

**Calendar No. 314**

116TH CONGRESS }  
*1st Session* }

SENATE

{ REPORT  
116-164

SUPPORTING VETERANS IN STEM CAREERS  
ACT

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R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND  
TRANSPORTATION

ON

S. 153



DECEMBER 5, 2019.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

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### SUPPORTING VETERANS IN STEM CAREERS ACT

DECEMBER 5, 2019.—Ordered to be printed

Mr. WICKER, from the Committee on Commerce, Science, and  
Transportation, submitted the following

### R E P O R T

[To accompany S. 153]

[Including cost estimate of the Congressional Budget Office]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 153) to promote veteran involvement in STEM education, computer science, and scientific research, and for other purposes, having considered the same, reports favorably thereon with an amendment (in the nature of a substitute) and recommends that the bill (as amended) do pass.

#### PURPOSE OF THE BILL

The purpose of S. 153 is to modify certain existing National Science Foundation (NSF) science, technology, engineering, and mathematics (STEM) research and education programs to enable and promote participation by veterans and to direct NSF to develop a plan to enhance its veteran outreach efforts. S. 153 also would direct the Office of Science and Technology Policy (OSTP) to establish or designate an interagency working group to coordinate and develop activities and programs to increase participation of veterans in STEM careers and education.

#### BACKGROUND AND NEEDS

According to the U.S. Bureau of Labor Statistics, employment in occupations related to STEM was projected to grow to more than 10 million between 2016 and 2026.<sup>1</sup> In addition, in the next 5

<sup>1</sup>Bureau of Labor Statistics, “Employment in STEM Occupations”. April 10, 2019 (<https://www.bls.gov/emp/tables/stem-employment.htm>).

years, between 1 million and 1.5 million members of the U.S. Armed Forces will leave the military, according to the Department of Defense. By a large margin, veterans cite finding employment as their most important need when returning home.<sup>2</sup>

Research shows that many military veterans have skills and training that align with STEM careers, particularly in information technology.<sup>3</sup> However, research also reveals several systemic barriers veterans face as they re-enter the workforce, including lack of formal STEM education, lack of career guidance, and the difficult task of transferring military training or credentials to similar civilian occupations.<sup>4</sup>

The Robert Noyce Teacher Scholarship Program provides scholarships and stipends to undergraduate STEM majors and professionals in return for STEM teaching service at the K–12 level. The program, which allocated approximately \$58 million for new grant awards in 2017, is intended to address the critical need for recruiting and preparing highly effective STEM teachers in high-need K–12 schools. The NSF Masters Teaching Fellowship track is a component of the Robert Noyce Teacher Scholarship Program, which offers awards for fellowships and programmatic support to experienced and exemplary certified K–12 STEM teachers who possess a master’s or bachelor’s degree in their field.

#### SUMMARY OF PROVISIONS

If enacted, S. 153 would do the following:

- Address the participation of veterans in STEM fields, including by making veterans eligible for certain NSF programs.
- Direct NSF to (1) encourage veterans to study and pursue careers in STEM and computer science in coordination with other Federal agencies that serve veterans, and (2) submit a plan to Congress for enhancing veterans outreach.
- Require the National Science Board to provide in its biennial report on indicators of the state of science and engineering in the United States any available and relevant data on veterans in science and engineering careers or education programs.
- Require NSF to consider the ability of an institution of higher education to recruit veterans in those institutions’ applications to participate in the Robert Noyce Teacher Scholarship Program, NSF fellowships and masters fellowships for mathematics and science teachers, computer and network security capacity building grants, and traineeship grants leading to a doctorate degree in computer and network security research.
- Establish or designate a working group in the Office of Science and Technology Policy (OSTP) to coordinate and develop Federal programs and policies for transitioning and training veterans and military spouses for STEM careers.

<sup>2</sup> Congressional Research Service, “Employment for Veterans: Trends and Programs”. February 20, 2014 (<https://fas.org/sgp/crs/misc/R42790.pdf>).

