

identify opportunities for hydropower applications in pumped storage and hybrid energy systems, including forecasting of seasonal and annual energy storage;

(B) considering aggregating small distributed hydropower assets; and

(C) identifying barriers to grid scale implementation of hydropower and pumped storage technologies;

(11) improve computational fluid dynamic modeling methods;

(12) improve flow measurement methods, including maintenance of continuous flow measurement equipment;

(13) identify best methods for compiling data on all hydropower resources and assets, including identifying potential for increased capacity; and

(14) identify mechanisms to test and validate performance of hydropower and pumped storage technologies.

(Pub. L. 110-140, title VI, §634, as added Pub. L. 116-260, div. Z, title III, §3001(a), Dec. 27, 2020, 134 Stat. 2480.)

Editorial Notes

PRIOR PROVISIONS

A prior section 17213, Pub. L. 110-140, title VI, §634, Dec. 19, 2007, 121 Stat. 1687, related to National Marine Renewable Energy Research, Development, and Demonstration Centers, prior to the general amendment of this part by Pub. L. 116-260.

§ 17214. Marine energy research, development, and demonstration

(a) In general

The Secretary, in consultation with the Secretary of Defense, Secretary of Commerce (acting through the Under Secretary of Commerce for Oceans and Atmosphere) and other relevant Federal agencies, shall conduct a program of research, development, demonstration, and commercial application of marine energy technology, including activities to—

(1) assist technology development to improve the components, processes, and systems used for power generation from marine energy resources at a variety of scales;

(2) establish and expand critical testing infrastructure and facilities necessary to—

(A) demonstrate and prove marine energy devices at a range of scales in a manner that is cost-effective and efficient; and

(B) accelerate the technological readiness and commercial application of such devices;

(3) address marine energy resource variability issues, including through the application of energy storage technologies;

(4) advance efficient and reliable integration of marine energy with the electric grid, which may include smart building systems;

(5) identify and study critical short-term and long-term needs to maintaining a sustainable marine energy supply chain based in the United States;

(6) increase the reliability, security, and resilience of marine energy technologies;

(7) validate the performance, reliability, maintainability, and cost of marine energy de-

vice designs and system components in an operating environment;

(8) consider the protection of critical infrastructure, such as adequate separation between marine energy devices and submarine telecommunications cables, including through the development of voluntary, consensus-based standards for such purposes;

(9) identify opportunities for crosscutting research, development, and demonstration programs between existing energy research programs;

(10) identify and improve, in conjunction with the Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere, and other relevant Federal agencies as appropriate, the environmental impact, including potential cumulative environmental impacts, of marine energy technologies, including—

(A) potential impacts on fisheries and other marine resources; and

(B) developing technologies, including mechanisms for self-evaluation, and other means available for improving environmental impact, including potential cumulative environmental impacts;

(11) identify, in consultation with relevant Federal agencies, potential navigational impacts of marine energy technologies and strategies to prevent possible adverse impacts, in addition to opportunities for marine energy systems to aid the United States Coast Guard, such as remote sensing for coastal border security;

(12) develop numerical and physical tools, including models and monitoring technologies, to assist industry in device and system design, installation, operation, and maintenance, including methods to validate such tools;

(13) support materials science as it relates to marine energy technology, such as the development of corrosive-resistant materials;

(14) improve marine energy resource forecasting and general understanding of aquatic system behavior, including turbulence and extreme conditions;

(15) develop metrics and voluntary, consensus-based standards, in coordination with the National Institute of Standards and Technology and appropriate standard development organizations, for marine energy components, systems, and projects, including—

(A) measuring performance of marine energy technologies; and

(B) characterizing environmental conditions;

(16) enhance integration with hybrid energy systems, including desalination;

(17) identify opportunities to integrate marine energy technologies into new and existing infrastructure; and

(18) to¹ develop technology necessary to support the use of marine energy—

(A) for the generation and storage of power at sea; and

(B) for the generation and storage of power to promote the resilience of coastal commu-

¹ So in original.

nities, including in applications relating to—

- (i) desalination;
- (ii) disaster recovery and resilience; and
- (iii) community microgrids in isolated power systems.

