116TH CONGRESS
1ST SESSION

S. 2579

To direct the Director of the Office of Science and Technology Policy to carry out programs and activities to ensure that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging their entire talent pool, and for other purposes.

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 26, 2019

Ms. HIRONO (for herself, Mr. BLUMENTHAL, Ms. CANTWELL, Ms. CORTEZ MASTO, Ms. DUCKWORTH, Mrs. GILLIBRAND, Ms. KLOBUCHAR, Mr. MARKEY, Mr. MERKLEY, and Ms. ROSEN) introduced the following bill; which was read twice and referred to the Committee on Health, Education, Labor, and Pensions

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A BILL

To direct the Director of the Office of Science and Technology Policy to carry out programs and activities to ensure that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging their entire talent pool, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS; FINDINGS.

(a) SHORT TITLE.—This Act may be cited as the ''STEM Opportunities Act of 2019''.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

(c) FINDINGS.—The Congress finds the following:

(1) Many reports over the past decade have found that it is critical to our Nation's economic leadership and global competitiveness that the United States educates and trains more scientists and engineers.

(2) Research shows that women and minorities who are interested in STEM careers are disproportionately lost at nearly every educational transition and at every career milestone.

(3) The National Center for Science and Engineering Statistics at the National Science Foundation collects, compiles, analyzes, and publishes data

on the demographics of STEM degrees and STEM jobs in the United States.

(4) Women now earn nearly 37 percent of all STEM bachelor's degrees, but major variations persist among fields. In 2017, women earned only 20 percent of all bachelor's degrees awarded in engineering and 19 percent of bachelor's degrees awarded in computer sciences. Based on Bureau of Labor Statistics data, jobs in computing occupations are expected to account for nearly 60 percent of the projected annual growth of newly created STEM job openings from 2016 to 2026.

(5) In 2017, underrepresented minority groups comprised 39 percent of the college-age population of the United States, but only 18 percent of students who earned bachelor's degrees in STEM fields. The Higher Education Research Institute at the University of California, Los Angeles, found that, while freshmen from underrepresented minority groups express an interest in pursuing a STEM undergraduate degree at the same rate as all other freshmen, only 22.1 percent of Latino students, 18.4 percent of African-American students, and 18.8 percent of Native American students studying in STEM fields complete their degree within 5 years, com-

pared to approximately 33 percent of White students and 42 percent of Asian students who complete their degree within 5 years.

(6) In some STEM fields, including the computer sciences, women persist at about the same rate through doctorate degrees. In other STEM fields, women persist through doctorate degrees at a lower rate. In mathematics, women earn just 26 percent of doctorate degrees compared with 42 percent of undergraduate degrees. Overall, women earned 38 percent of STEM doctorate degrees in 2016. The rate of minority students earning STEM doctorate degrees in physics is 9 percent, compared with 15 percent for bachelor's degree. Students from underrepresented minority groups accounted for only 11.5 percent of STEM doctorate degrees awarded in 2016.

(7) The representation of women in STEM drops significantly from the doctorate degree level to the faculty level. Overall, women hold only 26 percent of all tenured and tenure-track positions and 27 percent of full professor positions in STEM fields in our Nation's universities and 4-year colleges. Black and Hispanic faculty together hold about 6.8 percent of all tenured and tenure-track positions and 7.5

percent of full professor positions. Many of the numbers in the American Indian or Alaskan Native and Native Hawaiian or Other Pacific Islander categories for different faculty ranks were too small for the National Science Foundation to report publicly without potentially compromising confidential information about the individuals being surveyed.

(8) The representation of women is especially low at our Nation's top research universities. Even in the biological sciences, in which women now earn more than 50 percent of the doctorates and passed the 25 percent level 37 years ago, women make up only 25 percent of the full professors at the approximately 100 most research-intensive universities in the United States. In the physical sciences and mathematics, women make up only 11 percent of full professors, in computer sciences only 10 percent, and across engineering fields only 7 percent. The data suggest that approximately 6 percent of all tenure-track STEM faculty members at the most research-intensive universities are from underrepresented minority groups, but in some fields the numbers are too small to report publicly.

