

## Notice of Intent No. DE-FOA-0003427

### Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0003415

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Water Power Technologies Office (WPTO), a Funding Opportunity Announcement (FOA) entitled “Oceans of Opportunity: U.S. Wave Energy Open Water Testing”.

This FOA supports WPTO’s efforts to advance the commercial readiness of wave energy technologies through open water testing and system validation at multiple scales, serving the broader goals of the Biden administration to achieve carbon pollution-free electricity by 2035 and to “deliver an equitable, clean energy future, and put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050”<sup>1</sup> to the benefit of all Americans.

#### Background

The International Energy Agency/Ocean Energy Systems set a target to produce 180 gigawatts of power from wave energy by 2050. To help achieve this goal, the U.S. wave energy sector must advance to become competitive in the international market. The European Union and the United Kingdom have already provided significant funding to support the growth of the European marine energy industry, moving it ahead of the United States. For example, the equivalent of \$24.5 million was provided for EuropeWave, a program designed to advance wave energy converters (WECs) by fostering collaboration and sharing risks among developers and the public sector.

The time is right to accelerate the U.S. wave energy industry. U.S. developers have developed WEC technologies that are ready for open-water testing, and the industry is beginning to incorporate performance testing and third-party device certification to move devices toward commercialization. The infrastructure is also ready to support the testing U.S. developers need to advance their technologies. The PacWave South test facility, which will be able to test up to 20 WECs and support a maximum total power output of 20 megawatts, is expected to be ready in 2025. Additionally, the U.S. Navy’s Wave Energy Test Site, Jennette’s Pier, the Cal Poly Pier, and the Scripps Institution of Oceanography’s research pier are all available to support testing, including non-grid connected devices.

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<sup>1</sup> Executive Order 14008, “Tackling the Climate Crisis at Home and Abroad,” January 27, 2021.

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Given this international context and domestic readiness, WPTO plans to open a stage-gated, five-year funding opportunity to advance WECs toward commercial adoption. This approach will accelerate the design, fabrication, and testing of multiple WECs at a range of innovation scales: distributed, community and utility.

WPTO's efforts focused on distributed energy technologies aim to support the development, demonstration, and integration of marine energy technology with blue economy activities at sea. This will help to diversify the U.S. energy portfolio and expand energy access, equity, and independence while reducing greenhouse gas emissions. WPTO also aims to support community-scale marine energy projects and develop smaller-scale, nearshore energy solutions for coastal communities and industries. These systems could provide power or water delivery for coastal and island stakeholders and may or may not be connected to the electric grid. At the utility scale, WPTO seeks to maximize energy generation, ensure grid stability and reliability, and promote sustainability by supporting the deployment of grid-connected marine energy technologies. This involves identifying potential differences, challenges, and opportunities associated with marine energy integration with electrical utilities, establishing best practices for U.S. developers and utilities connecting marine energy pilot projects to the grid, and demonstrating marine energy arrays co-located and integrated with other renewable energy systems such as offshore wind.

It is anticipated this FOA will utilize a stage-gated approach designed to reduce risks for deployments, increase the potential for commercial adoption, and offer additional benefits to help quickly advance WECs. This includes the ability to identify and mature high-potential WEC technologies, reduce financial risks for developers and incentivize investors, progress technologies at a smaller scale while developing toward utility scale, and increase learning for installation, operations, and maintenance. The stage-gated approach is envisioned to include a down select in year 1 of selected projects in which the selected projects will undergo a technology evaluation by national labs and third-party engineering firms along with other analyses to determine which projects pass down selection. Projects remaining after the down select will undergo periodic Go/No-Go reviews (approximately annually) through the remainder of the project periods of performance (further details provided in subsequent sections).

It is anticipated that the FOA may include the following Topic Areas:

**Topic Area 1 (Distributed Scale Open Water Testing and System Validation):** This Topic Area opportunity leverages wave energy technologies that provide power to distributed blue economy applications. Distributed marine energy includes fixed and mobile wave harvesting technologies that are not grid-connected and are not connected to shore. Applications/end uses powered by distributed marine energy includes but is not limited to scientific and defense ocean observation, aquaculture, marine carbon dioxide removal (mCDR), seawater mining, and synthetic fuels generation.

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**Key TA1 objectives:**

- Accelerate the development of wave energy technologies via structured design and testing methods that focus on rapid iteration and knowledge generation, enabled by the smaller size and lower cost of distributed blue economy applications.
- Mature distributed wave energy harvesting technologies in the ocean, leading to significant increases in performance and reliability.
- Produce data and information at all stages of design and testing that maximize value to the sector, including but not limited to design tool development and validation, lessons learned, standards development, and deployment experience.
- If applicable, leverage previous testing infrastructure investments at national labs and NMECs to demonstrate that robust lab testing prior to ocean deployment increases ocean testing success while reducing project costs and schedule.
- Demonstrate the ability of wave energy to provide reliable power for an identified distributed blue economy application(s) and establish sector credibility that marine energy is a cornerstone for growth.

