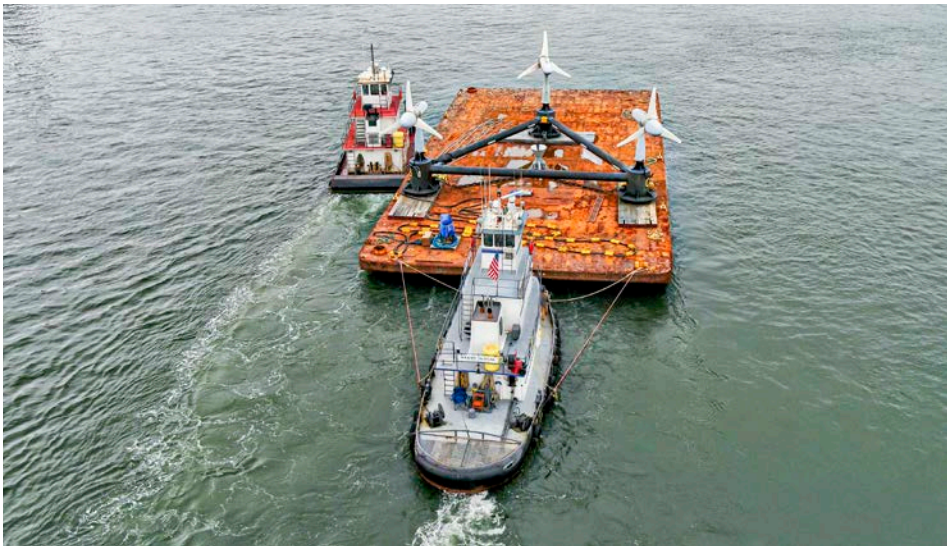
U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY & RENEWABLE ENERGY

Working with the Marine Energy Program in the U.S. Department of Energy's Water Power Technologies Office



The Marine Energy Program (formerly the Marine and Hydrokinetics Program) at the U.S. Department of Energy's (DOE's) Water Power Technologies Office (WPTO) conducts transformative early-stage research that advances the development of reliable, cost-competitive marine energy technologies and reduces barriers to technology deployment.

Vision

A U.S. marine energy industry that expands and diversifies the nation's energy portfolio by responsibly delivering power from ocean and river resources.

Marine energy technologies, which convert the energy of waves, tides, and river and ocean currents into electricity, have the potential to provide millions of Americans with locally sourced, clean, and reliable energy. This potential could provide cost-effective energy for numerous existing distributed and alternate applications in nongrid-connected or remote, coastal areas—including military bases and smaller communities—where electricity costs are high.

Oceans cover 71% of Earth—but 80% of those waters remain unmapped and rarely monitored because of limitations with existing ocean observing technologies, including energy constraints.[1] Marine energy technologies could be used to efficiently and cost-effectively power ocean observation technologies, such as sensors and data acquisition equipment.

Powering the Blue Economy

Since the Powering the Blue Economy initiative launched in 2019, WPTO has facilitated research and development that connects marine renewable energy to human needs. Innovative funding programs have attracted researchers, innovators, students, and partners to address energy challenges for blue economy sectors. Renewable energy from oceans and rivers could ultimately provide power to remote communities, serve in disaster relief scenarios, and improve our capacity to study the ocean and its inhabitants.

Through a host of programs, prizes, and partnerships, WPTO is working to build a clean energy economy and to find opportunities to address the growing impacts of climate change. energy.gov/eere/water/powering-blue-economy-exploring-opportunities-marine-renewable-energy-maritime-markets

Funding Opportunities

WPTO leverages a variety of funding mechanisms and increasingly focuses on developing innovative programs and funding mechanisms to support R&D. energy.gov/eere/water/water-power-funding-opportunities.

The following describes the main mechanisms WPTO leverages to fund R&D:

Competitively Selected Awards

Information about competitive awarding of discretionary grants or cooperative agreements with industry, academic, or national laboratory partners through funding opportunity announcements are available at eere-exchange.energy.gov.

DOE Advanced Research Projects Agency-Energy (ARPA-E)

ARPA-E funds short-term, technology-focused, applied R&D aimed at creating real-world solutions to important problems in energy creation, distribution, and use. The agency advances high-impact energy technologies that are too early for private-sector investment but have the potential to radically improve U.S. economic security, national security, and environmental well-being. arpa-e.energy.gov/about/apply-for-funding

Lab Seedlings

The Laboratory Seedlings Program, established by WPTO, is mechanism to fund promising, potentially high-impact new research ideas from the DOE research laboratories, encouraging and incentivizing them to broaden their thinking about research pathways. In Fiscal Years 2020 and 2021, WPTO funded 66 seedling projects at $4.25 million in six national labs, leading to new lab-led areas of research, bringing in new researchers and projects that span analytical studies to building and testing prototypes.