(9) By 2050, underrepresented minorities will comprise 52 percent of the college-age population of

the United States. If the percentage of female students and students from underrepresented minority groups earning bachelor's degrees in STEM fields does not significantly increase, the United States will face an acute shortfall in the overall number of students who earn degrees in STEM fields just as United States companies are increasingly seeking students with those skills. With this impending shortfall, the United States will almost certainly lose its competitive edge in the 21st century global economy.

(10) According to a 2014 Association for Women in Science survey of over 4,000 scientists across the globe, 70 percent of whom were men, STEM researchers face significant challenges in work-life integration. Researchers in the United States were among the most likely to experience a conflict between work and their personal life at least weekly. One-third of researchers surveyed said that ensuring good work-life integration has negatively impacted their careers, and, of researchers intending to leave their current job within the next year, 9 percent indicated it was because they were unable to balance work and life demands.

(11) Female students and students from underrepresented minority groups at institutions of higher education who see few others ''like themselves'' among faculty and student populations often do not experience the social integration that is necessary for success in all disciplines, including STEM.

(12) One in five children in the United States attend school in a rural community. The data shows that rural students are at a disadvantage with respect to STEM readiness. Among STEM-interested students, 17 percent of students in rural high schools and 18 percent of students in town-located high schools meet the ACT STEM Benchmark, compared with 33 percent of students in suburban high schools and 27 percent of students in urban high schools.

(13) A substantial body of evidence establishes that most people hold implicit biases. Decades of cognitive psychology research reveal that most people carry prejudices of which they are unaware but that nonetheless play a large role in evaluations of people and their work. Unintentional biases and outmoded institutional structures are hindering the access and advancement of women, minorities, and other groups historically underrepresented in STEM.

(14) Workshops held to educate faculty about unintentional biases have demonstrated success in raising awareness of such biases.

(15) In 2012, the Office of Diversity and Equal Opportunity of the National Aeronautics and Space Administration (in this Act referred to as ''NASA'') completed a report that—

(A) is specifically designed to help NASA grant recipients identify why the dearth of women in STEM fields continues and to ensure that it is not due to discrimination; and

(B) provides guidance that is usable by all institutions of higher education receiving significant Federal research funding on how to conduct meaningful self-evaluations of campus culture and policies.

(16) The Federal Government provides 55 percent of research funding at institutions of higher education and, through its grant-making policies, has had significant influence on institution of higher education policies, including policies related to institutional culture and structure.

SEC. 2. PURPOSES.

The purposes of this Act are as follows:

(1) To ensure that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging the entire talent pool of the United States.

(2) To promote research on, and increase understanding of, the participation and trajectories of women, minorities, and other groups historically underrepresented in STEM studies and careers, including persons with disabilities, older learners, veterans, and rural, poor, and tribal populations, at institutions of higher education and Federal science agencies, including Federal laboratories.

(3) To raise awareness within Federal science agencies, including Federal laboratories, and institutions of higher education about cultural and institutional barriers limiting the recruitment, retention, promotion, and other indicators of participation and achievement of women, minorities, and other groups historically underrepresented in academic and Government STEM research careers at all levels.

(4) To identify, disseminate, and implement best practices at Federal science agencies, including Federal laboratories, and at institutions of higher education to remove or reduce cultural and institutional barriers limiting the recruitment, retention,

and success of women, minorities, and other groups historically underrepresented in academic and Government STEM research careers.

(5) To provide grants to institutions of higher education to recruit, retain, and advance STEM faculty members from underrepresented minority groups and to implement or expand reforms in undergraduate STEM education in order to increase the number of students from underrepresented minority groups receiving degrees in these fields.

SEC. 3. FEDERAL SCIENCE AGENCY POLICIES FOR CAREGIVERS.

(a) OSTP GUIDANCE.—Not later than 6 months after the date of enactment of this Act, the Director, in consultation with relevant agencies, shall provide guidance to each Federal science agency to establish policies that—

(1) apply to all—

(A) research awards granted by such agency; and

(B) principal investigators of such research who have caregiving responsibilities, including care for a newborn or newly adopted child and care for an immediate family member who is sick or disabled; and

(2) provide—

(A) flexibility in timing for the initiation of approved research awards granted by such agency;

(B) no-cost extensions of such research awards;

(C) grant supplements, as appropriate, to research awards for research technicians or equivalent positions to sustain research activities conducted under such awards; and

(D) any other appropriate accommodations at the discretion of the director of each such agency.

