

Calendar No. 440

115TH CONGRESS
2D SESSION

S. 754

[Report No. 115–263]

To support meeting our Nation’s growing cybersecurity workforce needs by
expanding the cybersecurity education pipeline.

IN THE SENATE OF THE UNITED STATES

MARCH 28, 2017

Mr. KAINE (for himself, Mr. WICKER, Mrs. MURRAY, Mr. PERDUE, Mr. NELSON, and Mr. THUNE) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

JUNE 5, 2018

Reported by Mr. THUNE, with an amendment

[Strike out all after the enacting clause and insert the part printed in *italic*]

A BILL

To support meeting our Nation’s growing cybersecurity workforce needs by expanding the cybersecurity education pipeline.

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

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Cyber Scholarship Op-
3 portunities Act of 2017”.

4 **SEC. 2. FINDINGS.**

5 Congress finds the following:

6 (1) A well-trained workforce is essential to
7 meeting the Nation’s growing cybersecurity needs.

8 (2) A 2015 report by the National Academy of
9 Public Administration found that the United States
10 faces a severe shortage of properly trained and
11 equipped cybersecurity professionals.

12 (3) A 2015 study of the information security
13 workforce found that the information security work-
14 force shortfall is widening.

15 (4) The National Science Foundation’s Cyber-
16 Corps: Scholarship-for-Service program is a success-
17 ful effort to support capacity building in institutions
18 of higher education and scholarships for students to
19 pursue cybersecurity careers.

20 **SEC. 3. SENSE OF CONGRESS.**

21 It is the sense of Congress that—

22 (1) given the current need for cybersecurity
23 professionals in the public and private sectors, Con-
24 gress and the Federal Government should support
25 existing programs to boost their success;

1 (2) the Federal Government should also build
2 upon and develop existing programs to meet emerg-
3 ing challenges, such as the need to protect critical
4 infrastructure and the greater need for cybersecurity
5 professionals of various skill levels;

6 (3) there is a need for greater engagement with
7 students at the kindergarten through grade 12 level
8 to recruit young people to pursue career paths in cy-
9 bersecurity;

10 (4) many community colleges offer degrees or
11 industry-recognized credentials in cybersecurity and
12 related fields that prepare students to fill high-de-
13 mand cybersecurity jobs, and the Federal Govern-
14 ment should support programs at 2-year institutions
15 of higher education that help students develop skills
16 necessary to support the Nation's cybersecurity mis-
17 sions; and

18 (5) the Federal Government should expand ex-
19 isting programs to support re-training mid-career in-
20 dividuals, such as veterans of the Armed Forces, to
21 fill cybersecurity positions.

22 **SEC. 4. FEDERAL CYBER SCHOLARSHIP-FOR-SERVICE PRO-**
23 **GRAM.**

24 Section 302 of the Cybersecurity Enhancement Act
25 of 2014 (15 U.S.C. 7442) is amended—

1 (1) in subsection (a), by adding at the end the
 2 following: “Not less than 5 percent of scholarships
 3 provided under this section shall be provided to eligi-
 4 ble students who are pursuing an associate’s degree
 5 in a cybersecurity field without the intent of trans-
 6 ferring to a bachelor’s degree program and either
 7 have a bachelor’s degree already or are veterans of
 8 the Armed Forces.”;

9 (2) in subsection (d), by adding at the end the
 10 following: “In the case of a scholarship recipient who
 11 is pursuing a doctoral or master’s degree, such
 12 agreement may include (if determined appropriate
 13 on a case-by-case basis by the Director of the Na-
 14 tional Science Foundation) an agreement for the re-
 15 cipient to work at an institution of higher education
 16 or for a local educational agency teaching cybersecu-
 17 rity skills for a period equal to the length of the
 18 scholarship following receipt of such degree.”;

19 (3) in subsection (f)—

20 (A) by striking paragraph (3) and insert-
 21 ing the following:

22 “(3) have demonstrated a high level of com-
 23 petency in relevant knowledge, skills, and abilities;
 24 as described in the national cybersecurity awareness
 25 and education program under section 401;” and

1 (B) by striking paragraph (4) and insert-
2 ing the following:

3 “(4) be a student in an eligible degree program
4 at a qualified institution of higher education, as de-
5 termined by the Director of the National Science
6 Foundation, who is—

7 “(A) a full-time student; or

8 “(B) a student who is enrolled for study
9 leading to a degree on a less than full-time
10 basis but not less than half-time basis; and”;

