

116TH CONGRESS
1ST SESSION

H. R. 4372

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.

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 18, 2019

Ms. JOHNSON of Texas (for herself and Mr. WALTZ) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

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:

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

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

10 (3) STEM occupations offer higher wages, more
11 opportunities for advancement, and a higher degree
12 of job security than non-STEM occupations.

13 (4) The composition of the STEM workforce
14 does not reflect the current or projected diversity of
15 the Nation, with Hispanics, African Americans, and
16 other racial and ethnic minorities, significantly
17 underrepresented in the STEM workforce compared
18 to their presence in the workforce more generally.

19 (5) A stronger national commitment to increas-
20 ing the diversity of the STEM workforce is needed
21 to help address the STEM skills shortage.

22 (6) According to a 2019 National Academies of
23 Sciences, Engineering, and Medicine report entitled
24 “Minority Serving Institutions: America’s Underuti-
25 lized Resource for Strengthening the STEM Work-

1 force”, two- and four-year minority serving institu-
2 tions enroll nearly 30 percent of all undergraduate
3 students—a percentage that is expected to grow in
4 the coming years—in the United States higher edu-
5 cation system and play a critical role in providing
6 important pathways to STEM-related education,
7 training, and careers for students of color.

8 (7) HBCUs, TCUs, and MSIs are highly suc-
9 cessful at educating underrepresented minority stu-
10 dents in STEM fields and can serve as best practice
11 models for other colleges and universities to further
12 expand participation of underrepresented minorities
13 in the STEM workforce.

14 (8) Increased investment in STEM infrastruc-
15 ture at HBCUs, TCUs, and MSIs has the potential
16 to increase these institutions’ ability to educate even
17 more students in the STEM disciplines.

18 (9) With the demand for STEM skills exceeding
19 the supply of STEM graduates, success of HBCUs,
20 TCUs, and MSIs in educating and training science
21 and engineering leaders is increasingly important for
22 United States economic growth and competitiveness.

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

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

5 (1) an inventory of competitive funding pro-
6 grams and initiatives carried out by Federal science
7 agencies that are targeted to HBCUs, TCUs, and
8 MSIs or partnerships with HBCUs, TCUs, and
9 MSIs;

10 (2) an assessment of Federal science agency
11 outreach activities to increase the participation and
12 competitiveness of HBCUs, TCUs, and MSIs in the
13 funding programs and initiatives identified in para-
14 graph (1); and

15 (3) recommendations of the Comptroller Gen-
16 eral to increase the participation of and the rate of
17 success of HBCUs, TCUs, and MSIs in competitive
18 funding programs offered by Federal science agen-
19 cies.

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

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

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

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

5 (3) build the research capacity and competitive-
6 ness of HBCUs, TCUs, and MSIs in STEM dis-
7 ciplines; and

8 (4) identify and broadly disseminate effective
9 models for programs and practices at HBCUs,
10 TCUs, and MSIs that promote the education and
11 workforce preparation of minority students pursuing
12 STEM studies and careers in which such students
13 are underrepresented.

14 (b) RESEARCH.—Research described in this sub-
15 section is research on the contribution of HBCUs, TCUs,
16 and MSIs to the education and training of underrep-
17 resented minority students in STEM fields and to the
18 meeting of national STEM workforce needs, including—

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

23 (2) effective practices at HBCUs, TCUs, and
24 MSIs and associated outcomes on student recruit-
25 ment, retention, and advancement in STEM fields,

1 including the ability for students to compete for fel-
2 lowships, employment, and advancement in the
3 workforce;

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

6 (4) the unique challenges and opportunities for
7 HBCUs, TCUs, and MSIs in attaining the resources
8 needed for integrating effective practices in STEM
9 education, including providing research experiences
10 for underrepresented minority students;

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

14 (6) models of STEM curriculum, learning, and
15 teaching successful at HBCUs, TCUs, and MSIs for
16 increasing participation, retention, and success of
17 underrepresented minority students; and

18 (7) successful or promising partnerships be-
19 tween HBCUs, TCUs, and MSIs and other institu-
20 tions of higher education, private sector and non-
21 profit organizations, Federal laboratories, and inter-
22 national research institutions.