(b) UNIFORMITY OF GUIDANCE.—In providing guidance under subsection (a), the Director shall encourage uniformity and consistency in the policies established pursuant to such guidance across all Federal science agencies.

(c) ESTABLISHMENT OF POLICIES.—Consistent with the guidance under subsection (a), Federal science agencies shall—

(1) maintain or develop and implement policies for individuals described in paragraph (1)(B) of such subsection; and

(2) broadly disseminate such policies to current and potential grantees.

(d) DATA ON USAGE.—Federal science agencies shall—

(1) collect data on the usage of the policies under subsection (c), by gender, at both institutions of higher education and Federal laboratories; and

(2) report such data on an annual basis to the Director in such form as required by the Director.

SEC. 4. COLLECTION AND REPORTING OF DATA ON FEDERAL RESEARCH GRANTS.

(a) COLLECTION OF DATA.—

(1) IN GENERAL.—Each Federal science agency shall collect, as practicable, with respect to all applications for merit-reviewed research and development grants to institutions of higher education and Federal laboratories supported by that agency, the standardized record-level annual information on demographics, primary field, award type, institution type, review rating, budget request, funding outcome, and awarded budget.

(2) UNIFORMITY AND STANDARDIZATION.—The Director, in consultation with the Director of the National Science Foundation, shall establish a policy to ensure uniformity and standardization of the data collection required under paragraph (1).

(3) RECORD-LEVEL DATA.—

(A) REQUIREMENT.—Beginning not later than 2 years after the date of the enactment of this Act, and on an annual basis thereafter, each Federal science agency shall submit to the Director of the National Science Foundation record-level data collected under paragraph (1) in the form required by such Director.

(B) PREVIOUS DATA.—As part of the first submission under subparagraph (A), each Federal science agency, to the extent practicable, shall also submit comparable record-level data for the 5 years preceding the date of such submission.

(b) REPORTING OF DATA.—The Director of the National Science Foundation shall publish statistical summary data, as practicable, collected under this section, disaggregated and cross-tabulated by race, ethnicity, gender, and years since completion of doctoral degree, including in conjunction with the National Science Foundation's report required by section 37 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885d).

SEC. 5. POLICIES FOR REVIEW OF FEDERAL RESEARCH GRANTS.

(a) IN GENERAL.—Each Federal science agency shall implement the policy recommendations with respect to re-

ducing the impact of implicit bias at Federal science agencies and grantee institutions as developed by the Office of Science and Technology Policy in the 2016 report entitled ''Reducing the Impact of Bias in the STEM Workforce'' and any subsequent updates.

(b) PILOT ACTIVITY.—In consultation with the National Science Foundation and consistent with policy recommendations referenced in subsection (a), each Federal science agency shall implement a 2-year pilot orientation activity for program officers and members of standing review committees to educate reviewers on research related to, and minimize the effects of, implicit bias in the review of extramural and intramural Federal research grants.

(c) ESTABLISHMENT OF POLICIES.—Drawing upon lessons learned from the pilot activity under subsection (b), each Federal science agency shall maintain or develop and implement evidence-based policies and practices to minimize the effects of implicit bias in the review of extramural and intramural Federal research grants.

(d) ASSESSMENT OF POLICIES.—Federal science agencies shall regularly assess, and amend as necessary, the policies and practices implemented pursuant to subsection (c) to ensure effective measures are in place to minimize the effects of implicit bias in the review of extramural and intramural Federal research grants.

SEC. 6. COLLECTION OF DATA ON DEMOGRAPHICS OF FACULTY.

(a) COLLECTION OF DATA.—

(1) IN GENERAL.—Not later than 3 years after the date of enactment of this Act, and at least every 5 years thereafter, the Director of the National Science Foundation shall carry out a survey to collect data from grantees on the demographics of STEM faculty, by broad fields of STEM, at different types of institutions of higher education.

(2) CONSIDERATIONS.—To the extent practicable, the Director of the National Science Foundation shall consider, by gender, race, ethnicity, citizenship status, and years since completion of doctoral degree—

(A) the number and percentage of faculty;

(B) the number and percentage of faculty at each rank;

(C) the number and percentage of faculty who are in nontenure-track positions, including teaching and research;

(D) the number and percentage of faculty who are reviewed for promotion, including tenure, and the percentage of that number who are promoted, including being awarded tenure;

(E) faculty years in rank;

(F) the number and percentage of faculty to leave tenure-track positions;

(G) the number and percentage of faculty hired, by rank; and

(H) the number and percentage of faculty in leadership positions.

