o–14(c) of this title for the Major Research Instrumentation Program and under section 1862n–1a(i) of this title for teaching fellowships administered within the Robert Noyce Teacher Scholarship Program are waived for a period of 5 years following August 9, 2022.

(b) Assessment

Not later than 5 years following August 9, 2022, the Director shall submit to Congress an assessment, that includes feedback from the research community, of the impacts of the waivers provided under subsection (a), including—