111TH CONGRESS
2D SESSION

S. 3226

To require the Secretary of Energy to take actions to stimulate the emergence of an offshore wind power industry in the United States, and for other purposes.

IN THE SENATE OF THE UNITED STATES

APRIL 19, 2010

Mr. BROWN of Ohio (for himself, Mr. CARPER, Ms. COLLINS, Ms. SNOWE, and Mr. KAUFMAN) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

---

A BILL

To require the Secretary of Energy to take actions to stimulate the emergence of an offshore wind power industry in the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Program for Offshore Wind Energy Research and Development Act of 2010'' or the ''POWERED Act of 2010''.

SEC. 2. FINDINGS.

Congress finds that—

(1) as of the date of enactment of this Act, there are no installed offshore wind power projects in the United States;

(2) according to the Eastern Wind Integration and Transmission Study, high penetrations of wind generation are technically feasible with the expansion of transmission infrastructure; and

(3) to generate 20 percent of the electricity generation of the United States from wind by 2030, as described in the report entitled ''20 Percent Wind Energy by 2030'' and prepared by the Secretary, technological advances for offshore wind power will be required to enable cost reduction and performance improvement.

SEC. 3. DEFINITIONS.

In this Act:

(1) OFFSHORE WIND POWER.—The term ''offshore wind power'' means the generation of electricity from the deployment of wind turbines in the Great Lakes and other inland navigable waters or in coastal waters of the United States, including the territorial sea, the exclusive economic zone, and the outer Continental Shelf.

(2) PROGRAM.—The term ''Program'' means the Offshore Wind Power Research and Development Program established under section 5.

(3) ROADMAP.—The term ''roadmap'' means an integrated plan for achieving a substantial economically self-supporting offshore wind power industry in the United States during the near-term period of up to 2 years, the mid-term period of up to 7 years, and long-term period of up to 10 years beginning on the date of enactment of this Act.

(4) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

SEC. 4. ROADMAP TO AN OFFSHORE WIND POWER FUTURE.

(a) IN GENERAL.—Not later than 120 days after the date of enactment of this Act, in accordance with subsection (c), the Secretary shall initiate the development of a comprehensive roadmap to assist and coordinate offshore wind power implementation efforts.

(b) COMPONENTS.—At a minimum, the roadmap shall include—

(1) a compilation and synthesis of the previous analyses that have been conducted in the United States examining the potential for offshore wind power;

(2)(A) an assessment of the technological advances and research needed to make offshore wind power turbines more cost competitive (both in initial installation and in ongoing maintenance); and

(B) recommendations on Federal support to promote research and demonstration projects (including deepwater facilities) to achieve the advances;

(3)(A) an assessment of the various policy supports that would promote the United States marketplace for offshore wind power energy, taking into consideration best practices from international programs, including—

(i) feed-in tariff programs;

(ii) grid access policies;

(iii) support to improve the transmission capacity of the electrical grid to absorb power from large offshore wind energy projects;

(iv) policies for streamlining project approval and contractual agreements; and

(v) domestic content requirements for wind farm developers; and

(B) recommendations on Federal and State policies that should be enacted to prudently promote offshore wind power in the United States;

(4)(A) an assessment of the offshore wind power permitting system (including the requirements for securing permits for both inland and coastal waters); and

(B) recommendations on appropriate administrative and regulatory changes to encourage and streamline offshore wind power development in the United States while responsibly safeguarding the public interests and environmental considerations;

(5) an assessment of the resources that will be required to develop the infrastructure necessary to build offshore wind power farms, including—

(A)(i) an assessment of the suitability of the United States fleet for installation of offshore wind power turbines and associated foundations and transmission lines; and

(ii) an examination of the costs and technology for alternative designs of ships and barges that may need to be constructed (including potential domestic suppliers of the ships and barges);

(B) an assessment of dock, crane, and laydown requirements for building offshore wind power and the capabilities of United States ports relative to those requirements (in-

cluding associated costs of any necessary expansions); and

(C)(i) an assessment of specific skill-sets of personnel needed to install and maintain offshore wind power in the United States;

(ii) an estimate of the required quantities of workers required to keep pace with the anticipated expansion of the domestic offshore wind power market; and

(iii) a description of training and curricula required to produce the necessary workforce;

(6) an assessment of—

(A) the manner in which winter ice flows affect offshore wind power turbine towers; and

(B) the necessary technology (including costs) to mitigate any potential negative impacts;

(7) an assessment of the various domestic manufacturing entities that can be involved in supplying offshore wind power turbines and components, including the necessary capital required to convert the existing operations of the entities to support the offshore wind power industry;

(8) an assessment of—

(A) the energy storage requirements that may be needed to establish offshore wind installations; and

(B) the supply chain availability of current technologies to meet the energy storage requirements; and

(9) an assessment of—

(A) freshwater offshore wind potential; and

(B) deepwater offshore wind potential, including—

(i) designs of floating offshore wind turbine systems;

(ii) manufacturing and deployment logistics; and

(iii) suitable locations for demonstration projects.