(b) EXISTING SURVEYS.—The Director of the National Science Foundation, may, in modifying or expanding existing Federal surveys of higher education (as necessary)—

(1) take into account the considerations under subsection (a)(2) by collaborating with statistical centers at other Federal agencies; or

(2) award a grant or contract to an institution of higher education or other nonprofit organization to take such considerations into account.

(c) REPORTING DATA.—The Director of the National Science Foundation shall publish statistical summary data collected under this section, including as part of the National Science Foundation's report required by section 37 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885d).

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $3,000,000 in each of fiscal

years 2020 through 2022 to develop and carry out the initial survey required under subsection (a).

SEC. 7. CULTURAL AND INSTITUTIONAL BARRIERS TO EXPANDING THE ACADEMIC AND FEDERAL STEM WORKFORCE.

(a) BEST PRACTICES AT INSTITUTIONS OF HIGHER EDUCATION AND FEDERAL LABORATORIES.—

(1) DEVELOPMENT OF GUIDANCE.—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, shall develop written guidance for institutions of higher education and Federal laboratories on the best practices for—

(A) conducting periodic climate surveys of STEM departments and divisions, with a particular focus on identifying any cultural or institutional barriers to the recruitment, retention, or advancement of women, racial and ethnic minorities, and other groups historically underrepresented in STEM studies and careers; and

(B) providing educational opportunities, including workshops as described in subsection (b), for STEM faculty, research personnel, and

administrators to learn about current research on implicit bias in recruitment, evaluation, and promotion of undergraduate and graduate students and research personnel.

(2) EXISTING GUIDANCE.—In developing the guidance under paragraph (1), the Director shall utilize guidance already developed by Federal science agencies.

(3) DISSEMINATION OF GUIDANCE.—Federal science agencies shall broadly disseminate the guidance developed under paragraph (1) to institutions of higher education that receive Federal research funding and Federal laboratories.

(4) ESTABLISHMENT OF POLICIES.—Consistent with the guidance developed under paragraph (1)—

(A) the Director of the National Science Foundation shall develop a policy that—

(i) applies to, at a minimum, doctoral degree granting institutions that receive Federal research funding; and

(ii) requires each such institution, not later than 3 years after the date of enactment of this Act, to report to the Director of the National Science Foundation on activities and policies developed and imple-

mented based on the guidance developed under paragraph (1); and

(B) each Federal science agency with a Federal laboratory shall maintain or develop and implement practices and policies for the purposes described in paragraph (1) for such laboratory.

(b) WORKSHOPS TO ADDRESS CULTURAL BARRIERS TO EXPANDING THE ACADEMIC AND FEDERAL STEM WORKFORCE.—

(1) IN GENERAL.—Not later than 6 months after the date of enactment of this Act, the Director, in consultation with the interagency working group on inclusion in STEM, shall recommend a uniform policy for Federal science agencies to carry out a program of workshops that educate STEM department chairs at institutions of higher education, senior managers at Federal laboratories, and other federally funded researchers about methods that minimize the effects of implicit bias in the career advancement, including hiring, tenure, promotion, and selection for any honor based in part on the recipient's research record, of academic and Federal STEM researchers.

(2) INTERAGENCY COORDINATION.—The Director shall, to the extent practicable, ensure that workshops supported under this subsection are coordinated across Federal science agencies and jointly supported as appropriate.

(3) MINIMIZING COSTS.—To the extent practicable, workshops shall be held in conjunction with national or regional STEM disciplinary meetings to minimize costs associated with participant travel.

(4) PRIORITY FIELDS FOR ACADEMIC PARTICIPANTS.—In considering the participation of STEM department chairs and other academic researchers, the Director shall prioritize workshops for the broad fields of STEM in which the national rate of representation of women among tenured or tenure-track faculty or nonfaculty researchers at doctorate-granting institutions of higher education is less than 25 percent, according to the most recent data available from the National Center for Science and Engineering Statistics.

(5) ORGANIZATIONS ELIGIBLE TO CARRY OUT WORKSHOPS.—A Federal science agency may carry out the program of workshops under this subsection by making grants to organizations made eligible by

the Federal science agency and any of the following organizations:

(A) Nonprofit scientific and professional societies and organizations that represent one or more STEM disciplines.

