

116TH CONGRESS
1ST SESSION

S. 2660

To establish a grant program for wind energy research, development, and demonstration, and for other purposes.

IN THE SENATE OF THE UNITED STATES

OCTOBER 22, 2019

Ms. SMITH (for herself and Ms. COLLINS) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

A BILL

To establish a grant program for wind energy research, development, and demonstration, 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 “Wind Energy Research
5 and Development Act of 2019”.

6 **SEC. 2. DEFINITIONS.**

7 In this Act:

8 (1) **ELIGIBLE ENTITY.**—The term “eligible enti-
9 ty” means—

10 (A) an institution of higher education;

- 1 (B) a National Laboratory;
2 (C) a Federal research agency;
3 (D) a State research agency;
4 (E) a nonprofit research organization;
5 (F) an industrial entity; and
6 (G) a consortium of two or more entities
7 described in subparagraphs (A) through (F).

8 (2) INSTITUTION OF HIGHER EDUCATION.—The
9 term “institution of higher education” has the
10 meaning given the term in section 101 of the Higher
11 Education Act of 1965 (20 U.S.C. 1001).

12 (3) NATIONAL LABORATORY.—The term “Na-
13 tional Laboratory” has the meaning given the term
14 in section 2 of the Energy Policy Act of 2005 (42
15 U.S.C. 15801).

16 (4) PROGRAM.—The term “program” means
17 the program established under section 3(a).

18 (5) SECRETARY.—The term “Secretary” means
19 the Secretary of Energy.

20 (6) SUPERSIZED TURBINE.—The term “super-
21 sized turbine” means a 12-megawatt or greater wind
22 turbine that typically has a tower height greater
23 than 140 meters and blades greater than 75 meters.

1 **SEC. 3. WIND ENERGY TECHNOLOGY, RESEARCH, DEVELOP-**
2 **MENT, AND TESTING GRANT PROGRAM.**

3 (a) ESTABLISHMENT.—

4 (1) IN GENERAL.—The Secretary shall establish
5 a program under which the Secretary shall award
6 grants on a competitive, merit-reviewed basis to eli-
7 gible entities to conduct research, development, test-
8 ing, and evaluation of wind energy technologies in
9 accordance with this section.

10 (2) PURPOSES.—The purposes of the program
11 are the following:

12 (A) To improve the energy efficiency, reli-
13 ability, resilience, security, and capacity of wind
14 energy generation.

15 (B) To optimize the design and control of
16 wind energy systems for the broadest practical
17 range of atmospheric conditions.

18 (C) To reduce the cost and risk of permit-
19 ting, construction, operation, and maintenance
20 of wind energy systems, including using tech-
21 nologies to reduce environmental and commu-
22 nity impacts, improve grid integration, and re-
23 duce regulatory barriers.

24 (D) To improve materials, engineering,
25 and manufacturing processes for turbines, in-
26 cluding supersized turbines.

1 (E) To optimize wind plant performance
2 and integration within hybrid energy systems to
3 enhance cost efficiency and electric grid sta-
4 bility and resilience.

5 (3) COORDINATION.—To the maximum extent
6 practicable, the Secretary shall coordinate activities
7 under the program with other relevant programs and
8 capabilities of the Department of Energy and other
9 Federal research programs.

10 (b) GRANT SUBJECT AREAS.—In addition to award-
11 ing the grants described in subsections (c) through (e),
12 the Secretary shall award grants under the program to
13 eligible entities to carry out research, development, test-
14 ing, and evaluation in the following subject areas:

15 (1) Wind power plant performance and oper-
16 ations, including—

17 (A) wind flows and turbine-to-turbine
18 interactions;

19 (B) energy conversion potential;

20 (C) turbine and wind plant control para-
21 digms;

22 (D) turbine and wind plant security;

23 (E) turbine components; and

24 (F) integrated hybrid plant systems.

