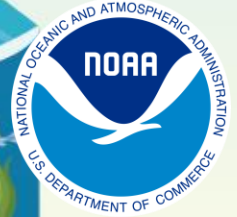




POWERING THE BLUE ECONOMY™:
POWER AT SEA PRIZE

AMERICAN
MADE
CHALLENGES

U.S. DEPARTMENT OF ENERGY
NOAA

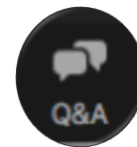


Webinar December 2024

Power at Sea Prize DEVELOP Phase Overview

Agenda

- Water Power Technologies Office (WPTO)
 - Powering the Blue Economy™ (PBE)
- Power at Sea Prize - DEVELOP Phase Overview
 - Timeline
 - Goals
 - Submission Requirements
 - Scoring & Criteria
 - Competitor Support Mechanisms
 - Office Hours
 - Power Connector
- Thank you & Questions



This webinar is being recorded.
Please post your questions in the Q&A.

Welcome Winners!

- **AquaSync** (Ann Arbor, Michigan)
- **BlueBio&Beyond** (Hoboken, New Jersey)
- **Cal Poly Mechanical Engineering** (San Luis Obispo, California)
- **Changzheng Huang** (Irvine, California)
- **E-Wave Technologies** (Hoboken, New Jersey)
- **IMTAqua** (Ithaca, New York)
- **OceaniCal** (Berkeley, California)
- **ODU Ocean Wave Energy** (Norfolk, Virginia)
- **OffshoreLink** (Hoboken, New Jersey)
- **Oscilla Power Inc.** (Seattle, Washington)
- **Oscilla Power Inc.** (Seattle, Washington)
- **Pittsburgh Coastal Energy** (Pittsburgh, Pennsylvania)
- **Poseidon's Kite** (Keswick, Virginia)
- **SEAquestration Team** (Ithaca, New York)
- **Seatrec, Inc.** (Vista, California)
- **Sperra** (Boulder, Colorado)
- **Team Michigan Tech** (Houghton, Michigan)
- **Team Streaming Energy** (Wendell, North Carolina)
- **Wave Water Works** (Farmington Hills, Michigan)
- **WaveRiders** (Calverton, Maryland)
- **Waverocker Energy** (Montrose, California)

Water Power Technologies Office (WPTO)



Powering the Blue Economy™



Potential market opportunities where marine energy may hold a **unique value proposition** to meet the energy needs of the blue economy.

Technology attributes of marine energy beneficial to many blue economy markets:

- Ability to provide both **electrical and mechanical power**
- **Minimal surface expression** improving storm survivability
- Opportunities for **co-design and integration** with other infrastructure
- Ability to leverage **existing maritime supply chains**

Represents a new strategic focus for the marine energy program, supporting opportunities uniquely suited to marine energy attributes



Powering the Blue EconomyTM:

Power at Sea Prize - DEVELOP Phase



Timeline:

DEVELOP Phase
Open: Nov. 25,
2024



DEVELOP Phase
Submission
Close: June 2,
2025, at 5 p.m. ET



Winner
announcement:
June 2025



Prize Goals



Engage and cultivate a community of **new and existing participants in marine energy** to introduce new, creative minds to Powering the Blue Economy and the marine energy field, fostering the development of new concepts and lessons learned.



Identify **new, innovative, and feasible marine energy concepts** that have a high likelihood of providing power at sea in the near term to accelerate the commercialization of the nascent marine energy industry.



Introduce competitors to **WPTO and government funding mechanisms** and prepare them to compete technically and financially for future funding opportunities both within and beyond DOE



