

116TH CONGRESS  
1ST SESSION

# S. 1821

To amend the Energy Independence and Security Act of 2007 to provide for research on, and the development and deployment of, marine energy, and for other purposes.

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## IN THE SENATE OF THE UNITED STATES

JUNE 12, 2019

Mr. WYDEN (for himself, Mr. MERKLEY, Mr. KING, Mr. SCHATZ, and Mr. REED) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

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## A BILL

To amend the Energy Independence and Security Act of 2007 to provide for research on, and the development and deployment of, marine energy, 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 “Marine Energy Re-  
5 search and Development Act of 2019”.

6 **SEC. 2. PURPOSE.**

7 The purpose of this Act is to support marine energy  
8 programs that—

1           (1) promote research on, and the development  
2 of, increased energy generation and capacity at re-  
3 duced costs;

4           (2) promote research and development activities  
5 that improve environmental outcomes of marine en-  
6 ergy technologies;

7           (3) provide grid stability and create new market  
8 opportunities; and

9           (4) promote job creation in the energy sector.

10 **SEC. 3. DEFINITION OF MARINE ENERGY.**

11           (a) IN GENERAL.—Section 632 of the Energy Inde-  
12 pendence and Security Act of 2007 (42 U.S.C. 17211) is  
13 amended to read as follows:

14 **“SEC. 632. DEFINITION OF MARINE ENERGY.**

15           “In this subtitle, the term ‘marine energy’ means en-  
16 ergy from—

17           “(1) waves, tides, and currents in oceans, estu-  
18 aries, and tidal areas;

19           “(2) free-flowing hydrokinetic water in rivers,  
20 lakes, and streams;

21           “(3) free-flowing hydrokinetic water in man-  
22 made channels; and

23           “(4) differentials in ocean temperature or ocean  
24 thermal energy conversion.”.

25           (b) CONFORMING EDITS.—

1 (1) The subtitle heading for subtitle C of title  
2 VI of the Energy Independence and Security Act of  
3 2007 (Public Law 110–440; 121 Stat. 1686) is  
4 amended by striking “**and Hydrokinetic Re-**  
5 **newable**”.

6 (2) Section 631 of the Energy Independence  
7 and Security Act of 2007 (42 U.S.C. 17001 note;  
8 121 Stat. 1686) is amended by striking “and  
9 Hydrokinetic Renewable”.

10 **SEC. 4. MARINE ENERGY RESEARCH AND DEVELOPMENT.**

11 Section 633 of the Energy Independence and Security  
12 Act of 2007 (42 U.S.C. 17212) is amended to read as  
13 follows:

14 **“SEC. 633. MARINE ENERGY RESEARCH AND DEVELOP-**  
15 **MENT.**

16 “(a) IN GENERAL.—The Secretary, acting through  
17 the Director of the Water Power Technologies Office, in  
18 consultation with the Secretary of the Interior, the Sec-  
19 retary of Commerce, and the Federal Energy Regulatory  
20 Commission, shall carry out a program to accelerate the  
21 introduction of marine energy production into the United  
22 States energy supply, giving priority to technologies most  
23 likely to lead to commercial utilization, while fostering ac-  
24 celerated research, development, demonstration, and com-  
25 mercial application of technology, including programs—

1           “(1) to assist technology development on a vari-  
2           ety of scales, including full-scale prototypes, to im-  
3           prove the components, processes, and systems used  
4           for power generation from marine energy resources;

5           “(2) to establish and expand critical testing in-  
6           frastructure and facilities necessary—

7                   “(A) to cost-effectively and efficiently test  
8                   and prove marine energy devices; and

9                   “(B) to accelerate the technological readi-  
10                  ness and commercialization of those devices;

11           “(3) to support efforts to increase the efficiency  
12           of energy conversion, lower the cost, increase the  
13           use, improve the reliability, and demonstrate the ap-  
14           plicability of marine energy technologies by partici-  
15           pating in demonstration projects;

16           “(4) to investigate variability issues and the ef-  
17           ficient and reliable integration of marine energy with  
18           the utility grid;

19           “(5) to identify and study critical short- and  
20           long-term needs to create a sustainable marine en-  
21           ergy supply chain based in the United States;

22           “(6) to increase the reliability and survivability  
23           of marine energy technologies;

24           “(7) to verify the performance, reliability, main-  
25           tainability, and cost of new marine energy device de-

1 signs and system components in an operating envi-  
2 ronment;

3 “(8) to consider the protection of critical infra-  
4 structure, such as adequate separation between ma-  
5 rine energy devices and projects and submarine tele-  
6 communications cables, including consideration of  
7 established industry standards;

8 “(9)(A) to coordinate the programs carried out  
9 under this section with, and avoid duplication of ac-  
10 tivities across, programs of the Department and  
11 other applicable Federal agencies, including National  
12 Laboratories; and