(c) CONSULTATION REQUIREMENTS.—In carrying out subsection (b), the Secretary shall—

(1) in consultation with the Secretary of the Interior, carry out subsection (b)(4); and

(2) in consultation with the Secretary of Commerce, carry out subsection (b)(6).

(d) REPORT.—Not later than 180 days after the enactment of this Act, the Secretary shall submit a report

that describes the roadmap and makes any recommendations to—

(1) the Committee on Energy and Natural Resources of the Senate;

(2) the Committee on Environment and Public Works of the Senate;

(3) the Committee on Commerce, Science, and Transportation of the Senate;

(4) the Committee on Energy and Commerce of the House of Representatives;

(5) the Committee on Natural Resources of the House of Representatives; and

(6) the Committee on Transportation and Infrastructure of the House of Representatives.

SEC. 5. OFFSHORE WIND POWER RESEARCH AND DEVELOPMENT PROGRAM.

(a) IN GENERAL.—Not later than 120 days after the date of enactment of this Act, in accordance with subsection (e), the Secretary shall establish the Offshore Wind Power Research and Development Program to assist and coordinate offshore wind power analysis and offshore wind power implementation efforts consistent with the roadmap developed under section 4.

(b) RESEARCH, DEVELOPMENT, AND DEMONSTRATION CENTERS.—

(1) IN GENERAL.—Under the Program, in accordance with paragraph (2), the Secretary shall award, on a competitive basis with an emphasis on technical merit, grants to academic institutions or industry-academic consortia to establish 2 or more national offshore wind centers.

(2) SELECTION.—In selecting academic institutions or industry-academic consortia, the Secretary shall ensure that—

(A) not less than 1 national offshore wind center focuses on transitional depth and deepwater floating offshore wind energy technologies; and

(B) not less than 1 national offshore wind center focuses on shallow water offshore wind energy technologies.

(c) GRANTS.—

(1) IN GENERAL.—Under the Program, the Secretary shall award grants to States, academic institutions, and industry-academic consortia to conduct coordinated, cohesive offshore wind power analysis, research, and development projects consistent with the roadmap developed under section 4.

(2) USE OF DEPARTMENT OF ENERGY INVESTMENTS.—In carrying out paragraph (1), the Sec-

retary shall, to the maximum extent practicable, leverage investments of the Department of Energy relating to the activities described in that paragraph.

(d) SCOPE OF ACTIVITIES TO BE PROPOSED.—The Secretary shall request proposals for projects under this section for carrying out 1 or more of the following activities:

(1) Development of alternative State policies for orderly use of offshore wind power in State power planning, including State incentives for development.

(2) Quantitative estimation of the offshore wind power resource, including—

(A) wind directions and strengths (including wind speed frequency distribution at technologically significant heights, analyzed with the wind speed average and turbulence intensity);

(B) bathymetry;

(C) waves and currents;

(D) seasonal air and water temperature distributions;

(E) potential ice formation in the water and on the blades;

(F) marine and lacustrine geology studies;

(G) the earthquake potential of the area;

(H) potential points for grid connection according to current and future grid power evacuation and wind farm power; and

(I) exclusion of competing uses.

(3) Analysis of offshore wind power to formulate recommendations for interconnection of offshore sites to each other and to the mainland.

(4) Development of plans for integration of the wind resource into the electric grid, including—

(A) grid transmission and distribution topology;

(B) systems analysis for reliable and efficient large-scale wind power integration;

(C) multilevel automatic control management of the power system;

(D) voltage and frequency regulation;

(E) a plan to coordinate new offshore wind farms with existing classical generators;

(F) energy storage for managing the variability in power production and load demand; and

(G) load demand and wind speed prediction.

(5) Analysis of the potential wildlife and ecological effects, which may include on-site field study

of possible wildlife impacts and any visual effects to adjacent communities.

(6) Study of infrastructure needs, academic programs at institutions of higher education, training, employment, and other economic impacts of permitted and potential offshore wind power projects.