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

1 (1) metrics of success to best capture the
2 achievements of HBCUs, TCUs, and MSIs and stu-
3 dents of such institutions to account for institutional
4 context and missions, faculty investment, student
5 populations, student needs, and institutional re-
6 source constraints;

7 (2) enhancements to undergraduate STEM cur-
8 riculum at HBCUs, TCUs, and MSIs to increase the
9 participation, retention, degree completion, and suc-
10 cess of underrepresented students;

11 (3) professional development programs to in-
12 crease the numbers and the high-quality preparation
13 of STEM faculty at HBCUs, TCUs, and MSIs, in-
14 cluding programs to encourage STEM doctoral stu-
15 dents to teach at HBCUs, TCUs, and MSIs; and

16 (4) mechanisms for institutions of higher edu-
17 cation that are not HBCUs, TCUs, or MSIs to part-
18 ner with HBCUs, TCUs, and MSIs on STEM edu-
19 cation, including the facilitation of student transfer,
20 mentoring programs for students and junior faculty,
21 joint research projects, and student access to grad-
22 uate education.

23 (d) RESEARCH EXPERIENCES.—Grants under this
24 section may fund the development or expansion of oppor-
25 tunities for the exchange of students and faculty to con-

1 duct research, including through partnerships with institu-
2 tions of higher education that are not HBCUs, TCUs, or
3 MSIs, private sector and non-profit organizations, Federal
4 laboratories, and international research institutions.

5 (e) PARTNERSHIPS.—In awarding grants under this
6 section, the Director of the National Science Foundation
7 shall—

8 (1) encourage HBCUs, TCUs, and MSIs and
9 consortia thereof and partnerships with one or more
10 HBCU, TCU, or MSI, to submit proposals;

11 (2) require proposals submitted in partnership
12 with one or more HBCU, TCU, or MSI include a
13 plan for establishing a sustained partnership that is
14 jointly developed and managed, draws from the ca-
15 pacities of each institution, and is mutually bene-
16 ficial; and

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

21 (f) MSI CENTERS OF INNOVATION.—Grants under
22 this section may fund the establishment of no more than
23 five MSI Centers of Innovation to leverage successes of
24 HBCUs, TCUs, and MSIs in STEM education and re-
25 search training of underrepresented minority students as

1 models for other institutions, including both HBCUs,
2 TCUs, and MSIs and institutions of higher education that
3 are not HBCUs, TCUs, or MSIs. Such centers will be lo-
4 cated on campuses of selected institutions of higher edu-
5 cation and serve as incubators to allow institutions of
6 higher education to experiment, pilot, evaluate, and scale
7 up promising practices.

8 **SEC. 5. AGENCY RESPONSIBILITIES.**

9 (a) IN GENERAL.—In consultation with outside
10 stakeholders and the heads of the Federal science agen-
11 cies, the Director shall develop a uniform set of policy
12 guidelines for Federal science agencies to carry out a sus-
13 tained program of outreach activities to increase clarity,
14 transparency, and accountability for Federal science agen-
15 cy investments in STEM education and research activities
16 at HBCUs, TCUs, and MSIs.

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

20 (1) to designate a liason for HBCUs, TCUs,
21 and MSIs responsible for—

22 (A) enhancing direct communication with
23 HBCUs, TCUs, and MSIs to increase the Fed-
24 eral science agency's understanding of the ca-
25 pacity and needs of such institutions and to

1 raise awareness of available Federal funding op-
2 portunities at such institutions;

3 (B) coordinating programs, activities, and
4 initiatives while accounting for the capacity and
5 needs of HBCUs, TCUs, and MSIs;

6 (C) tracking Federal science agency invest-
7 ments in and engagement with HBCUs, TCUs,
8 and MSIs; and

9 (D) reporting progress toward increasing
10 participation of HBCUs, TCUs, and MSIs in
11 grant programs;

