

Committee Print

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1ST SESSION

H. R. 3609

To provide for a program of wind energy research, development, and demonstration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Mr. TONKO (for himself, Mr. FORTENBERRY, Mr. KENNEDY, and Mr. BACON) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

To provide for a program of 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. WIND ENERGY TECHNOLOGY, RESEARCH, DEVELOP-**
7 **MENT AND TESTING PROGRAM.**

8 (a) IN GENERAL.—The Secretary of Energy (in this
9 Act, referred to as the “Secretary”) shall carry out a pro-

1 gram to conduct research, development, testing, and eval-
2 uation of wind energy technologies. In carrying out such
3 program and in accordance with subsection (b), the Sec-
4 retary shall award grants and enter into contracts and co-
5 operative agreements under this section and sections 3,
6 4, and 5 for each of the following purposes:

7 (1) To improve the energy efficiency, reliability,
8 resilience, security, and capacity of wind energy gen-
9 eration.

10 (2) To optimize the design and control of wind
11 energy systems for the broadest practical range of
12 atmospheric conditions.

13 (3) To reduce the cost and risk of permitting,
14 construction, operation, and maintenance of wind
15 energy systems, including technologies to reduce en-
16 vironmental and community impacts, improve grid
17 integration and reduce regulatory barriers.

18 (4) To improve materials, engineering, and
19 manufacturing processes for turbines, including
20 supersized turbines.

21 (5) To optimize wind plant performance and in-
22 tegration within hybrid energy systems to enhance
23 cost efficiency and electric grid stability and resil-
24 ience.

1 (b) GRANTS, CONTRACTS, AND COOPERATIVE
2 AGREEMENTS.—

3 (1) GRANTS.—In carrying out the program, the
4 Secretary shall award grants on a competitive,
5 merit-reviewed basis to eligible entities for projects
6 that the Secretary determines would best achieve the
7 goals of the program.

8 (2) CONTRACTS AND COOPERATIVE AGREE-
9 MENTS.—In carrying out the program, the Secretary
10 may enter into contracts and cooperative agreements
11 with eligible entities and Federal agencies for
12 projects that the Secretary determines would further
13 the purposes of the program.

14 (3) APPLICATION.—An entity seeking funding
15 or a contract or agreement under this subsection
16 shall submit to the Secretary an application at such
17 time, in such manner, and containing such informa-
18 tion as the Secretary may require.

19 (c) WIND ENERGY RESEARCH SUBJECT AREAS.—
20 The program established under subsection (a) shall focus
21 on the research, development, testing, and evaluation of
22 each of the following subject areas:

23 (1) Wind power plant performance and oper-
24 ations including—

- 1 (A) wind flows and turbine-to-turbine
2 interactions;
- 3 (B) energy conversion potential;
- 4 (C) turbine and wind plant control para-
5 digms;
- 6 (D) turbine and wind plant security;
- 7 (E) turbine components; and
- 8 (F) integrated hybrid plant systems.
- 9 (2) New materials and designs related to
10 blades, rotors, towers and drivetrains including—
- 11 (A) higher tip speed rotor designs;
- 12 (B) low noise rotor designs;
- 13 (C) advanced drivetrain and generator con-
14 cepts;
- 15 (D) modular construction and onsite or
16 near-site manufacturing and assembly tech-
17 niques;
- 18 (E) sustainable and recyclable materials
19 and manufacturing systems;
- 20 (F) supersized turbine design and installa-
21 tion approaches; and
- 22 (G) lightweight materials.
- 23 (3) Offshore wind-specific projects including—
- 24 (A) fixed and floating substructure con-
25 cepts;

1 (B) projects to assess and mitigate the im-
2 pacts of hurricane wind flow, freshwater ice,
3 and other United States-specific conditions;

4 (C) innovative operations and maintenance
5 strategies;

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

8 (E) offshore infrastructure monitoring.

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

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

14 (6) The distributed wind energy sector.

15 (7) Advanced transportation mechanisms for
16 wind turbine components.

17 (8) Transformational technologies for har-
18 nassing wind energy, including airborne wind energy
19 concepts.

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

22 (10) Storage technologies to address the tran-
23 sience and intermittency of wind energy resources.

24 (11) Other research areas as determined by the
25 Secretary.

1 (d) REPORT.—

2 (1) IN GENERAL.—Not later than 180 days
3 after the date of the enactment of this Act, the Sec-
4 retary shall submit to the Committee on Science,
5 Space, and Technology of the House of Representa-
6 tives and the Committee on Energy and Natural Re-
7 sources of the Senate a report on the potential for,
8 and technical viability of, airborne wind energy sys-
9 tems to provide a significant source of energy in the
10 United States.

11 (2) CONTENTS.—The report under subsection
12 (a) shall include a summary of research, develop-
13 ment, and demonstration needs, including an esti-
14 mate of Federal funding requirements, to further ex-
15 amine and validate the technical and economic via-
16 bility of airborne wind energy concepts over the 10-
17 year period beginning on the date of the enactment
18 of this Act.

19 (e) COORDINATION.—To the maximum extent prac-
20 ticable, the Secretary shall coordinate activities under the
21 program established under subsection (a) with other rel-
22 evant programs and capabilities of the Department of En-
23 ergy and other Federal research programs.