<sup>3</sup> National Science Foundation, Modeling IT Career Choices of Persons with Disabilities: The Case of Military Personnel and Veterans (Award abstract #1245195).” June 19, 2017 ([https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1245195](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1245195)); *Vancouver Business Journal*, “Research shows veterans may be answer to workforce gap.” May 12, 2017 (<https://www.vbjusa.com/opinion/columns/education-workforce-development-column/research-shows-veterans-may-answer-workforce-gap/>).

<sup>4</sup> *Id.*

- Direct the Government Accountability Office (GAO) to conduct a study on the academic success rates of student veterans pursuing STEM degrees and barriers faced by such students in that pursuit.

#### LEGISLATIVE HISTORY

S. 153 was introduced on January 16, 2019, by Senator Rubio (for himself and Senator Klobuchar) and was referred to the Committee on Commerce, Science, and Transportation of the Senate. Senators Daines, Gardner, Rounds, Rosen, Blumenthal, Cortez Masto, Fischer, Peters, Cramer, and Hoeven are additional cosponsors. On July 10, 2019, the Committee met in open Executive Session and, by voice vote, ordered S. 153 reported favorably with an amendment (in the nature of a substitute) and two first degree amendments. Senator Klobuchar offered an amendment (in the nature of a substitute) to reduce the unnecessary bureaucratic layers created by the original bill. Senator Gardner offered a first degree amendment to require the Comptroller General of the United States to conduct a study and report on barriers faced by student veterans pursuing STEM degrees. Senator Lee offered a first degree amendment to reduce the amount of time an interagency committee created by this bill could exist. The underlying bill and the amendment from Senator Lee would not sunset this committee if an existing committee were used to implement this bill.

A House companion bill, H.R. 425, was introduced on January 10, 2019, by Representative Dunn (for himself and Representative Lamb) and was referred to the Committee on Science, Space, and Technology of the House of Representatives. There are five additional cosponsors. On February 25, 2019, H.R. 425 was passed by the House of Representatives, and on February 26, 2019, that bill was referred to the Committee on Commerce, Science, and Transportation of the Senate.

In the 115th Congress, a similar bill, S. 3395, was introduced on August 28, 2018, by Senator Heller and was referred to the Committee on Commerce, Science, and Transportation of the Senate. A companion bill, H.R. 4323, was passed on December 19, 2017, by the Committee on Science, Space, and Technology of the House of Representatives and reported favorably with an amendment (in the nature of a substitute) by the Committee on Commerce, Science, and Transportation of the Senate on September 12, 2018.

#### ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

| <b>S. 153, Supporting Veterans in STEM Careers Act</b>  |      |                                     |           |
|---|------|-------------------------------------|-----------|
| As ordered reported by the Senate Committee on Commerce, Science, and Transportation on July 10, 2019 |      |                                     |           |
| By Fiscal Year, Millions of Dollars   | 2019 | 2019-2024                           | 2019-2029 |
| Direct Spending (Outlays)   | 0    | 0                                   | 0         |
| Revenues  | 0    | 0                                   | 0         |
| Deficit Effect  | 0    | 0                                   | 0         |
| Spending Subject to Appropriation (Outlays)   | 0    | 1                                   | n.e.      |
| Statutory pay-as-you-go procedures apply?   | No   | <b>Mandate Effects</b>              |           |
| Increases on-budget deficits in any of the four consecutive 10-year periods beginning in 2030?        | No   | Contains intergovernmental mandate? | No        |
|   |      | Contains private-sector mandate?    | No        |
| n.e. = not estimated  |      |                                     |           |

S. 153 would modify the requirements and selection criteria of several National Science Foundation programs to promote wider participation by veterans. The bill also would direct the Office of Science and Technology Policy (OSTP) to establish an interagency working group to improve participation by veterans in science, technology, engineering, and mathematics (STEM) fields, and to develop a strategic plan to address barriers for veterans in those fields. Finally, S. 153 would require the Government Accountability Office to study the academic success rates of veterans pursuing STEM degrees.

Based on the costs of similar activities, CBO estimates that implementing the bill would cost \$1 million over the 2019–2024 period; such spending would be subject to the availability of appropriated funds. Most of that amount would be for additional OSTP staff to manage working group activities and prepare the strategic plan.