11 (4) by striking subsection (m) and inserting the
12 following:

13 “(m) EVALUATION AND REPORT.—

14 “(1) IN GENERAL.—The Director of the Na-
15 tional Science Foundation shall evaluate and make
16 public, in a manner that protects the personally
17 identifiable information of scholarship recipients; in-
18 formation on the success of recruiting individuals for
19 scholarships under this section and on hiring and re-
20 taining those individuals in the public sector work-
21 force; including on—

22 “(A) placement rates;

23 “(B) where students are placed;

24 “(C) student salary ranges for students
25 not released from obligations under this section;

1 ~~“(D) how long after graduation they are~~
 2 ~~placed;~~

3 ~~“(E) how long they stay in the positions~~
 4 ~~they enter upon graduation;~~

5 ~~“(F) how many students are released from~~
 6 ~~obligations; and~~

7 ~~“(G) what (if any) remedial training needs~~
 8 ~~are required.~~

9 ~~“(2) REGULAR REPORTS.—The Director of the~~
 10 ~~National Science Foundation shall submit reports to~~
 11 ~~Congress under paragraph (1) not less often than~~
 12 ~~once every 5 years.”; and~~

13 ~~(5) by adding at the end the following:~~

14 ~~“(n) RESOURCES.—The Director of the National~~
 15 ~~Science Foundation shall work with the Director of the~~
 16 ~~Office of Personnel Management to provide adequate re-~~
 17 ~~sources to the CyberCorps community in the form of an~~
 18 ~~online resource center, where all other relevant websites~~
 19 ~~will be consolidated or eliminated, if possible. To the ex-~~
 20 ~~tent applicable, such websites shall—~~

21 ~~“(1) present up-to-date, accurate information~~
 22 ~~about existing scholarship programs and job oppor-~~
 23 ~~tunities;~~

24 ~~“(2) present a modernized view of cybersecurity~~
 25 ~~careers;~~

1 “(3) improve user friendliness; and

2 “(4) allow prospective job applicants to search
3 positions by State, salary, and title.

4 “(o) ADVERTISEMENTS.—The Director of the Na-
5 tional Science Foundation shall work with the Director of
6 the Office of Personnel Management and State, local, and
7 tribal agencies to advertise cybersecurity positions to
8 scholarship recipients under this section, such as by
9 hosting, in coordination with such office and agencies, a
10 virtual job fair for scholarship recipients.

11 “(p) CYBERSECURITY AT KINDERGARTEN THROUGH
12 GRADE 12 LEVEL.—The Director of the National Science
13 Foundation, in coordination with other Federal agencies
14 as necessary, shall carry out a program to grow and im-
15 prove cybersecurity education at the kindergarten through
16 grade 12 level that—

17 “(1) increases interest in cybersecurity careers;

18 “(2) helps students practice correct and safe
19 online behavior and understand the foundational
20 principles of cybersecurity; and

21 “(3) improves teaching methods for delivering
22 cybersecurity content for kindergarten through
23 grade 12 computer science curricula.

24 “(q) CRITICAL INFRASTRUCTURE PROTECTION.—
25 Due to the need for skilled cybersecurity professionals to

1 protect the Nation's critical infrastructure, the Director
 2 of the National Science Foundation may—

3 “(1) grant exceptions to students for fulfilling
 4 post-award employment obligations under this sec-
 5 tion (on a case-by-case basis and in coordination
 6 with other Federal agencies) who agree to work in
 7 a critical infrastructure mission at a Federal Gov-
 8 ernment corporation or a State, local, or tribal gov-
 9 ernment-affiliated asset, system, or network that is
 10 considered to be part of a critical infrastructure sec-
 11 tor as described in Presidential Policy Directive–21,
 12 issued February 12, 2013 (related to critical infra-
 13 structure security and resilience); or any successor;
 14 and

15 “(2) develop a pilot program to enhance critical
 16 infrastructure protection training for students pur-
 17 suing careers in cybersecurity.

18 “(r) STUDY.—The Director of the National Science
 19 Foundation, in coordination with the Director of the Of-
 20 fice of Personnel Management, shall assess the potential
 21 benefits and feasibility of granting scholarship awards
 22 under this section to students who do not possess a bach-
 23 elor's degree to pursue an associate's degree or an indus-
 24 try-recognized credential in a cybersecurity field.”.