24 (f) CONFORMING REPEALS.—

1 (1) Section 931(a)(2) of the Energy Policy Act
2 of 2005 (42 U.S.C. 16231(a)(2)) is amended by
3 striking subparagraph (B).

4 (2) Section 4(a) of the Renewable Energy and
5 Energy Efficiency Technology Competitiveness Act
6 of 1989 (42 U.S.C. 12003(a)) is amended by strik-
7 ing paragraph (1).

8 (g) DEFINITIONS.—In this section:

9 (1) The term “eligible entity” means any of the
10 following entities:

11 (A) An institution of higher education.

12 (B) A National Laboratory.

13 (C) A Federal research agency.

14 (D) A State research agency.

15 (E) A nonprofit research organization.

16 (F) An industrial entity or a multi-institu-
17 tional consortium thereof.

18 (2) The term “institution of higher education”
19 has the meaning given such term in section 101 of
20 the Higher Education Act of 1965 (20 U.S.C.
21 1001).

22 (3) The term “National Laboratory” has the
23 meaning given such term in section 2(3) of the En-
24 ergy Policy Act of 2005 (42 U.S.C. 15801(3)).

1 (4) The term “supersized turbine” means a 12
2 megawatt or greater wind turbine, typically with a
3 tower height greater than 140 meters and blades
4 greater than 75 meters.

5 **SEC. 3. WIND ENERGY TECHNOLOGY VALIDATION AND**
6 **MARKET TRANSFORMATION PROGRAM.**

7 (a) IN GENERAL.—In carrying out the program es-
8 tablished under section 2(a), the Secretary shall conduct
9 a wind energy technology validation and market trans-
10 formation program under which the Secretary shall award
11 grants on a competitive, merit-reviewed basis to eligible
12 entities to support activities that demonstrate and validate
13 new wind energy technologies with the potential to be cost-
14 competitive for land-based, offshore, and distributed appli-
15 cations.

16 (b) APPLICATION.—An eligible entity seeking a grant
17 under this section shall submit an application in such form
18 and manner as the Secretary may prescribe and that con-
19 tains—

20 (1) a certification that any demonstration
21 project carried out using grant funds are—

22 (A) conducted in collaboration with indus-
23 try and, as appropriate, with institutions of
24 higher education and other Federal research
25 programs; and

1 (B) of sufficient size and geographic diver-
2 sity to measure wind energy system perform-
3 ance under the full productive range of wind
4 conditions in the United States; and

5 (2) such other information as the Secretary
6 may require.

7 (c) FACILITY FOR HYBRID ENERGY SYSTEM RE-
8 SEARCH AND DEMONSTRATION PROJECTS.—In carrying
9 out the program established under subsection (a), the Sec-
10 retary shall establish or support a facility to conduct re-
11 search and demonstration projects for wind turbines and
12 plants in hybrid energy systems that incorporate diverse
13 generation sources, loads, and storage technologies.

14 **SEC. 4. WIND ENERGY INCUBATOR FUNDING.**

15 In carrying out the program established under section
16 2(a), the Secretary shall conduct research, development,
17 testing, and evaluation activities, in accordance with sec-
18 tion 2(b), to support innovative technologies that are not
19 represented in a significant way in—

20 (1) the portfolio of wind energy research activi-
21 ties carried out by the Department of Energy as of
22 the date of the enactment of this Act; or

23 (2) technology roadmaps used by the Depart-
24 ment of Energy as of such date of enactment.

1 **SEC. 5. MITIGATING REGULATORY AND MARKET BARRIERS.**

2 (a) IN GENERAL.—In carrying out the program es-
3 tablished under section 2(a), the Secretary shall to re-
4 search, develop, test, and evaluate, in accordance with sec-
5 tion 2(b), ways to reduce regulatory and market barriers
6 to the widespread adoption of wind power, including—

7 (1) grid transmission and integration chal-
8 lenges; and

9 (2) permitting issues associated with the poten-
10 tial impacts of wind power systems on wildlife, radar
11 systems, local communities, military operations, and
12 airspace.

13 (b) WILDLIFE IMPACT MITIGATION.—In carrying out
14 the activities described in subsection (a), the Secretary
15 shall support the development, testing, and evaluation of
16 wildlife impact mitigation technologies or strategies to re-
17 duce the potential impacts of wind energy facilities on—

18 (1) bald and golden eagles;

19 (2) bat species;

20 (3) marine wildlife; and

21 (4) other impacted species.

22 (c) EDUCATION AND OUTREACH.—In carrying out
23 the activities described in subsection (a), the Secretary
24 shall support education and outreach activities to dissemi-
25 nate information and promote public understanding of

1 wind technologies and the wind energy workforce, includ-
2 ing the Collegiate Wind Competition.

3 **SEC. 6. AUTHORIZATION OF APPROPRIATIONS.**

4 There are authorized to be appropriated to the Sec-
5 retary to carry out this Act—

- 6 (1) \$103,692,000 for fiscal year 2020;
- 7 (2) \$108,876,600 for fiscal year 2021;
- 8 (3) \$114,320,430 for fiscal year 2022;
- 9 (4) \$120,036,452 for fiscal year 2023; and
- 10 (5) \$126,038,274 for fiscal year 2024.