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1ST SESSION

H. R. 4372

IN THE SENATE OF THE UNITED STATES

DECEMBER 10, 2019

Received; read twice and referred to the Committee on Health, Education,
Labor, and Pensions

AN ACT

To direct Federal science agencies and the Office of Science and Technology Policy to undertake activities to improve the quality of undergraduate STEM education and enhance the research capacity at the Nation's HBCUs, TCUs, and MSIs, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “MSI STEM Achieve-
5 ment Act”.

6 **SEC. 2. FINDINGS.**

7 Congress makes the following findings:

8 (1) Evidence suggests that the supply of STEM
9 workers is not keeping pace with the rapidly evolving
10 needs of the public and private sector, resulting in
11 a deficit often referred to as a STEM skills short-
12 age.

13 (2) According to the Bureau of Labor Statis-
14 tics, the United States will need one million addi-
15 tional STEM professionals than it is on track to
16 produce in the coming decade.

17 (3) STEM occupations offer higher wages, more
18 opportunities for advancement, and a higher degree
19 of job security than non-STEM occupations.

20 (4) The composition of the STEM workforce
21 does not reflect the current or projected diversity of
22 the Nation, with Hispanics, African Americans, and
23 other racial and ethnic minorities, significantly
24 underrepresented in the STEM workforce compared
25 to their presence in the workforce more generally.

1 (5) A stronger national commitment to increas-
2 ing the diversity of the STEM workforce is needed
3 to help address the STEM skills shortage.

4 (6) According to a 2019 National Academies of
5 Sciences, Engineering, and Medicine report entitled
6 “Minority Serving Institutions: America’s Underuti-
7 lized Resource for Strengthening the STEM Work-
8 force”, 2- and 4-year minority serving institutions
9 enroll nearly 30 percent of all undergraduate stu-
10 dents—a percentage that is expected to grow in the
11 coming years—in the United States higher education
12 system and play a critical role in providing impor-
13 tant pathways to STEM-related education, training,
14 and careers for students of color.

15 (7) HBCUs, TCUs, and MSIs are highly suc-
16 cessful at educating underrepresented minority stu-
17 dents in STEM fields and can serve as best practice
18 models for other colleges and universities to further
19 expand participation of underrepresented minorities
20 in the STEM workforce.

21 (8) Increased investment in STEM infrastruc-
22 ture at HBCUs, TCUs, and MSIs has the potential
23 to increase these institutions’ ability to educate even
24 more students in the STEM disciplines.

1 (9) With the demand for STEM skills exceeding
2 the supply of STEM graduates, success of HBCUs,
3 TCUs, and MSIs in educating and training science
4 and engineering leaders is increasingly important for
5 United States economic growth and competitiveness.

6 **SEC. 3. GOVERNMENT ACCOUNTABILITY OFFICE REVIEW.**

7 Not later than 3 years after the date of enactment
8 of this Act, the Comptroller General of the United States
9 shall report to Congress—

10 (1) an inventory of competitive funding pro-
11 grams and initiatives carried out by Federal science
12 agencies that are targeted to HBCUs, TCUs, and
13 MSIs or partnerships with HBCUs, TCUs, and
14 MSIs;

15 (2) an assessment of Federal science agency
16 outreach activities to increase the participation and
17 competitiveness of HBCUs, TCUs, and MSIs in the
18 funding programs and initiatives identified in para-
19 graph (1); and

20 (3) recommendations of the Comptroller Gen-
21 eral to increase the participation of and the rate of
22 success of HBCUs, TCUs, and MSIs in competitive
23 funding programs offered by Federal science agen-
24 cies.