(b) Study of non-power sector applications for advanced marine energy technologies

(1) In general

The Secretary, in consultation with the Secretary of Transportation and the Secretary of Commerce, shall conduct a study to examine opportunities for research and development in advanced marine energy technologies for non-power sector applications, including applications with respect to—

- (A) the maritime transportation sector;
- (B) associated maritime energy infrastructure, including infrastructure that serves ports, to improve system resilience and disaster recovery; and
- (C) enabling scientific missions at sea and in extreme environments, including the Arctic.

(2) Report

Not later than 1 year after December 27, 2020, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report that describes the results of the study conducted under paragraph (1).

(Pub. L. 110–140, title VI, §635, as added Pub. L. 116–260, div. Z, title III, §3001(a), Dec. 27, 2020, 134 Stat. 2482.)

Editorial Notes

PRIOR PROVISIONS

A prior section 17214, Pub. L. 110–140, title VI, §635, Dec. 19, 2007, 121 Stat. 1688, related to applicability of other laws, prior to the general amendment of this part by Pub. L. 116–260.

§ 17215. National Marine Energy Centers

(a) In general

The Secretary shall award grants, each such grant up to \$10,000,000 per year, to institutions of higher education (or consortia thereof) for—

- (1) the continuation and expansion of the research, development, demonstration, testing, and commercial application activities at the National Marine Energy Centers (referred to in this section as “Centers”) established as of January 1, 2020; and
- (2) the establishment of new National Marine Energy Centers.

(b) Location selection

In selecting institutions of higher education for new Centers, the Secretary shall consider the following criteria:

- (1) Whether the institution hosts an existing marine energy research and development program.
- (2) Whether the institution has proven technical expertise to support marine energy research.
- (3) Whether the institution has access to marine resources.

(c) Purposes

The Centers shall coordinate among themselves, the Department, and National Laboratories to—

- (1) advance research, development, demonstration, and commercial application of marine energy technologies in response to industry and commercial needs;
- (2) support in-water testing and demonstration of marine energy technologies, including facilities capable of testing—
 - (A) marine energy systems of various technology readiness levels and scales;
 - (B) a variety of technologies in multiple test berths at a single location;
 - (C) arrays of technology devices; and
 - (D) interconnectivity to an electrical grid, including microgrids; and
- (3) collect and disseminate information on best practices in all areas relating to developing and managing marine energy resources and energy systems.

(d) Coordination

To the extent practicable, the Centers shall coordinate their activities with the Secretary of Commerce, acting through the Undersecretary of Commerce for Oceans and Atmosphere, and other relevant Federal agencies.

(e) Termination

To the extent otherwise authorized by law, the Secretary may terminate funding for a Center described in paragraph (a) if such Center is under-performing.

(Pub. L. 110–140, title VI, §636, as added Pub. L. 116–260, div. Z, title III, §3001(a), Dec. 27, 2020, 134 Stat. 2484.)

Editorial Notes

PRIOR PROVISIONS

A prior section 17215, Pub. L. 110–140, title VI, §636, Dec. 19, 2007, 121 Stat. 1688, related to authorization of appropriations, prior to the general amendment of this part by Pub. L. 116–260.

§ 17216. Organization and administration of programs

(a) Coordination

In carrying out this part, the Secretary shall coordinate activities, and effectively manage cross-cutting research priorities across programs of the Department and other relevant Federal agencies, including the National Laboratories and the National Marine Energy Centers.

(b) Collaboration

(1) In general

In carrying out this part, the Secretary shall collaborate with industry, National Laboratories, other relevant Federal agencies, institutions of higher education, including Minority Serving Institutions, National Marine Energy Centers, Tribal entities, including Alaska Native Corporations, and international bodies with relevant scientific and technical expertise.

(2) Participation

To the extent practicable, the Secretary shall encourage research projects that pro-