



**31 May 2024**

The Portal and Repository for Information on Marine Renewable Energy ([PRIMRE](#)) provides access to marine energy data, information, and resources in the U.S. and internationally. The bi-weekly [PRIMRE Blast](#) highlights relevant announcements and upcoming events; new content in the [Knowledge Hubs](#); and international marine energy news. [Email us](#) to contribute!

---

[Announcements](#)  
[Upcoming Events](#)

[Tethys Eng. Documents](#)  
[Telesto Update](#)

[PRIMRE Highlight](#)  
[News & Press Releases](#)

---

## **Announcements**

### Welsh Consultation

The Welsh Government has opened a [Consultation on Strategic Resource Areas for Marine Planning](#) and is seeking views on proposals to identify Strategic Resources Areas (SRAs) for tidal stream energy. Comments are due 5 June 2024.

### ETIPP Applications Open

The U.S. Department of Energy's (DOE) is accepting applications for the [Energy Transitions Initiative Partnership Project \(ETIPP\)](#), which provides technical assistance for remote and island communities to bolster their energy resilience through tailored solutions, through 10 July 2024.

### Power at Sea Prize Submissions Open

The U.S. DOE Water Power Technologies Office (WPTO) is accepting submissions for the [Powering the Blue Economy: Power at Sea Prize](#), which awards competitors to advance technologies that use marine energy to power ocean-based activities, through 26 July 2024.

### Call for Abstracts

The [Call for Abstracts](#) for the [3rd GloFouling Research & Development Forum and Exhibition on Biofouling Prevention and Management for Maritime Industries](#) is now open through 15 June 2024. The event will take place 4-8 November 2024 in Busan, South Korea.

## Funding & Testing Opportunities

Energiaren Euskal Erakundea / Ente Vasco de la Energía has opened an [investment support programme to support demonstration and validation activities of innovative technologies for wave and offshore wind energy](#), with the potential to contribute to greater adoption of renewable energies. Applications are due 19 June 2024.

The Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the U.S. DOE and directed by the Pacific Ocean Energy Trust (POET), is accepting [Request for Technical Support \(RFTS\) 13](#) applications through 28 June 2024 to support marine energy testing and development projects. Open Water Support applications can be submitted any time.

The U.S. Advanced Research Projects Agency-Energy (ARPA-E) recently announced up to \$150 million in funding through its [Vision OPEN Call](#) to develop ground-breaking systems that provide abundant primary energy, enable intermodal energy transport, and sustainably meet demand for polymer and other materials. Concept papers are due 16 July 2024.

---

## **Upcoming Events**

### Upcoming Webinar

Australia's Blue Economy Cooperative Research Centre is hosting a webinar, "[Cultural Licence to Operate in the Blue Economy](#)", on 19 June 2024 from 4:00-5:00pm AEST (6:00-7:00am UTC). The webinar will explore outcomes from a trans-Tasman scoping project funded to build a Cultural Licence to Operate framework that helps to create the ecosystem for an ethical, equitable, dynamic, and responsive system. [Register here.](#)

### Upcoming Workshops

The Marine Environmental Data and Information Network (MEDIN) and OceanWise are hosting a free online training workshop, "[Marine Data Management, Governance and the MEDIN Toolset](#)", on 3-7 June 2024. This training course is for anyone responsible for collecting or managing marine environmental data, including researchers, technicians, and students.

Pacific Northwest National Laboratory is hosting a three-part virtual workshop on understanding Pacific Northwest community, tribal, and other public information needs around marine carbon dioxide removal (MCR) and marine renewable energy (MRE). The workshop will take place in three two-hour sessions. Please save these dates and [register for the workshop](#) to participate:

- 17 June 2024, 1:00-3:00pm PDT: Kickoff Meeting and mCDR-focused discussion
- 18 June 2024, 1:00-3:00pm PDT: MRE-focused discussion
- 21 June 2024, 10:00am-12:00pm PDT: Bridging mCDR and MRE needs

The Oceanic Platform of the Canary Islands (PLOCAN) is hosting its [2024 Glider School](#), which is a leading hands-on ocean-glider technology training forum, from 21-25 October 2024 in Telde, Gran Canaria, Canary Islands, Spain. Applications to attend are due 30 June 2024.