(7) Development of an advanced concept offshore wind turbine generator that would use alternative designs not being implemented, such as new wind turbine blade, drivetrain, and electrical generator configurations.

(8) Optimization of the configuration of wind turbines in offshore arrays to improve overall efficiency.

(9) Development of advanced materials, manufacturing techniques, and deployment strategies that could reduce installation and operation costs including advanced blade manufacturing activity (including automation, materials, and the assembly of large-scale components) to stimulate the development of the blade manufacturing capacity of the United States.

(10) Design, demonstration, and deployment of advanced foundations, anchors, moorings, and other components that reduce costs and can sustain severe

water and ice flow conditions for application in shallow water, transitional depths, and deep offshore water.

(11) Research focused on improving the reliability of wind turbine subsystems and components critical to offshore locations.

(12) Development of floating platforms, anchors, and mooring technologies that extend the water depth of installations that—

(A) increase available site locations; and

(B) reduce the effect of the view from the shore.

(13) Development of advanced control systems for offshore wind turbines, gravity and floating foundations, and combining hydrodynamics and aerodynamics, including mechanical loads attenuation, high power quality, optimum reliability, and health monitoring.

(14) Research on the design of large blades, including efficient airfoils, de-icing systems, structural analysis, materials, and appropriate control systems for load attenuation.

(15) Design and development of new deployment vessels that reduce the cost of installation and

maintenance of offshore wind turbines and submarine cables.

(16) Development of advanced power electronics and alternating current or direct current electrical systems to connect offshore wind farms to each other and the mainland electrical grid.

(17) Full-scale testing and establishment of experimental offshore wind farms and other projects—

(A) to demonstrate advanced offshore wind components and systems; and

(B) to validate technology and performance issues relating to the components.

(e) CONSULTATION REQUIREMENTS.—In carrying out subsection (d), the Secretary shall—

(1) in consultation with the Secretary of the Interior, carry out—

(A) subsection (d)(2)(G); and

(B) subsection (d)(5); and

(2) in consultation with the Secretary of Commerce, carry out subparagraphs (A) through (F), (H), and (I) of subsection (d)(2).

(f) PROPOSAL REVIEW AND SELECTION CRITERIA.—The Secretary shall review applications, and rank and award proposals that—

(1) contain a written plan by each participating State government, academic institution, or academic-industry consortia describing the manner in which the information developed will be used for, and integrated into, decisions regarding offshore wind power;

(2) include as part of the proposal activity, the training of professionals in analysis of offshore wind power to enhance the national offshore wind power analysis capability;

(3) propose to carry out 1 or more of the activities described in subsection (d) and provide evidence of a proven capability to carry out the activities, as demonstrated through—

(A) prior research, publications, patents, and advising of government and industry regarding offshore wind power research; or

(B) in the absence of that experience, demonstrated capability in general wind power research or other fields that may be transferred to offshore wind power;

(4) have scientific merit in the fields of science, engineering, or social science required to carry out the activities described in subsection (d);

(5) supplement efforts carried out as of the date of enactment of this Act by the Secretary of the

Interior, the Secretary of Commerce, and the heads of other applicable Federal agencies to address data needs for the development of offshore wind power as identified in consultation with the heads of the applicable Federal agencies;

(6) are consistent with a preference for proposals that are identified in the roadmap as strongly contributing to near-term and mid-term development targets; and

(7) have a term of not less than 1 year and not more than 4 years.

(g) REPORTS.—A State, academic institution, or industry-academic consortia that receives a grant under this section shall submit a report that describes the findings of the research and development conducted with the grant to—

(1) the Secretary;

(2) the Secretary of Commerce;

(3) the Secretary of the Interior; and

(4) the Chief of Engineers.

(h) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this section $75,000,000 for each of fiscal years 2011 through 2015.

SEC. 6. USE OF RENEWABLE ENERGY TO COMPLY WITH FEDERAL RENEWABLE ELECTRICITY STANDARD.

Section 610(c)(2) of the Public Utility Regulatory Policies Act of 1978 (as added by section 132 of the American Clean Energy and Leadership Act of 2009) is amended—

(1) in subparagraph (H), by striking ''and'' after the semicolon at the end;

(2) in subparagraph (I)(iv), by striking the period at the end and inserting ''; and''; and

(3) by adding at the end the following:

''(J) allow triple credits for generation of energy from offshore wind power.''.

SEC. 7. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to carry out this Act such sums as are necessary.

○