1 **SEC. 4. RESEARCH AND CAPACITY BUILDING.**

2 (a) IN GENERAL.—The Director of the National
3 Science Foundation shall award grants, on a competitive
4 basis, to institutions of higher education or nonprofit orga-
5 nizations (or consortia thereof) to—

6 (1) conduct research described in subsection (b)
7 with respect to HBCUs, TCUs, and MSIs;

8 (2) conduct activities described in subsection (c)
9 to build the capacity of HBCUs, TCUs, and MSIs
10 to graduate students who are competitive in attain-
11 ing and advancing in the STEM workforce;

12 (3) build the research capacity and competitive-
13 ness of HBCUs, TCUs, and MSIs in STEM dis-
14 ciplines; and

15 (4) identify and broadly disseminate effective
16 models for programs and practices at HBCUs,
17 TCUs, and MSIs that promote the education and
18 workforce preparation of minority students pursuing
19 STEM studies and careers in which such students
20 are underrepresented.

21 (b) RESEARCH.—Research described in this sub-
22 section is research on the contribution of HBCUs, TCUs,
23 and MSIs to the education and training of underrep-
24 resented minority students in STEM fields and to the
25 meeting of national STEM workforce needs, including—

1 (1) the diversity with respect to local context,
2 cultural differences, and institutional structure
3 among HBCUs, TCUs, and MSIs and any associ-
4 ated impact on education and research endeavors;

5 (2) effective practices at HBCUs, TCUs, and
6 MSIs and associated outcomes on student recruit-
7 ment, retention, and advancement in STEM fields,
8 including the ability for students to compete for fel-
9 lowships, employment, and advancement in the
10 workforce;

11 (3) contributions made by HBCUs, TCUs, and
12 MSIs to local, regional, and national workforces;

13 (4) the unique challenges and opportunities for
14 HBCUs, TCUs, and MSIs in attaining the resources
15 needed for integrating effective practices in STEM
16 education, including providing research experiences
17 for underrepresented minority students;

18 (5) the access of students at HBCUs, TCUs,
19 and MSIs to STEM infrastructure and any associ-
20 ated outcomes for STEM competency;

21 (6) models of STEM curriculum, learning, and
22 teaching successful at HBCUs, TCUs, and MSIs for
23 increasing participation, retention, and success of
24 underrepresented minority students; and

1 (7) successful or promising partnerships be-
2 tween HBCUs, TCUs, and MSIs and other institu-
3 tions of higher education, private sector and non-
4 profit organizations, Federal laboratories, and inter-
5 national research institutions.

6 (c) CAPACITY BUILDING.—Activities described in this
7 subsection include the design, development, implementa-
8 tion, expansion, and assessment of—

9 (1) metrics of success to best capture the
10 achievements of HBCUs, TCUs, and MSIs and stu-
11 dents of such institutions to account for institutional
12 context and missions, faculty investment, student
13 populations, student needs, and institutional re-
14 source constraints;

15 (2) enhancements to undergraduate STEM cur-
16 riculum at HBCUs, TCUs, and MSIs to increase the
17 participation, retention, degree completion, and suc-
18 cess of underrepresented students;

19 (3) professional development programs to in-
20 crease the numbers and the high-quality preparation
21 of STEM faculty at HBCUs, TCUs, and MSIs, in-
22 cluding programs to encourage STEM doctoral stu-
23 dents to teach at HBCUs, TCUs, and MSIs; and

24 (4) mechanisms for institutions of higher edu-
25 cation that are not HBCUs, TCUs, or MSIs to part-

1 ner with HBCUs, TCUs, and MSIs on STEM edu-
2 cation, including the facilitation of student transfer,
3 mentoring programs for students and junior faculty,
4 joint research projects, and student access to grad-
5 uate education.

6 (d) RESEARCH EXPERIENCES.—Grants under this
7 section may fund the development or expansion of oppor-
8 tunities for the exchange of students and faculty to con-
9 duct research, including through partnerships with institu-
10 tions of higher education that are not HBCUs, TCUs, or
11 MSIs, private sector and non-profit organizations, Federal
12 laboratories, and international research institutions.

13 (e) PARTNERSHIPS.—In awarding grants under this
14 section, the Director of the National Science Foundation
15 shall—

16 (1) encourage HBCUs, TCUs, and MSIs and
17 consortia thereof and partnerships with one or more
18 HBCU, TCU, or MSI, to submit proposals;

19 (2) require proposals submitted in partnership
20 with one or more HBCU, TCU, or MSI include a
21 plan for establishing a sustained partnership that is
22 jointly developed and managed, draws from the ca-
23 pacities of each institution, and is mutually bene-
24 ficial; and

1 (3) encourage proposals submitted in partner-
2 ship with the private sector, non-profit organiza-
3 tions, Federal laboratories, and international re-
4 search institutions, as appropriate.