1 **SECTION 1. SHORT TITLE.**

2 *This Act may be cited as the “Cyber Scholarship Op-*
 3 *portunities Act of 2017”.*

4 **SEC. 2. FINDINGS.**

5 *Congress finds the following:*

6 (1) *A well-trained workforce is essential to meet-*
 7 *ing the Nation’s cybersecurity needs.*

8 (2) *An October 2015 report by the National*
 9 *Academy of Public Administration entitled “Increas-*
 10 *ing the Effectiveness of the Federal Role in Cybersecu-*
 11 *urity Education” noted that the United States faces a*
 12 *severe shortage of properly trained and equipped cy-*
 13 *bersecurity professionals in both the government and*
 14 *private sector workforce.*

15 (3) *The 2015 (ISC)² Global Information Secu-*
 16 *rity Workshop Study stated that “the information se-*
 17 *curity workforce shortfall is widening.”*

18 (4) *The National Science Foundation’s Federal*
 19 *Cyber Scholarship-for-Service program is a successful*
 20 *effort to support capacity building in institutions of*
 21 *higher education and scholarships for students to pur-*
 22 *sue cybersecurity careers.*

23 **SEC. 3. COMMUNITY COLLEGE CYBER PILOT PROGRAM AND**
 24 **ASSESSMENT.**

25 (a) *PILOT PROGRAM.*—*Not later than 1 year after the*
 26 *date of enactment of this Act, as part of the Federal Cyber*

1 *Scholarship-for-Service program established under section*
2 *302 of the Cybersecurity Enhancement Act of 2014 (15*
3 *U.S.C. 7442), the Director of the National Science Founda-*
4 *tion, in coordination with the Director of the Office of Per-*
5 *sonnel Management, shall develop and implement a pilot*
6 *program at not more than 10, but at least 5, community*
7 *colleges to provide scholarships to eligible students who—*

8 *(1) are pursuing associate degrees or specialized*
9 *program certifications in the field of cybersecurity;*
10 *and*

11 *(2)(A) have bachelor's degrees; or*

12 *(B) are veterans of the armed forces.*

13 *(b) ASSESSMENT.—Not later than 1 year after the date*
14 *of enactment of this Act, as part of the Federal Cyber Schol-*
15 *arship-for-Service program established under section 302 of*
16 *the Cybersecurity Enhancement Act of 2014 (15 U.S.C.*
17 *7442), the Director of the National Science Foundation, in*
18 *coordination with the Director of the Office of Personnel*
19 *Management, shall assess the potential benefits and feasi-*
20 *bility of providing scholarships through community colleges*
21 *to eligible students who are pursuing associate degrees, but*
22 *do not have bachelor's degrees.*

1 **SEC. 4. FEDERAL CYBER SCHOLARSHIP-FOR SERVICE PRO-**
2 **GRAM UPDATES.**

3 (a) *IN GENERAL.*—Section 302 of the Cybersecurity
4 Enhancement Act of 2014 (15 U.S.C. 7442) is amended—

5 (1) by striking subsection (b)(3) and inserting
6 the following:

7 “(3) prioritize the employment placement of at
8 least 80 percent of scholarship recipients in an execu-
9 tive agency (as defined in section 105 of title 5,
10 United States Code); and

11 “(4) provide awards to improve cybersecurity
12 education at the kindergarten through grade 12
13 level—

14 “(A) to increase interest in cybersecurity
15 careers;

16 “(B) to help students practice correct and
17 safe online behavior and understand the
18 foundational principles of cybersecurity;

19 “(C) to improve teaching methods for deliv-
20 ering cybersecurity content for kindergarten
21 through grade 12 computer science curricula;
22 and

23 “(D) to promote teacher recruitment in the
24 field of cybersecurity.”;

25 (2) by amending subsection (d) to read as fol-
26 lows:

1 “(d) *POST-AWARD EMPLOYMENT OBLIGATIONS.—Each*
 2 *scholarship recipient, as a condition of receiving a scholar-*
 3 *ship under the program, shall enter into an agreement*
 4 *under which the recipient agrees to work for a period equal*
 5 *to the length of the scholarship, following receipt of the stu-*
 6 *dent’s degree, in the cybersecurity mission of—*

7 “(1) *an executive agency (as defined in section*
 8 *105 of title 5, United States Code);*

9 “(2) *Congress, including any agency, entity, of-*
 10 *fice, or commission established in the legislative*
 11 *branch;*