## Upcoming Symposiums

Azul, the Center for American Progress, and Urban Ocean Lab are hosting an online symposium on the rising tide of justice and equity in ocean policy, “[Upwell: A Wave of Ocean Justice](#)”, on 4 June 2024. [Register for free here.](#)

The International Network on Offshore Renewable Energy (INORE) is accepting applications from graduate students, early-stage researchers, and young professionals in offshore renewable energy to attend its [2024 European Symposium](#) through 9 June 2024. The symposium will take place from 26 August to 1 September 2024 in Aberdeen, Scotland, and is free to attendees.

---

## **New Documents on Tethys Engineering**

*[Tethys Engineering](#) hosts thousands of documents on the technical aspects of marine energy research and development, including journal articles, conference papers, and reports.*

### **[Efficient prediction of tidal turbine fatigue loading using turbulent onset flow from Large Eddy Simulations](#) – Mullings et al. 2024**

To maximise the availability of power extraction from a tidal stream site, tidal turbines need to be able to operate reliably when located within arrays. This requires a thorough understanding of the operating conditions, which include turbulence, velocity shear due to bed proximity and roughness, ocean waves and due to upstream turbine wakes, over the range of flow speeds that contribute to the loading experienced by the devices. High-fidelity models such as Large Eddy Simulation (LES) can be used to represent these complex flow conditions and turbine device models can be embedded to predict loading. However, to inform micro-siting of multiple turbines with an array, the computational cost of performing multiple simulations of this type is impractical.

### **[Control co-design for wave energy farms: Optimisation of array layout and mooring configuration in a realistic wave climate](#) – Peña-Sanchez et al. 2024**

This paper presents a novel Control Co-Design (CCD) methodology aimed at economically optimising the layout of wave energy converter (WEC) arrays. CCD ensures the synergy of optimised WEC and array parameters with the final control strategy, resulting in a comprehensive and efficient design of the array. By integrating a spectral-based control strategy into the array layout design, this study pursues the twin objectives of maximising energy absorption while reducing costs. To prove the performance of the proposed CCD methodology, an application case is proposed where the inter-device distance, alignment, and mooring configuration of a five-device array, considering realistic wave scenarios, are optimised.

## [Predictive model using artificial neural network to design phase change material-based ocean thermal energy harvesting systems for powering uncrewed underwater vehicles](#) – Ouro-Koura et al. 2024

Uncrewed underwater vehicles (UUVs) significantly benefit from phase change material (PCM)-based ocean thermal energy harvesting for long mission duration. However, this technology relies on different parameters that are critical to its efficiency. Sea trials indicated that a design using this technology has lower performance than its initial specifications. This underperformance results from different factors—mainly, the UUV's trajectory, travel time, temperature fluctuations, and biofouling on the heat exchanger due to long-term underwater operations. Therefore, there exists a need to continuously monitor the ambient energy harvesting system and predict system performance for mission planning.

---

## Telesto Update

*[Telesto](#) provides information and guidance for testing, measurement, and data analysis for marine energy research, development, and demonstration, as well as additional resources.*

### [Testing and Measurement](#)

Telesto's Testing and Measurement page features a variety of resources, including links to marine energy testing facilities and open water test sites around the world, guidance on how to write test plans, and descriptions of specific tests at different development scales. What kinds of tests can be used in a wave tank or flume versus in the open ocean? What kinds of tools are available for data acquisition and processing? What international standards are relevant to testing and performance assessment? Find out on Telesto!

---

## PRIMRE Highlight

*[Signature Projects](#) bring focus to a selection of research and development projects supported by the U.S. DOE's WPTO and link to all the projects' reports, datasets, and associated papers.*

### [Laboratory Upgrade Point Absorber \(LUPA\)](#)

The Lab Upgrade Point Absorber (LUPA) project, sponsored by the U.S. DOE, has developed open-source modular point absorber for wave energy converter (WEC) hydrodynamics, controls, mooring systems, and student learning. The LUPA WEC system includes both physical and numerical version of the technology. The physical LUPA WEC system is modular and can be modified to change float and heave plate geometries, mooring systems, PTO systems and controls, and operating modes.

## **WEC-Sim (Wave Energy Converter SIMulator)**

WEC-Sim (Wave Energy Converter SIMulator) is an open-source software for simulating wave energy converters, hosted on the WEC-Sim repository. The software is developed in MATLAB/SIMULINK using the multi-body dynamics solver Simscape Multibody. WEC-Sim has the ability to model devices that are comprised of bodies, joints, power take-off systems, and mooring systems.

