

Calendar No. 172

116TH CONGRESS
1ST SESSION

S. 143

[Report No. 116–70]

To authorize the Department of Energy to conduct collaborative research with the Department of Veterans Affairs in order to improve healthcare services for veterans in the United States, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JANUARY 16, 2019

Ms. ERNST (for herself, Ms. HASSAN, Mr. PORTMAN, Mr. GARDNER, Mr. KING, Mr. HEINRICH, and Mr. ROUNDS) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

AUGUST 16, 2019

Reported under authority of the order of the Senate of August 1, 2019, by
Ms. MURKOWSKI, without amendment

A BILL

To authorize the Department of Energy to conduct collaborative research with the Department of Veterans Affairs in order to improve healthcare services for veterans in the United States, 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,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Department of Energy
3 Veterans’ Health Initiative Act”.

4 **SEC. 2. DEFINITIONS.**

5 In this Act:

6 (1) DEPARTMENT.—The term “Department”
7 means the Department of Energy.

8 (2) NATIONAL LABORATORY.—The term “Na-
9 tional Laboratory” has the meaning given that term
10 in section 2 of the Energy Policy Act of 2005 (42
11 U.S.C. 15801).

12 (3) SECRETARY.—The term “Secretary” means
13 the Secretary of Energy.

14 **SEC. 3. PURPOSES.**

15 The purposes of this Act are to advance Department
16 of Energy expertise in artificial intelligence and high-per-
17 formance computing in order to improve health outcomes
18 for veteran populations by—

19 (1) supporting basic research through the appli-
20 cation of artificial intelligence, high-performance
21 computing, modeling and simulation, machine learn-
22 ing, and large scale data analytics to identify and
23 solve outcome-defined challenges in the health
24 sciences;

25 (2) maximizing the impact of the Department
26 of Veterans Affairs’ health and genomics data

1 housed at the National Laboratories, as well as data
2 from other sources, on science, innovation, and
3 health care outcomes through the use and advance-
4 ment of artificial intelligence and high-performance
5 computing capabilities of the Department of Energy;

6 (3) promoting collaborative research through
7 the establishment of partnerships to improve data
8 sharing between Federal agencies, National Labora-
9 tories, institutions of higher education, and non-
10 profit institutions;

11 (4) establishing multiple scientific computing
12 user facilities to house and provision available data
13 to foster transformational outcomes; and

14 (5) driving the development of technology to im-
15 prove artificial intelligence, high-performance com-
16 puting, and networking relevant to mission applica-
17 tions of the Department of Energy, including mod-
18 eling, simulation, machine learning, and advanced
19 data analytics.

20 **SEC. 4. DEPARTMENT OF ENERGY VETERANS HEALTH RE-**
21 **SEARCH AND DEVELOPMENT.**

22 (a) IN GENERAL.—The Secretary shall establish and
23 carry out a research program in artificial intelligence and
24 high-performance computing, focused on the development
25 of tools to solve big data challenges associated with vet-

1 eran’s healthcare, and to support the efforts of the De-
2 partment of Veterans Affairs to identify potential health
3 risks and challenges utilizing data on long-term health-
4 care, health risks, and genomic data collected from veteran
5 populations. The Secretary shall carry out this program
6 through a competitive, merit-reviewed process, and con-
7 sider applications from National Laboratories, institutions
8 of higher education, multi-institutional collaborations, and
9 other appropriate entities.

10 (b) PROGRAM COMPONENTS.—In carrying out the
11 program established under subsection (a), the Secretary
12 may—

13 (1) conduct basic research in modeling and sim-
14 ulation, machine learning, large scale data analytics,
15 and predictive analysis in order to develop novel or
16 optimized algorithms for prediction of disease treat-
17 ment and recovery;

18 (2) develop methods to accommodate large data
19 sets with variable quality and scale, and to provide
20 insight and models for complex systems;

21 (3) develop new approaches and maximize the
22 use of algorithms developed through artificial intel-
23 ligence, machine learning, data analytics, natural
24 language processing, modeling and simulation, and
25 develop new algorithms suitable for high-perform-

1 ance computing systems and large biomedical data
2 sets;

3 (4) advance existing and construct new data en-
4 claves capable of securely storing data sets provided
5 by the Department of Veterans Affairs, Department
6 of Defense, and other sources; and

7 (5) promote collaboration and data sharing be-
8 tween National Laboratories, research entities, and
9 user facilities of the Department by providing the
10 necessary access and secure data transfer capabili-
11 ties.