(B) Nonprofit organizations that have the primary mission of advancing the participation of women, minorities, or other groups historically underrepresented in STEM.

(6) CHARACTERISTICS OF WORKSHOPS.—The workshops shall have the following characteristics:

(A) Invitees to workshops shall include at least—

(i) the chairs of departments in the relevant STEM discipline or disciplines from doctoral degree granting institutions that receive Federal research funding; and

(ii) in the case of Federal laboratories, individuals with personnel management responsibilities comparable to those of an institution of higher education department chair.

(B) Activities at the workshops shall include research presentations and interactive discussions or other activities that increase the

awareness of the existence of implicit bias in recruitment, hiring, tenure review, promotion, and other forms of formal recognition of individual achievement for faculty and other federally funded STEM researchers and shall provide strategies to overcome such bias.

(C) Research presentations and other workshop programs, as appropriate, shall include a discussion of the unique challenges faced by different underrepresented groups, including minority women, minority men, persons from rural and underserved areas, persons with disabilities, gender and sexual minority individuals, and first generation graduates in research.

(D) Workshop programs shall include information on best practices for mentoring undergraduate, graduate, and postdoctoral women, minorities, and other students from groups historically underrepresented in STEM.

(7) DATA ON WORKSHOPS.—Any proposal for funding by an organization seeking to carry out a workshop under this subsection shall include a description of how such organization will—

(A) collect data on the rates of attendance by invitees in workshops, including information

on the home institution and department of attendees, and the rank of faculty attendees;

(B) conduct attitudinal surveys on workshop attendees before and after the workshops; and

(C) collect follow-up data on any relevant institutional policy or practice changes reported by attendees not later than one year after attendance in such a workshop.

(8) REPORT TO NSF.—Organizations receiving funding to carry out workshops under this subsection shall report the data required in paragraph (7) to the Director of the National Science Foundation in such form as required by such Director.

(c) REPORT TO CONGRESS.—Not later than 4 years after the date of enactment of this Act, the Director of the National Science Foundation shall submit a report to Congress that includes—

(1) a summary and analysis of the types and frequency of activities and policies developed and carried out under subsection (a) based on the reports submitted under paragraph (4) of such subsection; and

(2) a description and evaluation of the status and effectiveness of the program of workshops re-

quired under subsection (b), including a summary of any data reported under paragraph (8) of such subsection.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $1,000,000 in each of fiscal years 2020 through 2024 to carry out this section.

SEC. 8. RESEARCH AND DISSEMINATION AT THE NATIONAL SCIENCE FOUNDATION.

(a) IN GENERAL.—The Director of the National Science Foundation shall award research grants and carry out dissemination activities consistent with the purposes of this Act, including—

(1) research grants to analyze the record-level data collected under section 4 and section 6, consistent with policies to ensure the privacy of individuals identifiable by such data;

(2) research grants to study best practices for work-life accommodation;

(3) research grants to study the impact of policies and practices that are implemented under this Act or that are otherwise consistent with the purposes of this Act;

(4) collaboration with other Federal science agencies and professional associations to exchange

best practices, harmonize work-life accommodation policies and practices, and overcome common barriers to work-life accommodation; and

(5) collaboration with institutions of higher education in order to clarify and catalyze the adoption of a coherent and consistent set of work-life accommodation policies and practices.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $5,000,000 in each of fiscal years 2020 through 2024 to carry out this section.

SEC. 9. RESEARCH AND RELATED ACTIVITIES TO EXPAND STEM OPPORTUNITIES.

(a) NATIONAL SCIENCE FOUNDATION SUPPORT FOR INCREASING DIVERSITY AMONG STEM FACULTY AT INSTITUTIONS OF HIGHER EDUCATION.—Section 305 of the American Innovation and Competitiveness Act (42 U.S.C. 1862s–5) is amended—

(1) by redesignating subsections (e) and (f) as subsections (g) and (h), respectively; and

(2) by inserting after subsection (d) the following:

''(e) SUPPORT FOR INCREASING DIVERSITY AMONG STEM FACULTY AT INSTITUTIONS OF HIGHER EDUCATION.—

''(1) IN GENERAL.—The Director of the Foundation shall award grants 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.