Blue Economy Applications

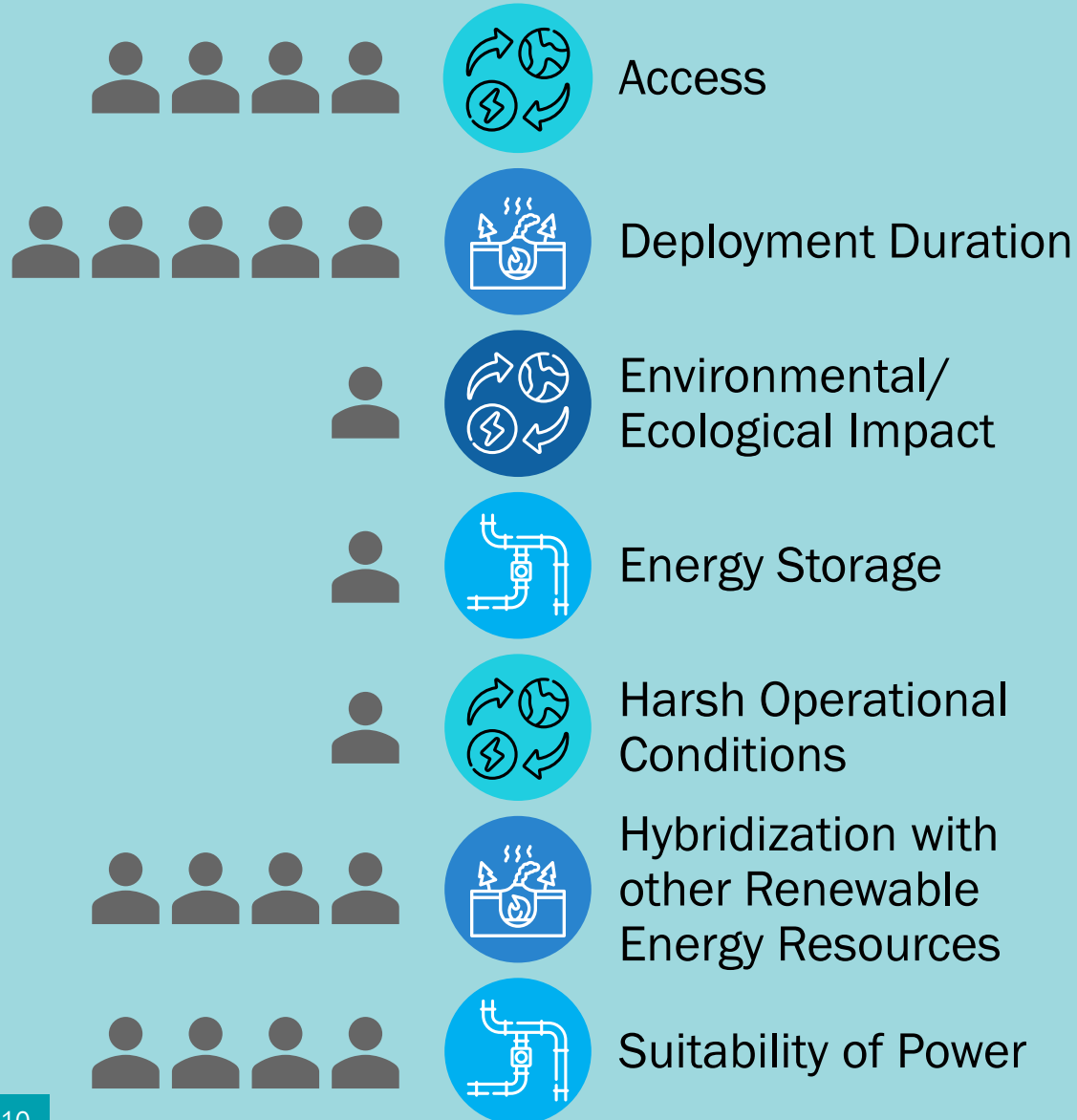
In the **CONCEPT Phase**, prize competitors considered which applications could benefit from their marine energy concept as a part of their submission and identified how their solution will provide power to this application.

In the **DEVELOP Phase**, prize competitors will narrow in on one primary blue economy application and further evaluate how their concept will provide value to the identified blue economy application and end user(s).

| Estimated Power at Sea Device Power Usage (Order of Magnitude) | | | | | |
|--|-----------------|-----------|----------------|----------------|----------------|
| | Milliwatts (mW) | Watts (W) | Kilowatts (kW) | Megawatts (MW) | Gigawatts (GW) |
| mCDR (including monitoring) | • | • | • | • | • |
| Ocean observation and navigation | • | • | • | • | |
| Marine aquaculture (including monitoring) | • | • | • | • | |
| Underwater vehicle charging | | • | • | | |
| Subsea communications | | • | • | • | • |
| Mining seawater minerals and gasses | | | • | • | • |
| Data centers | | | • | • | • |
| Hydrogen electrolysis | | | • | • | • |
| Marine restoration | | | • | • | • |
| Pollution remediation | | | • | • | • |
| Offshore fuels production | | | | • | • |

This table identifies applications in the blue economy, including the order of magnitude of their power needs, which competitors used to define the power requirements of their concepts in the previous phase

Prize Challenge Areas



Competitors are **expected to continue ideating in the same challenge area; however, they may choose to change areas.**

- Competitors must email PowerAtSea@NREL.gov to change challenge area ASAP clearly describing **why they are proposing to change** to a different area and **justify the decision** as it relates to their concept.
 - clear description of the proposed challenge area
 - background on why they are proposing to change to the new area
 - justify the benefit of the identified challenge area to marine energy.