12 “(3) *an interstate agency;*

13 “(4) *a State, local, or tribal government; or*

14 “(5) *a State, local, or tribal government-affili-*
 15 *ated non-profit that is considered to be critical infra-*
 16 *structure (as defined in section 1016(e) of the USA*
 17 *Patriot Act (42 U.S.C. 5195c(e))).”;*

18 (3) *in subsection (f)—*

19 (A) *by amending paragraph (3) to read as*
 20 *follows:*

21 “(3) *have demonstrated a high level of com-*
 22 *petency in relevant knowledge, skills, and abilities, as*
 23 *defined by the national cybersecurity awareness and*
 24 *education program under section 401;”;* and

1 (B) by amending paragraph (4) to read as
2 follows:

3 “(4) be a full-time student in an eligible degree
4 program at a qualified institution of higher edu-
5 cation, as determined by the Director of the National
6 Science Foundation, except that in the case of a stu-
7 dent who is enrolled in a community college, be a stu-
8 dent pursuing a degree on a less than full-time basis,
9 but not less than half-time basis; and”;

10 (4) by amending subsection (m) to read as fol-
11 lows:

12 “(m) PUBLIC INFORMATION.—

13 “(1) EVALUATION.—The Director of the National
14 Science Foundation, in coordination with the Direc-
15 tor of the Office of Personnel Management, shall peri-
16 odically evaluate and make public, in a manner that
17 protects the personally identifiable information of
18 scholarship recipients, information on the success of
19 recruiting individuals for scholarships under this sec-
20 tion and on hiring and retaining those individuals in
21 the public sector cyber workforce, including on—

22 “(A) placement rates;

23 “(B) where students are placed, including
24 job titles and descriptions;

1 “(C) *student salary ranges for students not*
2 *released from obligations under this section;*

3 “(D) *how long after graduation they are*
4 *placed;*

5 “(E) *how long they stay in the positions*
6 *they enter upon graduation;*

7 “(F) *how many students are released from*
8 *obligations; and*

9 “(G) *what, if any, remedial training is re-*
10 *quired.*

11 “(2) *REPORTS.—The Director of the National*
12 *Science Foundation, in coordination with the Office*
13 *of Personnel Management, shall submit, at least once*
14 *every 3 years, to the Committee on Commerce,*
15 *Science, and Transportation of the Senate and the*
16 *Committee on Science, Space, and Technology of the*
17 *House of Representatives a report, including the re-*
18 *sults of the evaluation under paragraph (1) and any*
19 *recent statistics regarding the size, composition, and*
20 *educational requirements of the Federal cyber work-*
21 *force.*

22 “(3) *RESOURCES.—The Director of the National*
23 *Science Foundation, in coordination with the Direc-*
24 *tor of the Office of Personnel Management, shall pro-*
25 *vide consolidated and user-friendly online resources*

1 *for prospective scholarship recipients, including, to*
 2 *the extent practicable—*

3 “(A) searchable, up-to-date, and accurate
 4 information about participating institutions of
 5 higher education and job opportunities related to
 6 the field of cybersecurity; and

7 “(B) a modernized description of cybersecu-
 8 rity careers.”.

9 (b) *SAVINGS PROVISION.*—*Nothing in this section, or*
 10 *an amendment made by this section, shall affect any agree-*
 11 *ment, scholarship, loan, or repayment, under section 302*
 12 *of the Cybersecurity Enhancement Act of 2014 (15 U.S.C.*
 13 *7442), in effect on the day before the date of enactment of*
 14 *this Act.*

15 **SEC. 5. CYBERSECURITY TEACHING.**

16 *Section 10A(i) of the National Science Foundation Au-*
 17 *thorization Act of 2002 (42 U.S.C. 1862n-1(i)) is amend-*
 18 *ed—*

19 (1) *by amending paragraph (5) to read as fol-*
 20 *lows:*

21 “(5) the term ‘mathematics and science teacher’
 22 means a science, technology, engineering, mathe-
 23 matics, or computer science, including cybersecurity,
 24 teacher at the elementary school or secondary school
 25 level;” and

1 (2) *by amending paragraph (7) to read as fol-*
2 *lows:*

3 “(7) *the term ‘science, technology, engineering, or*
4 *mathematics professional’ means an individual who*
5 *holds a baccalaureate, master’s, or doctoral degree in*
6 *science, technology, engineering, mathematics, or com-*
7 *puter science, including cybersecurity, and is working*
8 *in or had a career in such field or a related area;*
9 *and”.*

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