''(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed, competitive basis.

''(3) USE OF FUNDS.—Activities supported by grants under this subsection may include—

''(A) institutional assessment activities, such as data analyses and policy review, in order to identify and address specific issues in the recruitment, retention, and advancement of faculty members from underrepresented minority groups;

''(B) implementation of institution-wide improvements in workload distribution, such that faculty members from underrepresented minority groups are not disadvantaged in the amount of time available to focus on research, publishing papers, and engaging in other activi-

ties required to achieve tenure status and run a productive research program;

''(C) development and implementation of training courses for administrators and search committee members to ensure that candidates from underrepresented minority groups are not subject to implicit biases in the search and hiring process;

''(D) development and hosting of intra- or inter-institutional workshops to propagate best practices in recruiting, retaining, and advancing faculty members from underrepresented minority groups;

''(E) professional development opportunities for faculty members from underrepresented minority groups;

''(F) activities aimed at making undergraduate STEM students from underrepresented minority groups aware of opportunities for academic careers in STEM fields;

''(G) activities to identify and engage exceptional graduate students and postdoctoral researchers from underrepresented minority groups at various stages of their studies and to encourage them to enter academic careers; and

''(H) other activities consistent with paragraph (1), as determined by the Director of the Foundation.

''(4) SELECTION PROCESS.—

''(A) APPLICATION.—An institution of higher education (or a consortium of such institutions) seeking funding under this subsection shall submit an application to the Director of the Foundation at such time, in such manner, and containing such information and assurances as such Director may require. The application shall include, at a minimum, a description of—

''(i) the reform effort that is being proposed for implementation by the institution of higher education;

''(ii) any available evidence of specific difficulties in the recruitment, retention, and advancement of faculty members from underrepresented minority groups in STEM academic careers within the institution of higher education submitting an application, and how the proposed reform effort would address such issues;

"(iii) how the institution of higher education submitting an application plans to sustain the proposed reform effort beyond the duration of the grant; and

"(iv) how the success and effectiveness of the proposed reform effort will be evaluated and assessed in order to contribute to the national knowledge base about models for catalyzing institutional change.

"(B) REVIEW OF APPLICATIONS.—In selecting grant recipients under this subsection, the Director of the Foundation shall consider, at a minimum—

"(i) the likelihood of success in undertaking the proposed reform effort at the institution of higher education submitting the application, including the extent to which the administrators of the institution are committed to making the proposed reform effort a priority;

"(ii) the degree to which the proposed reform effort will contribute to change in institutional culture and policy such that greater value is placed on the recruitment,

retention, and advancement of faculty members from underrepresented minority groups;

''(iii) the likelihood that the institution of higher education will sustain or expand the proposed reform effort beyond the period of the grant; and

''(iv) the degree to which evaluation and assessment plans are included in the design of the proposed reform effort.

''(C) GRANT DISTRIBUTION.—The Director of the Foundation shall ensure, to the extent practicable, that grants awarded under this section are made to a variety of types of institutions of higher education.

''(5) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this subsection $8,000,000 for each of fiscal years 2020 through 2024.''.

(b) NATIONAL SCIENCE FOUNDATION SUPPORT FOR BROADENING PARTICIPATION IN UNDERGRADUATE STEM EDUCATION.—Section 305 of the American Innovation and Competitiveness Act (42 U.S.C. 1862s–5), as amended by subsection (a), is further amended by inserting after subsection (e) the following:

''(f) SUPPORT FOR BROADENING PARTICIPATION IN UNDERGRADUATE STEM EDUCATION.—

''(1) IN GENERAL.—The Director of the Foundation shall award grants 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.

''(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed, competitive basis.

''(3) USE OF FUNDS.—Activities supported by grants under this subsection may include—

''(A) implementation or expansion of innovative, research-based approaches to broaden participation of underrepresented minority groups in STEM fields;

''(B) implementation or expansion of bridge, cohort, tutoring, or mentoring programs, including those involving community colleges and technical schools, designed to enhance the recruitment and retention of students from underrepresented minority groups in STEM fields;

''(C) implementation or expansion of outreach programs linking institutions of higher education and K–12 school systems in order to heighten awareness among pre-college students from underrepresented minority groups of opportunities in college-level STEM fields and STEM careers;