The CBO staff contact for this estimate is Janani Shankaran. The estimate was reviewed by H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

#### REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

##### NUMBER OF PERSONS COVERED

S. 153, as reported, would not create any new programs or impose any new regulatory requirements. Therefore, it would not subject any individuals or businesses to new regulations.

##### ECONOMIC IMPACT

S. 153, as reported, is not expected to have a negative impact on the Nation's economy.

## PRIVACY

S. 153, as reported, would not have any adverse impact on the personal privacy of individuals.

## PAPERWORK

S. 153, as reported, would not increase paperwork requirements for private individuals or businesses. S. 153 would require the Director of the Office of Science and Technology Policy to modify an existing annual report to Congress.

## CONGRESSIONALLY DIRECTED SPENDING

In compliance with paragraph 4(b) of rule XLIV of the Standing Rules of the Senate, the Committee provides that no provisions contained in the bill, as reported, meet the definition of congressionally directed spending items under the rule.

## SECTION-BY-SECTION ANALYSIS

*Section 1. Short title.*

This section would provide that the bill may be cited as the “Supporting Veterans in STEM Careers Act.”

*Section 2. Definitions.*

This section would define the terms “Director,” “Foundation,” “STEM,” and “veteran.”

*Section 3. Supporting veterans in STEM education and computer science.*

This section would require NSF, in coordination with other Federal agencies that serve veterans, to encourage veterans to study and pursue STEM and computer science careers. This section would instruct NSF to develop and submit a plan to Congress that includes NSF’s existing outreach activities to veterans, identifies best methods for NSF to leverage existing authorities and programs to facilitate and support veterans in STEM careers and education, identifies options for how NSF could track veterans’ participation in NSF research and education programs, and describes any barriers to collecting such information on veterans’ participation.

Further, this section would require the National Science Board to provide, in its report on indicators of the state of U.S. science and engineering, any available and relevant data on veterans’ science and engineering education programs and careers.

Additionally, this section would require NSF to consider the ability of an institution of higher education to recruit veterans in those institutions’ applications to participate in the Robert Noyce Teacher Scholarship Program and the NSF Masters Teacher Fellowship component. This section also would require NSF to use its computer and network security capacity building grants program to increase the number of veterans who pursue degrees in computer and network security fields, and allow program participants to use grant awards to create opportunities for veterans to transition to careers in computer and network security. This section also would require NSF to consider the likelihood that increased numbers of veterans would be recruited as students when considering the ap-

plications of institutions of higher education to participate in its graduate traineeship program for computer and network security.

Finally, this section would require the Director of OSTP to establish or designate an interagency working group to coordinate Federal programs and policies for transitioning and training veterans and military spouses for STEM careers.

*Section 4. Comptroller General of the United States study and report on barriers faced by student veterans pursuing degrees in science, technology, engineering, or math.*

This section would direct the GAO to study the academic success rates of student veterans pursuing STEM degrees as well as barriers facing these students in pursuing such degrees. The study would include an assessment of the current number of veterans pursuing STEM degrees, the percentage of those students who pursue such a degree but do not obtain it in 4 or fewer years, an analysis of the reasons why students are not able to obtain their degree and whether those reasons are barriers to veterans obtaining STEM degrees, and recommendations for Federal action to help more student veterans obtain STEM degrees.

#### CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

#### NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 2002

[Public Law 107-368, enacted December 19, 2002; as amended through P.L. 115-303, enacted December 11, 2018]

[42 U.S.C. 1862n-1]

#### **SEC. 10. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.**

(a) SCHOLARSHIP PROGRAM.—

(1) \* \* \*

(5) AWARDS.—In awarding grants under this section, the Director shall ensure that the eligible entities (and participating institutions of higher education of the consortia, if applicable) represent a variety of types of institutions of higher education. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to—

(A) historically Black colleges and universities that are part B institutions, as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)); [and]

(B) minority institutions, as defined in section 365(3) of the Higher Education Act of 1965 (20 U.S.C. 1067k(3))**[.]**;

and

(C) *higher education programs that serve or support veterans.*

(6) SUPPLEMENT NOT SUPPLANT.—Grant funds provided under this section shall be used to supplement, and not sup-



plant, other Federal or State funds available for the type of activities supported by the grant.