12 (c) COORDINATION.—In carrying out the program re-
13 quired under subsection (a), the Secretary is authorized
14 to—

15 (1) enter into memoranda of understanding in
16 order to carry out reimbursable agreements with the
17 Department of Veterans Affairs and other entities in
18 order to maximize the effectiveness of Department
19 of Energy research and development to improve vet-
20 erans' healthcare;

21 (2) consult with the Department of Veterans
22 Affairs and other Federal agencies as appropriate;
23 and

24 (3) ensure that data storage meets all privacy
25 and security requirements established by the Depart-

1 ment of Veterans Affairs, and that access to data is
2 provided in accordance with relevant Department of
3 Veterans Affairs data access policies, including in-
4 formed consent.

5 (d) REPORT.—Not later than two years after the date
6 of the enactment of this Act, the Secretary shall submit
7 to the Committee on Science, Space, and Technology and
8 the Committee on Veterans’ Affairs of the House of Rep-
9 resentatives, and the Committee on Energy and Natural
10 Resources and the Committee on Veterans’ Affairs of the
11 Senate, a report detailing the effectiveness of—

12 (1) the interagency coordination between each
13 Federal agency involved in the research program
14 carried out under this section;

15 (2) collaborative research achievements of the
16 program; and

17 (3) potential opportunities to expand the tech-
18 nical capabilities of the Department.

19 (e) FUNDING.—The Secretary of Veterans Affairs
20 shall allocate up to \$27,000,000 during the period of fiscal
21 years 2019 through 2023 to carry out this section, subject
22 to the availability of appropriations.

1 **SEC. 5. ARTIFICIAL INTELLIGENCE, DATA ANALYTICS, AND**
2 **COMPUTATIONAL RESEARCH PILOT PRO-**
3 **GRAM.**

4 (a) IN GENERAL.—The Secretary shall carry out a
5 pilot program to develop tools for big data analytics by
6 utilizing data sets generated by Federal agencies, institu-
7 tions of higher education, nonprofit research organiza-
8 tions, and industry in order to advance artificial intel-
9 ligence technologies to solve complex, big data challenges.
10 The Secretary shall carry out this program through a com-
11 petitive, merit-reviewed process, and consider applications
12 from National Laboratories, institutions of higher edu-
13 cation, multi-institutional collaborations, and other appro-
14 priate entities.

15 (b) PROGRAM COMPONENTS.—In carrying out the
16 pilot program established under subsection (a), the Sec-
17 retary may—

18 (1) establish a cross-cutting research initiative
19 to prevent duplication and coordinate research ef-
20 forts in artificial intelligence and data analytics
21 across the Department;

22 (2) conduct basic research in modeling and sim-
23 ulation, artificial intelligence, machine learning,
24 large scale data analytics, natural language proc-
25 essing, and predictive analysis in order to develop
26 novel or optimized predictive algorithms suitable for

1 high-performance computing systems and large bio-
2 medical data sets;

3 (3) develop multivariate optimization models to
4 accommodate large data sets with variable quality
5 and scale in order to visualize complex systems;

6 (4) establish multiple scientific computing user
7 facilities to serve as data enclaves capable of se-
8 curely storing data sets created by Federal agencies,
9 institutions of higher education, nonprofit organiza-
10 tions, or industry at National Laboratories; and

11 (5) promote collaboration and data sharing be-
12 tween National Laboratories, research entities, and
13 user facilities of the Department by providing the
14 necessary access and secure data transfer capabili-
15 ties.

16 (c) REPORT.—Not later than two years after the date
17 of the enactment of this Act, the Secretary shall submit
18 to the Committee on Science, Space, and Technology of
19 the House of Representatives and the Committee on En-
20 ergy and Natural Resources of the Senate a report evalu-
21 ating the effectiveness of the pilot program under sub-
22 section (a), including basic research discoveries achieved
23 in the course of the program and potential opportunities
24 to expand the technical capabilities of the Department

1 through the development of artificial intelligence and data
2 analytics technologies.

3 (d) FUNDING.—The Secretary of Energy shall allo-
4 cate up to \$26,000,000 for each of fiscal years 2019 and
5 2020 to carry out this section, subject to the availability
6 of appropriations.

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