12 (2) to publish annual forecasts of funding op-
13 portunities and proposal deadlines, including for
14 grants, contracts, subcontracts, and cooperative
15 agreements;

16 (3) to conduct on-site reviews of research facili-
17 ties at HBCUs, TCUs, and MSIs, as practicable,
18 and make recommendations regarding strategies for
19 becoming more competitive in research;

20 (4) to hold geographically accessible or virtual
21 workshops on research priorities of the Federal
22 science agency and on how to write competitive
23 grant proposals;

24 (5) to ensure opportunities for HBCUs, TCUs,
25 and MSIs to directly communicate with Federal

1 science agency officials responsible for managing
2 competitive grant programs in order to receive feed-
3 back on research ideas and proposals, including
4 guidance on the Federal science agency's peer review
5 process;

6 (6) to foster mutually beneficial public-private
7 collaboration among Federal science agencies, indus-
8 try, Federal laboratories, academia, and nonprofit
9 organizations to—

10 (A) identify alternative sources of funding
11 for STEM education and research at HBCUs,
12 TCUs, and MSIs;

13 (B) provide access to high-quality, relevant
14 research experiences for students and faculty of
15 HBCUs, TCUs, and MSIs;

16 (C) expand the professional networks of
17 students and faculty of HBCUs, TCUs, and
18 MSIs;

19 (D) broaden STEM educational opportuni-
20 ties for students and faculty of HBCUs, TCUs,
21 and MSIs; and

22 (E) support the transition of students of
23 HBCUs, TCUs, and MSIs into the STEM
24 workforce; and

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

(c) STRATEGIC PLAN.—

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

(2) CONSIDERATIONS.—In developing a strategic plan under paragraph (1), the Director and each head of each Federal science agency shall consider—

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

(B) modifying existing research and development program solicitations to incentivize ef-

1 fective partnerships with HBCUs, TCUs, and
2 MSIs;

3 (C) offering planning grants for HBCUs,
4 TCUs, and MSIs to develop or equip grant of-
5 fices with the requisite depth of knowledge to
6 submit competitive grant proposals and manage
7 awarded grants;

8 (D) offering additional training programs
9 and individualized and timely guidance to grant
10 officers and faculty researchers at HBCUs,
11 TCUs, and MSIs to ensure they understand the
12 requirements for an effective grant proposal;
13 and

14 (E) other approaches for making current
15 competitive funding models more accessible for
16 under-resourced HBCUs, TCUs, and MSIs.

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

22 **SEC. 6. DEFINITIONS.**

23 In this Act:

1 (1) DIRECTOR.—The term “Director” means
2 the Director of the Office of Science and Technology
3 Policy.

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

8 (3) FEDERAL SCIENCE AGENCY.—The term
9 “Federal science agency” means any Federal agency
10 with an annual extramural research expenditure of
11 over \$100,000,000.

12 (4) HBCU.—The term “HBCU” has the mean-
13 ing given the term “part B institution” in section
14 322 of the Higher Education Act of 1965 (20
15 U.S.C. 1061).

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

20 (6) MINORITY SERVING INSTITUTION.—The
21 term “minority serving institution” or “MSI” means
22 Hispanic-Serving Institutions as defined in section
23 502 of the Higher Education Act of 1965 (20 U.S.C
24 1101a); Alaska Native Serving Institutions and Na-
25 tive Hawaiian-Serving Institutions as defined in sec-

1 tion 317 of the Higher Education Act of 1965 (20
2 U.S.C. 1059d); and Predominantly Black Institu-
3 tions, Asian American and Native American Pacific
4 Islander-Serving Institutions, and Native American-
5 Serving Nontribal Institutions as defined in section
6 371 of the Higher Education Act of 1965 (20
7 U.S.C. 1067q(c)).

8 (7) STEM.—The term “STEM” has the mean-
9 ing given the term in the STEM Education Act of
10 2015 (42 U.S.C. 1861 et seq.).

11 (8) TCU.—The term “TCU” has the meaning
12 given the term “Tribal College or University” in sec-
13 tion 316 of the Higher Education Act of 1965 (20
14 U.S.C. 1059c).

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