5 (f) MSI CENTERS OF INNOVATION.—Grants under
6 this section may fund the establishment of no more than
7 five MSI Centers of Innovation to leverage successes of
8 HBCUs, TCUs, and MSIs in STEM education and re-
9 search training of underrepresented minority students as
10 models for other institutions, including both HBCUs,
11 TCUs, and MSIs and institutions of higher education that
12 are not HBCUs, TCUs, or MSIs. Such centers will be lo-
13 cated on campuses of selected institutions of higher edu-
14 cation and serve as incubators to allow institutions of
15 higher education to experiment, pilot, evaluate, and scale
16 up promising practices.

17 (g) AUTHORIZATION OF APPROPRIATIONS.—There
18 are authorized to be appropriated to the Director of the
19 National Science Foundation \$170,000,000 for fiscal year
20 2020, \$175,000,000 for fiscal year 2021, \$180,000,000
21 for fiscal year 2022, \$185,000,000 for fiscal year 2023,
22 and \$190,000,000 fiscal year 2024 to carry out this sec-
23 tion.

1 **SEC. 5. AGENCY RESPONSIBILITIES.**

2 (a) IN GENERAL.—In consultation with outside
3 stakeholders and the heads of the Federal science agen-
4 cies, the Director shall develop a uniform set of policy
5 guidelines for Federal science agencies to carry out a sus-
6 tained program of outreach activities to increase clarity,
7 transparency, and accountability for Federal science agen-
8 cy investments in STEM education and research activities
9 at HBCUs, TCUs, and MSIs.

10 (b) OUTREACH ACTIVITIES.—In developing policy
11 guidelines under subsection (a) the Director shall include
12 guidelines that require each Federal science agency—

13 (1) to designate a liaison for HBCUs, TCUs,
14 and MSIs responsible for—

15 (A) enhancing direct communication with
16 HBCUs, TCUs, and MSIs to increase the Fed-
17 eral science agency’s understanding of the ca-
18 pacity and needs of such institutions and to
19 raise awareness of available Federal funding op-
20 portunities at such institutions;

21 (B) coordinating programs, activities, and
22 initiatives while accounting for the capacity and
23 needs of HBCUs, TCUs, and MSIs;

24 (C) tracking Federal science agency invest-
25 ments in and engagement with HBCUs, TCUs,
26 and MSIs; and

1 (D) reporting progress toward increasing
2 participation of HBCUs, TCUs, and MSIs in
3 grant programs;

4 (2) to publish annual forecasts of funding op-
5 portunities and proposal deadlines, including for
6 grants, contracts, subcontracts, and cooperative
7 agreements;

8 (3) to conduct on-site reviews of research facili-
9 ties at HBCUs, TCUs, and MSIs, as practicable,
10 and make recommendations regarding strategies for
11 becoming more competitive in research;

12 (4) to hold geographically accessible or virtual
13 workshops on research priorities of the Federal
14 science agency and on how to write competitive
15 grant proposals;

16 (5) to ensure opportunities for HBCUs, TCUs,
17 and MSIs to directly communicate with Federal
18 science agency officials responsible for managing
19 competitive grant programs in order to receive feed-
20 back on research ideas and proposals, including
21 guidance on the Federal science agency's peer review
22 process;

23 (6) to foster mutually beneficial public-private
24 collaboration among Federal science agencies, indus-

1 try, Federal laboratories, academia, and nonprofit
2 organizations to—

3 (A) identify alternative sources of funding
4 for STEM education and research at HBCUs,
5 TCUs, and MSIs;

6 (B) provide access to high-quality, relevant
7 research experiences for students and faculty of
8 HBCUs, TCUs, and MSIs;

9 (C) expand the professional networks of
10 students and faculty of HBCUs, TCUs, and
11 MSIs;

12 (D) broaden STEM educational opportuni-
13 ties for students and faculty of HBCUs, TCUs,
14 and MSIs; and

15 (E) support the transition of students of
16 HBCUs, TCUs, and MSIs into the STEM
17 workforce; and

18 (7) to publish an annual report that provides an
19 account of Federal science agency investments in
20 HBCUs, TCUs, and MSIs, including data on the
21 level of participation of HBCUs, TCUs, and MSIs
22 as prime recipients/contractors or subrecipients/sub-
23 contractors.