(b) SELECTION PROCESS.—

(1) \* \* \*

(2) REVIEW OF APPLICATIONS.—In evaluating the applications submitted under paragraph (1), the Director shall consider, at a minimum—

(A) \* \* \*

(F) the ability of the applicant (and the participating institutions of higher education of the consortium, if applicable) to recruit students who would otherwise not pursue a career in teaching in elementary schools or secondary schools [and students], *students* who are individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b), and *veterans*.

(c) SCHOLARSHIP REQUIREMENTS.—

(1) \* \* \*

(2) SELECTION.—Individuals shall be selected to receive scholarships primarily on the basis of academic merit, with consideration given to financial need and to the goal of promoting the participation of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) and *veterans*.

(3) \* \* \*

(d) STIPENDS.—

(1) \* \* \*

(2) SELECTION.—Individuals shall be selected to receive stipends under this section primarily on the basis of academic merit and professional achievement, with consideration given to financial need and to the goal of promoting the participation of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) and *veterans*.

\* \* \* \* \*

[42 U.S.C. 1862n-1a(d)]

**SEC. 10A. NATIONAL SCIENCE FOUNDATION TEACHING FELLOWSHIPS AND MASTER TEACHING FELLOWSHIPS.**

(a) \* \* \*

(d) SELECTION PROCESS.—

(1) \* \* \*

(3) CRITERIA.—In evaluating the applications submitted under paragraph (2), the Director shall consider, at a minimum—

(A) \* \* \*

(F) in the case of the National Science Foundation Teaching Fellowship, the ability of the applicant (and participating institutions of higher education of the consortium, if applicable) to recruit individuals who would otherwise not pursue a career in teaching [and individuals], *individuals* identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1855a or 1855b), and *veterans*.

(4) SELECTION OF FELLOWS.—

(A) \* \* \*

(B) PROMOTING PARTICIPATION OF CERTAIN INDIVIDUALS.—Among individuals demonstrating equivalent qualifications, consideration may be given to the goal of promoting the participation of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) *and veterans*.

\* \* \* \* \*

## CYBER SECURITY RESEARCH AND DEVELOPMENT ACT

[P.L. 107–305, enacted November 27, 2002; as amended through P.L. 114–329, enacted January 6, 2017]

[15 U.S.C. 7404(a)]

**SEC. 5. NATIONAL SCIENCE FOUNDATION COMPUTER AND NETWORK SECURITY PROGRAMS.****(a) COMPUTER AND NETWORK SECURITY CAPACITY BUILDING GRANTS.—**

(1) IN GENERAL.—The Director shall establish a program to award grants to institutions of higher education (or consortia thereof) to establish or improve undergraduate and master’s degree programs in computer and network security, to increase the number of students, including the number of students from groups historically underrepresented in these fields *and students who are veterans*, who pursue undergraduate or master’s degrees in fields related to computer and network security, and to provide students with experience in government or industry related to their computer and network security studies.

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

(3) USE OF FUNDS.—Grants awarded under this subsection shall be used for activities that enhance the ability of an institution of higher education (or consortium thereof) to provide high-quality undergraduate and master’s degree programs in computer and network security and to recruit and retain increased numbers of students to such programs. Activities may include—

(A) \* \* \*

(I) establishing or enhancing bridge programs in computer and network security between community colleges and universities; **[and]**

(J) *creating opportunities for veterans to transition to careers in computer and network security; and*

**[(J)]** (K) any other activities the Director determines will accomplish the goals of this subsection.

(4) \* \* \*

[15 U.S.C. 7404(c)(6)(C)]

**(c) GRADUATE TRAINEESHIPS IN COMPUTER AND NETWORK SECURITY RESEARCH.—**

(1) \* \* \*

(6) REVIEW OF APPLICATIONS.—In evaluating the applications submitted under paragraph (5), the Director shall consider—

(A) \* \* \*

(C) the likelihood that the program will recruit increased numbers of students, including students from groups his-

torically underrepresented in computer and network security related disciplines *or veterans*, to pursue and earn doctorate degrees in computer and network security;

\* \* \* \* \*