What to Submit:

The following items constitute the DEVELOP Phase submission package and must be submitted through the HeroX platform.

Each item is described in more detail in the following slides.

Quad Chart

Technical Narrative

Early Design Document

Quad Chart

Purpose: provide a **high-level summary of the concept being explored** for reviewers, competitors, and members of the public interested in learning more about these funded concepts.

Public

Total Possible Points: 15; Weight: 10%

[Template Available](#)

Basic information about the submission that does not exceed a single page and should include:

- Title
- Competitor name(s), team name (if applicable), and organization
- Blue economy application from Table 2 in Section 2.2 of Rules
- Primary end-use/intended deployment location and estimated power production
- Marine energy resource type(s)
- Short description of the concept and the activities undertaken during the DEVELOP competition
- Image that summarizes the technology visually.

Technical Narrative

Purpose: detailed narrative describing **long-term future planning for the concept.**

NOT Public

Total Possible Points: 65; Weight: 43%

[Template Available](#)

Total page count must not exceed **10 pages**, with **up to 5 supporting visualizations or graphics** (counted as part of the **10-page limit**)

Scoring Criteria:

- Concept Development and Viability
- Blue Economy Application Evaluation
- End User(s) Identification
- Future Plans

Early Design Document

Purpose: design document describing near-term planning, design considerations, and results from any modeling or testing.

NOT Public

Total Possible Points: 70; Weight: 47%

[Template Available](#)

Total page count must not exceed **15 pages**, may also include a **section for supporting visualizations, drawings, or graphics** (this section **does not** count towards the overall page limit)

Scoring Criteria:

- Technical Capabilities and Merit
- Quantitative Analysis
- System Performance
- Testing and Validation Planning

Scoring and Criteria

All scored submission components will be scored on how well the competitor addresses the statements in each criterion

Each statement will be scored by reviewers on a 0–5 scale.

| Scoring Criteria | |
|--|--|
| <p>Suggested Content Competitor Provides:</p> <ul style="list-style-type: none"> • Example: An introduction to the team | <p>Each Statement Scored on a 0–5 Scale:</p> <ul style="list-style-type: none"> • Example: A description of the team and their relevant experience, qualifications, and capabilities. |

On the **left-hand side** are suggested content you could provide to address the scored statements.

On the **right-hand side** are the exact scoring statements that reviewers will use to score your submission.

| 0 | 1 | 2 | 3 | 4 | 5 |
|--|----------|-------------------|----------------|-------|------------------------------------|
| Strongly Disagree/ Does Not Address | Disagree | Slightly Disagree | Slightly Agree | Agree | Strongly Agree/ Fully Addresses |

Scoring and Criteria

| Scoring Criteria | Number of Scored Statements | Total Possible Points | Weight |
|---|-----------------------------|-----------------------|-------------|
| Quad Chart | 3 | 15 | 10% |
| Technical Narrative | 13 | 65 | 43% |
| Criterion 1: Concept Development and Viability | 4 | 20 | 13% |
| Criterion 2: Blue Economy Application Evaluation | 3 | 15 | 10% |
| Criterion 3: End User(s) Identification | 3 | 15 | 10% |
| Criterion 4: Future Plans | 3 | 15 | 10% |
| Early Design Document | 14 | 70 | 47% |
| Criterion 1: Technical Capabilities and Merit | 3 | 15 | 10% |
| Criterion 2: Qualitative Analysis | 3 | 15 | 10% |
| Criterion 3: System Performance | 4 | 20 | 13% |
| Criterion 4: Testing and Validation Planning | 4 | 20 | 13% |
| Total | 30 | 150 | 100% |

Competitor Support Mechanisms

| Planned Support Tasks | Details |
|-----------------------|--|
| Office Hours | <ul style="list-style-type: none">• Provide feedback to competitors on their submissions in the DEVELOP Phase. This feedback is provided by a third party and does not represent the opinion of WPTO, Pacific Northwest National Laboratory, or the National Renewable Energy Laboratory. This support does not include writing submissions or directly redlining drafts. |
| Networking | <ul style="list-style-type: none">• Host virtual networking meetings where competitors can introduce themselves to other competitors that may be interested in collaborating.• As the prize progresses, host virtual peer-to-peer workshops where DEVELOP Phase participants and other organizations can discuss challenges and make connections with potential partners. |
| Targeted Trainings | <ul style="list-style-type: none">• Identify training session topics that would be the most impactful for winners.• Host seminars featuring experts on topics such as an introduction to marine energy, applications in the blue economy, commercialization best practices, or other topics of interest. |

Updates on training sessions, mentorship contacts, and office hours will be posted on the HeroX platform, and competitors are encouraged to leverage these opportunities.

