

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

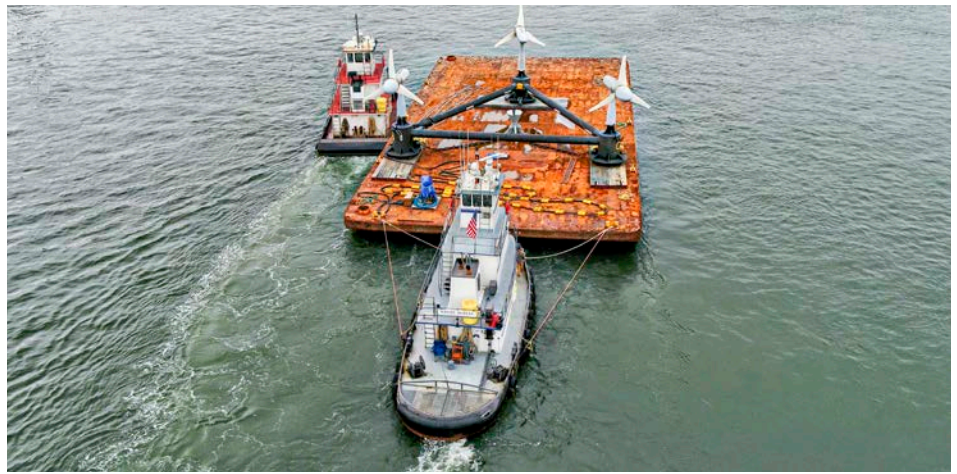
The Marine Energy Program (formerly the Marine and Hydrokinetics [MHK] Program) in the U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) conducts research, development, demonstrations, and commercial activities that advance the development of reliable, cost-competitive marine energy technologies and reduce barriers to technology deployment.

Vision

WPTO envisions 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 grid-disconnected or remote, coastal areas, including military bases and smaller communities.

Oceans cover 71% of Earth, but 80% of those waters remain unmapped and rarely monitored because of limitations with existing ocean observing technologies,



Verdant Power's 2020 tidal turbine deployment in New York City's East River. Photo from Paul Komosinski

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. Unique 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 the 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. Learn more at energy.gov/eere/water/powering-blue-economy.

Funding Opportunities

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

WPTO leverages several main mechanisms 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.

Advanced Research Projects Agency-Energy

Advanced Research Projects Agency-Energy 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. Learn more at arpa-e.energy.gov/about/apply-for-funding.

Seedlings Program

The Seedlings Program, established by WPTO, is a mechanism to fund promising, potentially high-impact, new research ideas from 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 with \$4.25 million at six national labs, leading to new lab-led areas of research, bringing in new researchers and projects that span from analytical studies to building and testing prototypes. Learn more at energy.gov/eere/water/seedling-and-sapling-program.

National Laboratory Funding

There are various ways to partner with national laboratories on research proposals. Direct funding proposals for research by national laboratories are competitively

¹ National Oceanic and Atmospheric Administration, 2021. "How much of the ocean have we explored?" <https://oceanservice.noaa.gov/facts/exploration.html>

selected. The proposals are merit-reviewed by external subject-matter experts.

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 marine energy industry. 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. Learn more at energy.gov/eere/water/water-power-technologies-office-prizes-competitions.

WPTO also supports the Marine Energy Collegiate Competition to help undergraduate and graduate students gain experience and connections in the fields of marine energy and the blue economy. Learn more at [openei.org/wiki/PRIMRE/STEM/Prizes_and_Compétitions/Marine_Energy_Collegiate_Compétition_\(MECC\)](https://openei.org/wiki/PRIMRE/STEM/Prizes_and_Compétitions/Marine_Energy_Collegiate_Compétition_(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, foster and encourage participation by minority and underrepresented persons in technological innovation, and increase commercialization in the private sector derived from federal research and development.

The 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. Learn more at science.energy.gov/sbir/.

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 support promising energy technologies with the goal of increasing the commercialization and economic impact of energy technologies developed at DOE's national labs. Learn more at 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 (NREL) to help users explore potential for marine energy resources. Learn more at 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. Learn more at marineenergy.app.

STEM for Marine Energy Portal

WPTO and NREL developed the Science, Technology, Engineering, and Mathematics (STEM) for Marine Energy portal to provide resources for academia and industry to educate the future workforce. Learn more at openei.org/wiki/PRIMRE/STEM.

Marine Energy Testing Facilities

WPTO-funded marine energy centers as well as PacWave, an open-ocean wave energy testing facility, enable technology developers to validate their devices in relatively low-risk environments. Learn more energy.gov/eere/water/reducing-barriers-testing.

Portal and Repository for Information on Marine Renewable Energy

The Portal and Repository for Information on Marine Renewable Energy provides broad access to information on marine engineering and technologies, resource characterization, device performance, and environmental effects of marine renewable energy projects. Learn more at openei.org/wiki/PRIMRE.

Testing Expertise and Access to Marine Energy Research Program

The Testing Expertise and Access to Marine Energy Research program accelerates the viability of marine renewable energy by providing access to the nation's best facilities and expertise to solve challenges, build knowledge, foster innovation, and drive commercialization. Learn more at teamer-us.org.

Stay Updated

Attend a WPTO Webinar

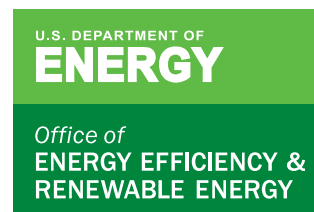
WPTO hosts an R&D deep-dive webinar series to share updates on tools, analysis, and emerging technologies to advance marine energy systems. The webinars feature WPTO technology managers, national laboratory research experts, and other partners and highlight WPTO's research and development efforts for the marine energy industry. Learn more at 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. Learn more about becoming a reviewer at 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. Subscribe at bit.ly/MarineEnergyNewsletter. ■



For more information, visit energy.gov/water.

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