''(D) implementation or expansion of faculty development programs focused on improving retention of undergraduate STEM students from underrepresented minority groups;

''(E) implementation or expansion of mechanisms designed to recognize and reward faculty members who demonstrate a commitment to increasing the participation of students from underrepresented minority groups in STEM fields;

''(F) expansion of successful reforms aimed at increasing the number of STEM students from underrepresented minority groups beyond a single course or group of courses to achieve reform within an entire academic unit, or expansion of successful reform efforts beyond a single academic unit or field to other STEM

academic units or fields within an institution of higher education;

''(G) expansion of opportunities for students from underrepresented minority groups to conduct STEM research in industry, at Federal labs, and at international research institutions or research sites;

''(H) provision of stipends for students from underrepresented minority groups participating in research;

''(I) development of research collaborations between research-intensive universities and primarily undergraduate minority-serving institutions;

''(J) support for graduate students and postdoctoral fellows from underrepresented minority groups to participate in instructional or assessment activities at primarily undergraduate institutions, including primarily undergraduate minority-serving institutions and two-year institutions of higher education; and

''(K) other activities consistent with paragraph (1), as determined by the Director of the Foundation.

''(4) SELECTION PROCESS.—

''(A) APPLICATION.—An institution of higher education (or a consortium thereof) seeking a grant under this subsection shall submit an application to the Director of the Foundation at such time, in such manner, and containing such information and assurances as such Director may require. The application shall include, at a minimum—

''(i) a description of the proposed reform effort;

''(ii) a description of the research findings that will serve as the basis for the proposed reform effort or, in the case of applications that propose an expansion of a previously implemented reform, a description of the previously implemented reform effort, including data about the recruitment, retention, and academic achievement of students from underrepresented minority groups;

''(iii) evidence of an institutional commitment to, and support for, the proposed reform effort, including a long-term commitment to implement successful strategies from the current reform beyond the aca-

demic unit or units included in the grant proposal;

''(iv) a description of existing or planned institutional policies and practices regarding faculty hiring, promotion, tenure, and teaching assignment that reward faculty contributions to improving the education of students from underrepresented minority groups in STEM; and

''(v) how the success and effectiveness of the proposed reform effort will be evaluated and assessed in order to contribute to the national knowledge base about models for catalyzing institutional change.

''(B) REVIEW OF APPLICATIONS.—In selecting grant recipients under this subsection, the Director of the Foundation shall consider, at a minimum—

''(i) the likelihood of success of the proposed reform effort at the institution submitting the application, including the extent to which the faculty, staff, and administrators of the institution are committed to making the proposed institu-

tional reform a priority of the participating academic unit or units;

''(ii) the degree to which the proposed reform effort will contribute to change in institutional culture and policy such that greater value is placed on faculty engagement in the retention of students from underrepresented minority groups;

''(iii) the likelihood that the institution will sustain or expand the proposed reform effort beyond the period of the grant; and

''(iv) the degree to which evaluation and assessment plans are included in the design of the proposed reform effort.

''(C) GRANT DISTRIBUTION.—The Director of the Foundation shall ensure, to the extent practicable, that grants awarded under this subsection are made to a variety of types of institutions of higher education, including two-year and minority-serving institutions of higher education.

''(5) EDUCATION RESEARCH.—

''(A) IN GENERAL.—All grants made under this subsection shall include an education re-

search component that will support the design and implementation of a system for data collection and evaluation of proposed reform efforts in order to build the knowledge base on promising models for increasing recruitment and retention of students from underrepresented minority groups in STEM education at the undergraduate level across a diverse set of institutions.

''(B) DISSEMINATION.—The Director of the Foundation shall coordinate with relevant Federal agencies in disseminating the results of the research under this paragraph to ensure that best practices in broadening participation in STEM education at the undergraduate level are made readily available to all institutions of higher education, other Federal agencies that support STEM programs, non-Federal funders of STEM education, and the general public.

''(6) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this subsection $15,000,000 for each of fiscal years 2020 through 2024.''.

SEC. 10. TRIBAL COLLEGES AND UNIVERSITIES PROGRAM.