Competitor Support Mechanisms

Office Hours with third party expert - Jochem Weber

Microsoft Booking link will be posted on HeroX January 2025 through March 2025

**Up to 4 hours per team*

Office Hours with Power at Sea Prize Team

Microsoft Booking link will be posted on HeroX January 2025 through March 2025

**Up to 4 hours per team*

OpenSeas Office Hours:

Registration will be via will be posted on HeroX Scheduled multiple times during December 2024 and January 2025.

American-Made Challenges

1,623 Share Follow (684)

POWERING THE BLUE ECONOMY™
POWER AT SEA PRIZE

Power At Sea Prize

Create reliable and cost-effective renewable power at sea to support Powering the Blue Economy™ initiatives. #PowerAtSea Prize

Energy, Environment & Resources Government

Stage: Enter Prize: \$1,700,000

SOLVE THIS CHALLENGE

Summary Timeline Updates 1 Forum 2 Teams 684 Entries Resources FAQ Upcoming Webinars

Booking links will be posted under resources.

Power Connector – Open Seas

- OpenSeas, through the Power Connector Program, is providing **DOJO Open Sessions** and **One-on-One sessions** to support teams participating in the challenge.
- Current open availability during **December 2024 and January 2025**.
- Multiple 30-minute availabilities for providing support to individual teams to answer questions and provide mentoring. Requestors may reserve appointments by contacting jcronin@odu.edu.

| DOJO - Open Sessions | Eastern Time |
|------------------------------|--------------|
| Wednesday, December 18, 2024 | 1500 |
| Thursday, December 19, 2024 | 1000 |
| Thursday, January 2, 2025 | 1000 |
| Thursday, January 2, 2025 | 1400 |
| Wednesday, January 8, 2025 | 1500 |
| Thursday, January 9, 2025 | 1000 |
| Wednesday, January 15, 2025 | 1500 |
| Thursday, January 16, 2025 | 1000 |
| Wednesday, January 22, 2025 | 1500 |
| Thursday, January 23, 2025 | 1000 |
| Wednesday, January 29, 2025 | 1500 |
| Thursday, January 30, 2025 | 1000 |

| One on One Session Availability | Eastern Time |
|---------------------------------|--------------|
| Friday, December 20, 2024 | 1000 - 1400 |
| Friday, January 3, 2025 | 1000 - 1400 |
| Thursday, January 9, 2025 | 1130 - 1530 |
| Thursday, January 16, 2025 | 1130 - 1530 |
| Thursday, January 23, 2025 | 1130 - 1530 |
| Thursday, January 30, 2025 | 1130 - 1530 |

Read the Rules!

Topics covered in today's presentation can all be found in the Official Rules Document.

For a more in-depth look at these topics, please read the rules document, which is available here:

<https://americanmadechallenges.org/challenges/poweratsea/docs/Power-At-Sea-Prize-Rules.pdf>



Stay in Touch!

For more information, visit:

- HeroX: www.herox.com/poweratsea
- American Made Challenges: www.americanmadechallenges.org/challenges/poweratsea
- Email: poweratsea@nrel.gov

Sign up for our newsletters!



- Water Column (monthly marine energy news)



- Hydro Headlines (monthly hydropower news)



- Water Wire (bi-monthly marine energy and hydropower news)

Frequently Asked Questions

Previously answered questions will be archived on HeroX

www.herox.com/PowerAtSea/faq

[Does the proposed solution need to include wave or tidal energy?](#)

As stated in the Official Rules Document Section 1.2 Applications of Interest, the prize is seeking solutions which receives 50% or more of its energy needs from one of the following marine energy resources to power systems at sea: wave, tidal, ocean current, river, salinity gradients, or thermal gradients.

Hybrid technologies are acceptable, including other renewable resources and batteries, but all solutions must meet the 50% requirement to be applicable for a U.S. DOE Water Power Technologies Office Prize.

[Do I have to register on HeroX.com to follow the challenge, leave a comment or register to compete in the challenge?](#)

Yes, but it's quick and easy. Just click the "Solve this Challenge" button on this page and follow the instructions to complete your registration. All you need to provide is your name and email address.

[I have a question that was not answered in the FAQ. Who can I contact?](#)

If you have a question not answered in the FAQ, we recommend that you post it in the Forum where someone will respond to you. This way, others who may have the same question will be able to see it.



PowerAtSea@NREL.gov

Thank you & Questions



HeroX.com/poweratseaprize

#PowerAtSea Prize