**Topic Area 2 (Community Scale Open Water Testing and System Validation):** This Topic Area aims to develop functional wave energy technologies for coastal and island stakeholders (may or may not be grid-connected). The technology development focus ranges from small-scale, nearshore solutions to early adoption of technologies suited for communities. Open-water testing is essential to mature technologies, validate performance against analytic models, demonstrate compliance with applicable design standards, and mitigate the technical and financial risk of developing commercial projects. Partnerships or collaborations with communities and/or blue-economy end-users is highly encouraged.

**Key TA2 objectives:**

- Establish community-scale technology solutions for energy resilient coastal communities with simple, robust, modular devices.
- Deploy smaller-scale, nearshore WEC energy solutions to unlock value in the blue economy of coastal communities and industries.
- Scale-up successful technologies from Waves 2 Water Prize and marine energy systems innovation at sea technologies to community-scale desalination opportunities.
- Accelerate faster design and testing cycles towards reliability and survivability.
- Solve energy system integration challenges for microgrids and/or regional grids in particular. Early supply chain development

**Topic Area 3 (Utility Scale Open Water Testing and System Validation):** This Topic Area allows for maturing grid connected technologies that demonstrate reliable power generation direct to a utility. Open water testing for power, survivability and reliability performance focuses on

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deployments at PacWave, however developers could also propose alternative grid connected sites such as the Department of Navy’s Wave Energy Test Site (WETS) in Kaneohe, HI.

Key TA3 objectives:

- Baseline WEC reliability, survivability data through extended testing durations.
- Baseline high fidelity WEC CAPEX and OPEX cost data utilizing the LCOE Cost Breakdown Structure to baseline.
- Increasing WPTO confidence in cost estimates prior to authorizing fabrication via third party verification of estimates.
- Demonstrating the ability of PacWave to test multiple utility scale. prototypes in parallel in accordance with grid integration protocols. Implementation of foundational R&D to improve overall WEC system performance.

EERE envisions awarding multiple financial assistance awards in the form of cooperative agreements. The subsequent paragraphs are provided to illustrate the intentions of this FOA and the selected projects for funding levels, stage gates, eligibility requirements, cost sharing, data protections, and special reporting requirements. The information below has not been finalized and is subject to change. The below table illustrates EERE’s anticipated funding levels (subject to availability of appropriations), Technology Readiness Levels, award duration, and potential number of awards to be selected per Topic Area.

Topic	TRL <i>(range from start to end of project(s))</i>	# of Awards <i>(minimum – maximum anticipated)</i>	Award Duration	Range of Federal \$\$ per award (estimated and subject to change)	Total Federal Funding <i>(estimated and subject to Appropriations)</i>
Topic 1	TRL 4-8	Up to 7	1-5 years	3 awards @ \$5.625M each to 7 awards @ \$2.410M each	\$16.875M
Topic 2	TRL 4-8	Up to 6	1-5 years	2 awards @ \$22.5M each to 6 awards @ \$7.5M each	\$45M
Topic 3	TRL 6-8	Up to 4	1-5 years	1 award @ \$50.625M each to 4 awards @ \$12.656M each	\$50.625M
<b>TOTAL</b>		<b>Up to 17</b>			<b>\$112.5M</b>

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The table above describes anticipated funding levels under a stage-gated approach utilizing a down select and multiple Go/No-Go's for all projects. For further illustration, the below example FOA stage gate structure is provided assuming 20 applicants at a minimum:

- Stage 1 (design phase) = Up to 17 awards; down-select up to 10 awards (across all topic areas)
- Stage 2 (fabrication phase) = Up to 10 awards from Stage 1; with Go/No-Go's to Stage 3
- Stage 3 (installation & initial testing phase); with Go/No-Go's to Stage 4
- Stage 4 (testing, maintenance & power generation); with Go/No-Go's to Stage 5
- Stage 5 (power performance and decommissioning) = End of period of performance and project close outs.

Stage 1 (Design Phase) project work is intended to inform the down-select process at the end of Stage 1. It is envisioned the following minimum data/reporting will be required in Stage 1, including, but not limited to:

- Health and Safety (H&S) plans.
- Bill of Materials with minimum of three quotes for costs to fabricate WEC structure, moorings/anchoring/foundations, other ancillary subsystems as relevant to full WEC system integration and installation.
- Installation, Operations and Maintenance (IO&M) plans with minimum of three quotes for marine vessel availability.