24 (c) STRATEGIC PLAN.—

1 (1) IN GENERAL.—Not later than 1 year after
2 the date of enactment of this Act, the Director, in
3 collaboration with the head of each Federal science
4 agency, shall submit to Congress a report containing
5 a strategic plan for each Federal science agency to
6 increase the capacity of HBCUs, TCUs, and MSIs
7 to compete effectively for grants, contracts, or coop-
8 erative agreements and to encourage HBCUs,
9 TCUs, and MSIs to participate in Federal programs.

10 (2) CONSIDERATIONS.—In developing a stra-
11 tegic plan under paragraph (1), the Director and
12 each head of each Federal science agency shall con-
13 sider—

14 (A) issuing new or expanding existing
15 funding opportunities targeted to HBCUs,
16 TCUs, and MSIs;

17 (B) modifying existing research and devel-
18 opment program solicitations to incentivize ef-
19 fective partnerships with HBCUs, TCUs, and
20 MSIs;

21 (C) offering planning grants for HBCUs,
22 TCUs, and MSIs to develop or equip grant of-
23 fices with the requisite depth of knowledge to
24 submit competitive grant proposals and manage
25 awarded grants;

1 (D) offering additional training programs
2 and individualized and timely guidance to grant
3 officers and faculty researchers at HBCUs,
4 TCUs, and MSIs to ensure they understand the
5 requirements for an effective grant proposal;
6 and

7 (E) other approaches for making current
8 competitive funding models more accessible for
9 under-resourced HBCUs, TCUs, and MSIs.

10 (d) REPORT TO CONGRESS.—Not later than 2 years
11 after the date of enactment of this Act, and every 5 years
12 thereafter, the Director shall report to Congress on the
13 implementation by Federal science agencies of the policy
14 guidelines developed under this section.

15 **SEC. 6. DEFINITIONS.**

16 In this Act:

17 (1) DIRECTOR.—The term “Director” means
18 the Director of the Office of Science and Technology
19 Policy.

20 (2) FEDERAL LABORATORY.—The term “Fed-
21 eral laboratory” has the meaning given such term in
22 section 4 of the Stevenson-Wydler Technology Inno-
23 vation Act of 1980 (15 U.S.C. 3703).

24 (3) FEDERAL SCIENCE AGENCY.—The term
25 “Federal science agency” means any Federal agency

1 with an annual extramural research expenditure of
2 over \$100,000,000.

3 (4) HBCU.—The term “HBCU” has the mean-
4 ing given the term “part B institution” in section
5 322 of the Higher Education Act of 1965 (20
6 U.S.C. 1061).

7 (5) INSTITUTION OF HIGHER EDUCATION.—The
8 term “institution of higher education” has the
9 meaning given such term in section 101 of the High-
10 er Education Act of 1965 (20 U.S.C. 1001).

11 (6) MINORITY SERVING INSTITUTION.—The
12 term “minority serving institution” or “MSI” means
13 Hispanic-Serving Institutions as defined in section
14 502 of the Higher Education Act of 1965 (20
15 U.S.C. 1101a); Alaska Native Serving Institutions
16 and Native Hawaiian-Serving Institutions as defined
17 in section 317 of the Higher Education Act of 1965
18 (20 U.S.C. 1059d); and Predominantly Black Insti-
19 tutions, Asian American and Native American Pa-
20 cific Islander-Serving Institutions, and Native Amer-
21 ican-Serving Nontribal Institutions as defined in sec-
22 tion 371 of the Higher Education Act of 1965 (20
23 U.S.C. 1067q(c)).