## **The Reference Model Project (RMP)**

The Reference Model Project (RMP), sponsored by the U.S. DOE, was a partnered effort to develop open-source marine hydrokinetic (MHK) point designs as reference models (RMs) to benchmark MHK technology performance and costs, and an open-source methodology for design and analysis of MHK technologies, including models for estimating their capital costs, operational costs, and levelized costs of energy. The point designs also served as open-source test articles for university researchers and commercial technology developers.

---

## **News & Press Releases**

### **Water Power Technologies Office Selects Teams for 2025 Hydropower and Marine Energy Collegiate Competitions** – U.S. DOE

The U.S. DOE's WPTO recently announced the 36 teams selected to participate in the 2025 Hydropower Collegiate Competition (HCC) and Marine Energy Collegiate Competition (MECC), the largest cohort of teams to date. These annual competitions engage and educate students about real-world challenges facing these sectors and the many career opportunities in water power with the goal of encouraging the next generation to join the hydropower and marine energy workforces. The 2025 MECC asks teams to integrate marine energy with blue economy applications such as ocean exploration, aquaculture, and desalination. After identifying a promising blue economy market, teams will design a marine energy-powered device to serve that market. Each team will be assigned a marine energy mentor and compete in four challenges.

### **EMEC General Election Manifesto Ask** – European Marine Energy Centre (EMEC)

Established in 2003, EMEC is a not-for-profit innovation catalyst pioneering the transition to a clean energy future, offering test and demonstration sites to reduce the time, cost and risk of testing ocean energy and associated low carbon technologies. EMEC is the only accredited wave and tidal test centre in the world with more ocean energy devices tested in Orkney, Scotland, than at any other site. Over the last 20 years, pre-commercial technologies have been put to the test in challenging conditions at EMEC. An economic impact assessment spanning two decades of EMEC's operations values impact of the test centre to the UK economy at £370 million – an eight-fold return on public funding in EMEC's infrastructure. EMEC has worked with a range of key

stakeholders to scope out key green growth opportunities and the centre is seeking the mandate to deliver on these ambitious goals.

### **Buoy comes back for maintenance after one year of gauging tidal energy device effects on wildlife – Offshore Energy**

Menter Mon-managed wildlife monitoring buoy, in charge of collecting marine wildlife information off the coast of Holyhead, Wales, has been brought back to Holyhead Port for maintenance, after a year at sea. The mission of the buoy equipment, which records wildlife behavior in the Morlais zone, is to understand the impact of the Morlais tidal energy devices on local wildlife, if any are present. This wildlife monitoring buoy was deployed in the sea off the coast of Holyhead on June 15, 2023, scoring a notable milestone for tidal energy in Wales, as the data gathered is anticipated to be used to make decisions on future turbine installations at the Morlais tidal energy site as well as similar projects worldwide. Operating on solar and wind energy, the buoy features data collection technology, including surface and underwater infrared and red-green-blue cameras.

### **BiMEP wins 2024 Innovation Award – Biscay Marine Energy Platform (BiMEP)**

This year the Basque Association of Civil Engineers has given its innovation award to the marine energy test facility, BiMEP, for its crucial role in promoting research and development into new marine sources of renewable energy — specifically wave power and floating wind power. The award, presented at the association’s annual meeting in Bilbao, recognises the innovative thinking of BiMEP’s founders a decade ago. In awarding the prize, the association referred to their foresightedness in identifying that tech companies would need fully equipped and pre-authorised offshore test infrastructures for trialling floating renewable power generation devices. By commissioning the BiMEP, they provided the market with a critical permanently-available infrastructure for sea trials.

### **Two new blade technologies from Edinburgh University researchers aim for renewable energy efficiency – Offshore Energy**

Engineering and Physical Sciences Research Council (EPSRC) has funded a collaboration between Professor of Fluid Mechanics and Bioinspired Engineering, Ignazio Maria Viola, and Senior Lecturer in Composites Design and Testing, Eddie McCarthy, which resulted in two new technologies that are expected to reduce unsteady loading, improve turbine resilience and reliability and decrease the levelized cost of energy. Viola and McCarthy developed two technologies that enable the passive morph of the blade, each aimed at increasing energy yield and reducing capital and operational costs. The first technology is a morphing blade with a flexible trailing edge that deforms with changes in fluid load. The second technology is a passive pitching mechanism for rigid blades, allowing them to pitch independently in response to varying loads.