Progression through stage gates 2-5 for up to 10 awards may be based on the following items. This listing is provided as an example, is not all inclusive, and final criteria may differ by Topic Area.

- Successful control of costs (CAPEX/OPEX costs)
- Achievement of technical milestones,
- Validated metrics (e.g., survivability, reliability, power production); and
- Submission of quality reporting.

Regarding cost sharing, Congressional Appropriations Language for WPTO for Fiscal Year 2024 states, *"The Secretary is encouraged to utilize existing authorities to waive cost share for water power technologies research, development, demonstration, and deployment activities."* As such, WPTO intends to seek a cost share reduction from the statutory 20% to 10% for all applicants under this FOA for all Topic Areas.

A key objective of this FOA is to emphasize advancing the commercial readiness of wave energy technologies. To this end, WPTO is considering limiting participation by institutions of higher education for this FOA. Specifically, institutions of higher education will be eligible to apply as subrecipients under the FOA but will not be eligible to apply as prime recipients.

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In order to maximize the broader public dissemination of wave energy technology data to continue to advance the industry, WPTO intends to limit data protections under this FOA. WPTO is considering the following data release/protection requirements for awardees:

- All project data will be made available to the Water Power Technologies Office as it is produced, but no later than the end of the quarter in which the data was generated.
- Protected Data protection period is limited to 1 year from the end of the award period of performance.

This Notice is issued so that interested parties are aware of the EERE's intention to issue this FOA in the near term. **All of the information contained in this Notice is subject to change.** EERE will not respond to questions concerning this Notice. Once the FOA has been released, EERE will provide an avenue for potential Applicants to submit questions.

EERE plans to issue the FOA on or about September 2024 via the EERE Program Information Center website <https://epicweb.ee.doe.gov/EPICWeb>. If Applicants wish to receive official notifications and information from EERE regarding this FOA, they should register in the EERE Program Information Center. When the FOA is released, applications will be accepted only through the EERE Program Information Center.

In anticipation of the FOA being released, Applicants are advised to complete the following steps, which are **required** for application submission:

- Register and create an account in the EERE Program Information Center at <https://epicweb.ee.doe.gov/EPICWeb>. This account will allow the user to apply to any open EERE FOAs that are currently in the EERE Program Information Center.

To access the EERE Program Information Center, we recommend potential applicants have a [Login.gov](https://login.gov) account. As part of the EERE Program Information Center registration process, new users have the option of creating an account in [Login.gov](https://login.gov).

**NOTE: Unless your account affiliation is "Individual", your organization's Authorized Organizational Representative (AOR) must first create an account in the EERE Program Information Center before any applicant accounts can be approved.** The AOR will then be responsible for approving/managing user accounts created for the organization or designating an Account Administrator to act on their behalf.

For more information, the following training materials will cover the process of registering for an account and managing user accounts (for AORs and AAs).

- [Account Registration \(Video\)](#)
- [Account Registration: Individual \(Quick Guide\)](#)

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- [Account Registration: Industry, Academia, Non-Profit, and Government \(Quick Guide\)](#)
- [How to Manage Users \(Video\)](#)

If you need any assistance while using the EERE Program Information Center, please utilize the Help Center, which is located at the top right corner of the home page, and provides several useful resources, including quick guides and training videos. You may also contact the EERE Program Information Center Helpdesk at [eeere-epichelpdesk@ee.doe.gov](mailto:eeere-epichelpdesk@ee.doe.gov).

- Register with the System for Award Management (SAM) at <https://www.sam.gov>. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually. Upon registration, SAM will automatically assign a Unique Entity ID (UEI).

**NOTE: Due to the high demand of UEI requests and SAM registrations, entity legal business name and address validations are taking longer than expected to process. Entities should start the UEI and SAM registration process as soon as possible.** If entities have technical difficulties with the UEI validation or SAM registration process they should utilize the HELP feature on SAM.gov. SAM.gov will work entity service tickets in the order in which they are received and asks that entities not create multiple service tickets for the same request or technical issue. Additional entity validation resources can be found here: [GSAFSD Tier 0 Knowledge Base - Validating your Entity](#).

- Register in FedConnect at <https://www.fedconnect.net/>. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at [https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect\\_Ready\\_Set\\_Go.pdf](https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf)
- Register in Grants.gov to receive automatic updates when Amendments to a FOA are posted. However, please note that applications will not be accepted through Grants.gov. <http://www.grants.gov/>. All applications must be submitted through EERE eXCHANGE.

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