

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.

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## 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

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## 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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