National Laboratory Funding

There are various ways to partner with the national laboratories on research proposals. Direct funding proposals for research by national laboratories, which are merit-reviewed by external subject matter experts, are competitively selected.

[1] "National Oceanic and Atmospheric Administration," oceanservice.noaa.gov/facts/exploration.html.

Prizes and Competitions

Prizes and competitions enable WPTO to find solutions by tapping into the ingenuity and creativity of innovators nationwide. These unique funding mechanisms bring together a diverse community made up of researchers, innovators, students, and partners to address energy challenges in the hydropower and marine energy industries. Prizes in particular serve as a key mechanism to lower the barrier to entry to attract novel solutions and reach a broad spectrum of stakeholders. energy.gov/eere/water/water-power-technologies-office-prizes-competitions

WPTO also supports the Marine Energy Collegiate Competition for undergraduate and graduate students to gain experience and connections in the fields of marine energy and the blue economy. openei.org/wiki/PRIMRE/STEM/Prizes_and_Competitions/Marine_Energy_Collegiate_Competition_(MECC)

Small Business Innovation Research Grants

The Small Business Innovation Research program is aimed at stimulating technological innovation in small businesses, to meet federal R&D needs, to foster and encourage participation by minority and underrepresented persons in technological innovation, and to increase private-sector commercialization derived from federal research and development.

The Small Business Administration's Small Business Technology Transfer program funds collaborative efforts between small businesses and research institutions with the goal of transferring technologies and products from the laboratory to the marketplace. Five federal agencies, including DOE, participate in the program, soliciting grant proposals from small businesses and making awards on a competitive basis. science.energy.gov/sbir/

DOE Office of Technology Transitions Technology Commercialization Fund

This fund leverages the R&D funding in DOE's applied energy programs to advance energy technologies with the potential for high impact. Funds provided are matched with funds from private partners to promote promising energy technologies with the goal of increasing the commercialization and economic impact of energy technologies developed at DOE's national labs. energy.gov/technologytransitions/initiatives/technology-commercialization-fund

Tools & Resources

Marine Energy Atlas

This interactive mapping tool was designed and developed by the National Renewable Energy Laboratory to help users explore potential for marine energy resources. maps.nrel.gov/marine-energy-atlas

Marine Energy Environmental Toolkit for Permitting and Licensing

This toolkit is a one-stop shop for the marine energy community to access, review, and compile relevant regulatory, spatial, and educational information to increase the efficiency of the marine energy permitting and licensing process. marineenergy.app

Marine Energy STEM Portal

In 2020, WPTO, in collaboration with the National Renewable Energy Laboratory, launched new science, technology, engineering, and math (STEM) and workforce development portals, including the STEM Marine Energy Portal. These portals offer resources for academia and industry to educate the future water power workforce. openei.org/wiki/PRIMRE/STEM

Portal and Repository for Information on Marine Renewable Energy (PRIMRE)

PRIMRE provides broad access to information on marine engineering and technologies, resource characterization, device performance, and environmental effects of marine renewable energy projects. openei.org/wiki/PRIMRE

U.S. Testing Expertise and Access to Marine Energy Research Program (TEAMER)

TEAMER accelerates the viability of marine renewables by providing access to the nation's best facilities and expertise to solve challenges, build knowledge, foster innovation, and drive commercialization. teamer-us.org

Stay Updated

Attend a WPTO Webinar

WPTO is hosting a series of R&D Deep Dive webinars to share updates on tools, analysis, and emerging technologies to advance marine energy systems. The webinars will feature WPTO technology managers, national laboratory research experts, and other partners, and will highlight WPTO's research and development efforts for the marine energy industry. energy.gov/eere/water/water-power-technologies-office-rd-deep-dive-webinar-series

Serve as a Reviewer

WPTO is always in need of subject matter experts to review research funding applications and the current water power portfolio. If you're interested in becoming a reviewer, visit energy.gov/eere/water/interested-becoming-water-power-reviewer-doe

Subscribe to the Marine Energy Newsletter

WPTO's Marine Energy e-newsletter shares news and updates on tools, analysis, and emerging technologies to advance marine energy. bit.ly/MarineEnergyNewsletter ■

Back page photo of a mini wave energy converter test. Courtesy of Curtis Rusch.

Front page photo of Verdant Power's 2020 tidal turbine deployment in New York City's East River. Courtesy of Paul Komosinski.

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For more information, visit:
energy.gov/eere/water.

To contact us, email WaterPowerTechnologiesOffice@ee.doe.gov.

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