1 (2) New materials and designs relating to
2 blades, rotors, towers, and drivetrains, including—

3 (A) higher tip speed rotor designs;

4 (B) low-noise rotor designs;

5 (C) advanced drivetrain and generator con-
6 cepts;

7 (D) modular construction and onsite or
8 near-site manufacturing and assembly tech-
9 niques, including the use of additive manufac-
10 turing;

11 (E) sustainable and recyclable materials,
12 including thermoplastics, and manufacturing
13 systems;

14 (F) supersized turbine design and installa-
15 tion approaches; and

16 (G) lightweight materials.

17 (3) Offshore wind-specific projects, including—

18 (A) fixed and floating substructure con-
19 cepts;

20 (B) projects to assess and mitigate the im-
21 pacts of hurricane wind flow, freshwater ice,
22 and other conditions specific to the United
23 States;

24 (C) innovative operations and maintenance
25 strategies;

1 (D) analysis of offshore meteorological, ge-
2 ological, and oceanographic data collection;

3 (E) offshore infrastructure monitoring;
4 and

5 (F) analysis of corrosion and fatigue for
6 the purpose of extending the design life of off-
7 shore wind turbine substructures.

8 (4) Recycling and reuse of wind energy compo-
9 nents.

10 (5) Wind power forecasting and atmospheric
11 measurement systems, including for turbines and
12 plant systems of varying height.

13 (6) Distributed wind-specific projects, includ-
14 ing—

15 (A) cost-effective turbine designs, compo-
16 nents, and manufacturing; and

17 (B) microgrid applications.

18 (7) Advanced transportation mechanisms for
19 wind turbine components.

20 (8) Transformational technologies for har-
21 nassing wind energy, including airborne wind energy
22 concepts.

23 (9) Methods to extend the operational lifetime
24 of onshore and offshore wind turbines and systems.

1 (10) Other research areas, as determined by the
2 Secretary.

3 (c) WIND ENERGY TECHNOLOGY VALIDATION AND
4 MARKET TRANSFORMATION GRANTS.—

5 (1) DEMONSTRATION PROJECTS.—In carrying
6 out the program, the Secretary shall award grants to
7 eligible entities to carry out demonstration projects
8 that demonstrate and validate new wind energy tech-
9 nologies that have the potential to be cost-competi-
10 tive for land-based, offshore, and distributed applica-
11 tions.

12 (2) FACILITY FOR HYBRID ENERGY SYSTEM RE-
13 SEARCH GRANTS.—In carrying out the program, the
14 Secretary shall award grants to eligible entities to
15 establish a facility or support an existing facility in
16 conducting research and demonstration projects for
17 wind turbines and plants in hybrid energy systems
18 that incorporate diverse generation sources, loads,
19 and storage technologies.

20 (3) OFFSHORE RESEARCH FACILITY GRANTS.—

21 (A) IN GENERAL.—In carrying out the
22 program, the Secretary shall award grants to
23 eligible entities to establish a facility to conduct
24 research, development, and demonstration
25 projects, in coordination with the oceanic and

1 atmospheric science communities, for ocean and
2 atmospheric resource characterization relevant
3 to offshore wind energy development.

4 (B) FACILITY REQUIREMENTS.—A facility
5 established using a grant under subparagraph
6 (A) shall be an offshore facility used to evalu-
7 ate, test, and advance atmospheric, oceanic, bio-
8 logic, and geologic monitoring technologies that
9 improve offshore wind energy development, in-
10 cluding the generation of benchmark data sets
11 for testing offshore wind energy technologies
12 and informing how those technologies may be
13 financed, insured, and regulated.

14 (4) OFFSHORE SUPPORT STRUCTURE TESTING
15 FACILITY GRANTS.—In carrying out the program,
16 the Secretary shall award grants to eligible entities
17 to establish a facility to conduct research, develop-
18 ment, and demonstration projects for large-scale and
19 full-scale offshore wind energy support structure
20 components and systems, with an emphasis on inno-
21 vative structures, including floating substructures.

22 (5) APPLICATIONS.—An eligible entity seeking
23 a grant under this subsection shall submit to the
24 Secretary an application at such time, in such man-
25 ner, and containing such information as the Sec-

1 retary may require, including, in the case of an ap-
2 plication for a grant under paragraph (1), a certifi-
3 cation that the proposed demonstration project shall
4 be—

5 (A) conducted in collaboration with indus-
6 try and, as appropriate, with institutions of
7 higher education and other Federal research
8 programs; and

9 (B) of sufficient size and geographic diver-
10 sity to measure wind energy system perform-
11 ance under the full productive range of wind
12 conditions in the United States.