(a) GRANTS TO BROADEN TRIBAL COLLEGE AND UNIVERSITY STUDENT PARTICIPATION IN COMPUTER SCIENCE.—Section 525 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–13) is amended by inserting after subsection (c) the following:

''(d) GRANTS TO BROADEN TRIBAL COLLEGE AND UNIVERSITY STUDENT PARTICIPATION IN COMPUTER SCIENCE.—

''(1) IN GENERAL.—The Director, as part of the program authorized under this section, shall award grants on a competitive, merit-reviewed basis to eligible entities to increase the participation of tribal populations in computer science and computational thinking education programs to enable students to develop skills and competencies in coding, problem-solving, critical thinking, creativity and collaboration.

''(2) PURPOSE.—Grants awarded under this subsection shall support—

''(A) research and development needed to bring computer science and computational thinking courses and degrees to tribal colleges and universities;

''(B) research and development of instructional materials needed to integrate computer

science and computational thinking into programs that are culturally relevant to students attending tribal colleges and universities;

''(C) research, development, and evaluation of distance education for computer science and computational thinking courses and degree programs for students attending tribal colleges and universities; and

''(D) other activities consistent with the activities described in paragraphs (1) through (4) of subsection (b), as determined by the Director.

''(3) PARTNERSHIPS.—A tribal college or university seeking a grant under this subsection, or a consortia thereof, may partner with an institution of higher education or nonprofit organization with demonstrated expertise in academic program development.

''(4) COORDINATION.—In carrying out this subsection, the Director shall consult and cooperate with the programs and policies of other relevant Federal agencies to avoid duplication with and enhance the effectiveness of the program under this subsection.

''(5) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the Foundation $2,000,000 in each of fiscal years 2020 through 2024 to carry out this subsection.''.

(b) EVALUATION.—

(1) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, the Director of the National Science Foundation shall evaluate the grant program authorized under section 525 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–13), as amended by subsection (a).

(2) REQUIREMENTS.—In conducting the evaluation under paragraph (1), the Director of the National Science Foundation shall, as practicable—

(A) use a common set of benchmarks and assessment tools to identify best practices and materials developed or demonstrated by the research conducted pursuant to grants programs under section 525 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–13);

(B) include an assessment of the effectiveness of such grant programs in expanding ac-

cess to high quality STEM education, research, and outreach at tribal colleges and universities, as applicable;

(C) assess the number of students who participated in such grant programs; and

(D) assess the percentage of students participating in such grant programs who successfully complete their education programs.

(3) REPORT.—Not later than 180 days after the date on which the evaluation under paragraph (1) is completed, the Director of the National Science Foundation shall submit to Congress and make available to the public, a report on the results of the evaluation, including any recommendations for legislative action that could optimize the effectiveness of the grant program authorized under section 525 of the America COMPETES Reauthorization Act of 2010, as amended by subsection (a).

SEC. 11. REPORT TO CONGRESS.

Not later than 4 years after the date of enactment of this Act, the Director shall submit a report to Congress that includes—

(1) a description and evaluation of the status and usage of policies implemented pursuant to section 3 at all Federal science agencies, including any

recommendations for revising or expanding such policies;

(2) with respect to efforts to minimize the effects of implicit bias in the review of extramural and intramural Federal research grants under section 5—

(A) what steps all Federal science agencies have taken to implement policies and practices to minimize such effects;

(B) a description of any significant updates to the policies for review of Federal research grants required under such section; and

(C) any evidence of the impact of such policies on the review or awarding of Federal research grants; and

(3) a description and evaluation of the status of institution of higher education and Federal laboratory policies and practices required under section 7(a), including any recommendations for revising or expanding such policies.

SEC. 12. MERIT REVIEW.

Nothing in this Act shall be construed as altering any intellectual or broader impacts criteria at Federal science agencies for evaluating grant applications.

SEC. 13. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term ''Director'' means the Director of the Office of Science and Technology Policy.

(2) FEDERAL LABORATORY.—The term ''Federal laboratory'' has the meaning given such term in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703).

(3) FEDERAL SCIENCE AGENCY.—The term ''Federal science agency'' means any Federal agency with at least $100,000,000 in research and development expenditures in fiscal year 2018.

(4) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the meaning given such term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(5) INTERAGENCY WORKING GROUP ON INCLUSION IN STEM.—The term ''interagency working group on inclusion in STEM'' means the interagency working group established by section 308 of the American Innovation and Competitiveness Act (42 U.S.C. 6626).

(6) STEM.—The term ''STEM'' means science, technology, engineering, and mathematics, including computer science.

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