13 “(B) to coordinate public-private collaboration  
14 in carrying out the programs under this section;

15 “(10) to identify opportunities for joint re-  
16 search and development programs and the develop-  
17 ment of economies of scale between—

18 “(A) marine energy technologies; and

19 “(B) other renewable energy and fossil en-  
20 ergy programs, offshore oil and gas production  
21 activities, and activities of the Department of  
22 Defense;

23 “(11) to identify, in conjunction with the Sec-  
24 retary of Commerce, acting through the Under Sec-  
25 retary of Commerce for Oceans and Atmosphere,

1 and other relevant Federal agencies as appropriate,  
2 the potential environmental impacts, including po-  
3 tential impacts on fisheries and other marine re-  
4 sources, of marine energy technologies, measures to  
5 prevent adverse impacts, and technologies and other  
6 means available for monitoring and determining en-  
7 vironmental impacts;

8 “(12) to identify, in conjunction with the Sec-  
9 retary of the Department in which the United States  
10 Coast Guard is operating, acting through the Com-  
11 mandant of the United States Coast Guard, the po-  
12 tential navigational impacts of marine energy tech-  
13 nologies and measures to prevent adverse impacts on  
14 navigation; and

15 “(13) to support in-water technology develop-  
16 ment with international partners using existing co-  
17 operative procedures (including memoranda of un-  
18 derstanding)—

19 “(A) to allow cooperative funding and  
20 other support of value to be exchanged and le-  
21 veraged; and

22 “(B) to encourage international research  
23 centers and international companies to partici-  
24 pate in the development of marine energy tech-  
25 nology in the United States and to encourage

1 United States research centers and companies  
2 to participate in marine energy projects abroad.

3 “(b) COST SHARING AND MERIT REVIEW.—The Sec-  
4 retary shall carry out the program under this section in  
5 accordance with sections 988 and 989 of the Energy Pol-  
6 icy Act of 2005 (42 U.S.C. 16352, 16353).”.

7 **SEC. 5. NATIONAL MARINE ENERGY CENTERS.**

8 Section 634 of the Energy Independence and Security  
9 Act of 2007 (42 U.S.C. 17213) is amended—

10 (1) in the section heading, by striking “**RE-**  
11 **NEWABLE ENERGY RESEARCH, DEVELOPMENT,**  
12 **AND DEMONSTRATION**” and inserting “**ENERGY**”;

13 (2) by redesignating subsection (c) as sub-  
14 section (d); and

15 (3) by striking subsections (a) and (b) and in-  
16 serting the following:

17 “(a) CENTERS.—

18 “(1) IN GENERAL.—The Secretary shall award  
19 grants to institutions of higher education for—

20 “(A) the continuation and expansion of re-  
21 search, development, and testing activities at  
22 National Marine Energy Centers established as  
23 of January 1, 2019; and

24 “(B) the establishment of new National  
25 Marine Energy Centers.

1           “(2) CRITERIA.—In selecting locations for new  
2 National Marine Energy Centers to be established  
3 under paragraph (1)(B), the Secretary shall consider  
4 sites that meet one of the following criteria:

5           “(A) The new Center hosts an existing ma-  
6 rine energy research and development program  
7 in coordination with an engineering program at  
8 an institution of higher education.

9           “(B) The new Center has proven expertise  
10 to support environmental and policy-related  
11 issues associated with the harnessing of energy  
12 in the marine environment.

13           “(C) The new Center has access to and  
14 uses marine resources.

15           “(b) PURPOSES.—The National Marine Energy Cen-  
16 ters shall coordinate with other National Marine Energy  
17 Centers, the Department, and the National Labora-  
18 tories—

19           “(1) to advance research, development, and  
20 demonstration of marine energy technologies;

21           “(2) to support in-water testing and demonstra-  
22 tion of marine energy technologies, including facili-  
23 ties capable of testing—

24           “(A) marine energy systems of various  
25 technology readiness levels and scales;



1           “(B) a variety of technologies in multiple  
2           test berths at a single location; and

3           “(C) arrays of technology devices; and

4           “(3) to serve as information clearinghouses for  
5           the marine energy industry by collecting and dis-  
6           seminating information on best practices in all areas  
7           relating to developing and managing marine energy  
8           resources and energy systems.

9           “(c) COST SHARING.—The Secretary shall carry out  
10          the program under this section in accordance with section  
11          988(b)(4) of the Energy Policy Act of 2005 (42 U.S.C.  
12          16352(b)(4)).”.

13       **SEC. 6. AUTHORIZATION OF APPROPRIATIONS.**

14          Section 636 of the Energy Independence and Security  
15          Act of 2007 (42 U.S.C. 17215) is amended by striking  
16          “\$50,000,000 for each of the fiscal years 2008 through  
17          2012” and inserting “\$150,000,000 for each of fiscal  
18          years 2020 and 2021”.

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