13 (d) WIND ENERGY INCUBATOR GRANTS.—In car-
14 rying out the program, the Secretary shall award grants
15 to eligible entities to support innovative technologies that
16 are not significantly represented in—

17 (1) the portfolio of wind energy research activi-
18 ties carried out by the Secretary as of the date of
19 enactment of this Act; or

20 (2) technology roadmaps used by the Depart-
21 ment of Energy as of that date.

22 (e) MITIGATING REGULATORY AND MARKET BAR-
23 RIER GRANTS.—

24 (1) IN GENERAL.—In carrying out the program,
25 the Secretary shall award grants to eligible entities

1 to research, develop, test, and evaluate ways to re-
2 duce regulatory and market barriers to the wide-
3 spread adoption of wind power, including—

4 (A) grid transmission and integration chal-
5 lenges; and

6 (B) permitting issues associated with the
7 potential impacts of wind power systems on
8 wildlife, radar systems, local communities, mili-
9 tary operations, and airspace.

10 (2) WILDLIFE IMPACT MITIGATION.—Of the
11 grants awarded under paragraph (1), the Secretary
12 shall ensure that a substantial portion include the
13 development, testing, and evaluation of wildlife im-
14 pact mitigation technologies or strategies to reduce
15 the potential impacts of wind energy facilities on—

16 (A) bald and golden eagles;

17 (B) bat species;

18 (C) marine wildlife; and

19 (D) other impacted species.

20 (f) EDUCATION AND OUTREACH.—In carrying out
21 the program, the Secretary shall support education and
22 outreach activities to disseminate information and pro-
23 mote public understanding of wind technologies and the
24 wind energy workforce, including the Collegiate Wind
25 Competition.

1 (g) WAGES.—Notwithstanding any other provision of
2 law, all laborers and mechanics employed by contractors
3 or subcontractors on projects funded by grants under this
4 section shall be paid wages at rates not less than those
5 prevailing on projects of a similar character in the locality,
6 as determined by the Secretary of Labor, in accordance
7 with subchapter IV of chapter 31 of title 40, United States
8 Code.

9 (h) AUTHORIZATION OF APPROPRIATIONS.—There
10 are authorized to be appropriated to the Secretary to carry
11 out the program—

12 (1) \$103,692,000 for fiscal year 2020;

13 (2) \$108,876,600 for fiscal year 2021;

14 (3) \$114,320,430 for fiscal year 2022;

15 (4) \$120,036,452 for fiscal year 2023; and

16 (5) \$126,038,274 for fiscal year 2024.

17 **SEC. 4. CONFORMING AMENDMENTS.**

18 (1) Section 4 of the Renewable Energy and En-
19 ergy Efficiency Technology Competitiveness Act of
20 1989 (42 U.S.C. 12003) is amended—

21 (A) in subsection (a)—

22 (i) by striking paragraph (1); and

23 (ii) by redesignating paragraphs (2)

24 through (5) as paragraphs (1) through (4),

25 respectively; and

1 (B) in subsection (c), in the matter pre-
2 ceding paragraph (1), by striking “the Wind
3 Energy Research Program,”.

4 (2) Section 931(a)(2) of the Energy Policy Act
5 of 2005 (42 U.S.C. 16231(a)(2)) is amended—

6 (A) by striking subparagraph (B); and

7 (B) by redesignating subparagraphs (C)
8 through (E) as subparagraphs (B) through (D),
9 respectively.

10 (3) Section 636 of the Energy Independence
11 and Security Act of 2007 (42 U.S.C. 17215) is
12 amended by striking “section 931(a)(2)(E)(i)” and
13 all that follows through the period at the end and
14 inserting “subparagraph (D)(i) of section 931(a)(2)
15 of the Energy Policy Act of 2005 (42 U.S.C.
16 16231(a)(2)).”.

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