



**27 October 2023**

[Tethys](#) is a knowledge hub with information and resources on the environmental effects of wind and marine energy. The bi-weekly [Tethys Blast](#) highlights announcements and upcoming events; new documents in the [Knowledge Base](#); and international energy news. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. [Email us](#) to contribute!

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## **Announcements**

### [Make A Splash Photo Contest](#)

The U.S. Department of Energy (DOE) Water Power Technologies Office (WPTO) recently launched the [Make A Splash Photo and Video Contest](#) to capture photos and videos of water power that transport viewers and showcase the scope and potential of water power as a renewable energy. Cash prizes are available. Submissions due 17 November 2023.

### [BOEM Seeking Public Input](#)

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking comments on the two Draft Wind Energy Areas off the coast of [Oregon](#) (due 31 October 2023), on the draft Environmental Impact Statement for the proposed [Maryland Offshore Wind Project](#) (due 20 November 2023), and on the Draft Wind Energy Area in the [Gulf of Maine](#) (due 20 November 2023).

### [OWEER Call for Information](#)

The [Call for Information](#) for the Offshore Wind Environmental Evidence Register (OWEER) is now open through 10 November 2023. [Version 4](#) of the OWEER is freely available on the Crown Estate's Marine Data Exchange and Version 5 will be published in January 2024.

## E-TWG Requesting Feedback

The New York State Environmental Technical Working Group (E-TWG) is requesting stakeholder feedback on its [Draft Guidance for Pre-and Post-Construction Monitoring of Marine Birds in Relation to Offshore Wind Energy Development](#) until 13 November 2023.

## Earthshot Prize Applications

As an Official Nominator for [The Earthshot Prize](#), the European Marine Energy Centre (EMEC) is [inviting expressions of interest](#) from ocean energy, offshore wind, and green hydrogen related solutions through 30 October 2023.

## Calls for Abstracts

The [Call for Abstracts](#) for the [Environmental Interactions of Marine Renewables Congress 2024 \(EIMR 2024\)](#) is now open through 17 November 2023. EIMR 2024 will take place on 15-19 April 2024 in Orkney, Scotland.

The [Call for Abstracts](#) for the [Asian Offshore Wind, Wave and Tidal Energy Conference \(AWTEC 2024\)](#) is now open through 20 March 2024. AWTEC will take place 20-24 October 2024 in Busan, Korea.

## Funding & Testing Opportunities

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program is now accepting [Request for Technical Support 11 applications](#) until 3 November 2023. Applicants can apply to work with approved facilities on tank and flume testing, lab/bench testing, numerical modeling and analysis, and open water support.

The U.S. DOE is now accepting applications for the [Renewable Energy Siting through Technical Engagement and Planning \(R-STEP\)](#) program, which seeks to expand the decision-making capacity and expertise of state and local governments around large-scale renewable energy planning, siting, and permitting. Applications are due 3 November 2023.

The U.S. DOE and Department of the Interior recently released the [Installation Noise Reduction and Reliable Moorings for Offshore Wind and Marine Energy Funding Opportunity Announcement](#), which includes \$6.4 million for projects to improve the reliability of moorings for floating offshore wind energy and marine energy systems and \$10 million for projects to reduce the noise associated with the installation of fixed-bottom offshore wind energy projects. Concept papers are due 9 November 2023 and full applications are due 29 February 2023.

RWE has launched its first global [Floating Wind Co-use Competition](#), which is looking for innovative and sustainable solutions to promote co-existence with other sea users and biodiversity enhancement. Applications are due 31 December 2023.

France's National Offshore Wind Observatory has launched a [Call for Research Projects](#) to develop new knowledge on the marine environment and the impacts of offshore wind power on the environment. Applications for the second round are due 31 December 2023.

The European Commission's Horizon Europe Framework Programme has opened a [Call for Additional Activities for the European Partnership for a Climate Neutral, Sustainable and Productive Blue Economy](#). This call is open to companies from European Union countries and a selected number of non-EU/non-Associated Countries. Applications are due 28 February 2024.

### Career Opportunities

The U.S. BOEM is seeking a [Marine Biologist](#) to prepare and review programmatic and project-specific environmental impact analyses related to potential impacts from proposed offshore renewable energy activities and facilities. Applications are due 1 November 2023.

Oregon Sea Grant is looking for an [Oregon Sea Grant Extension Specialist in Marine Renewable Energy and Communities](#) to develop and implement a program of authentic community engagement focused on marine renewable energy, specifically floating offshore wind energy development, in Oregon. Applications are due 6 November 2023.

Ørsted is seeking a [Wildlife Operations Compliance Manager](#) who be responsible for driving permitting and compliance success, identifying potential environmental and social risks, and finding inventive solutions to ensure Ørsted's onshore energy projects have a net-positive impact on surrounding communities and biodiversity. Applications are due 12 November 2023.

East Carolina University is looking for a [Program Manager](#) to support projects focused on marine energy technology testing at the Jennette's Pier Wave Energy Test Center. Applications are due 19 November 2023.

Ocean Science Consulting Limited (OSC) is seeking a [Senior Marine Consultant](#) with a strong track record of working in offshore sectors, specifically wind, tidal, military, and/or oil and gas, and delivering expertise on environmental impact assessments, licensing, and/or equipment specifications and deployment methods.

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## Upcoming Events

### Upcoming Webinars

The National Renewable Energy Laboratory and the Renewable Energy Wildlife Institute (REWI) are hosting the fourth and final webinar of their [Compensatory Mitigation for Land-Based Wind Energy](#) series, "Compensatory Mitigation: Thinking Outside the Box", on 1 November 2023 from 3:00-4:00pm EDT (7:00-8:00pm UTC). Register [here](#).

The U.S. DOE WPTO is hosting an “[R&D Deep Dive Webinar: Spatial Environmental Assessment Tool - Connecting Marine Energy and the Environment](#)”, on 9 November 2023 from 1:00-2:00pm EST (6:00-7:00pm UTC). Register [here](#).

The U.S. DOE WPTO is also hosting its next [Semiannual Stakeholder Webinar](#) on 13 November 2023 from 10:30am-12:00pm PST (3:30-5:00pm UTC). The webinar will dive into current and future funding opportunities and other accomplishments, news, and updates. Register [here](#).

The Portal and Repository for Information on Marine Renewable Energy ([PRIMRE](#)) team is hosting a webinar, “[Introducing Telesto: PRIMRE’s Knowledge Hub for Marine Energy Development Resources and Guidance](#)”, on 28 November 2023 from 10:00-11:00am MST (5:00-6:00pm UTC). The new and improved version of [Telesto](#) is home to open-source wiki pages, structured databases, and tools that provide information about the development life cycle of marine energy. Register [here](#).

Marine Renewables Canada is hosting the second webinar in its [Ask the Expert webinar series](#), “Environmental Impacts & Effects of Offshore Wind”, on 14 December 2023 from 1:00-2:00pm EST (9:00-10:00pm UTC). Register [here](#).

### Upcoming Conferences

The [Offshore Energy Conference 2023](#) will take place on 28-29 November 2023 in Amsterdam, Netherlands. Register [here](#).

The hybrid [National Offshore Wind Research & Development Symposium 2023](#) will take place on 4-5 December 2023 in Brooklyn, New York, U.S. Register [here](#). Virtual attendance is free.

The [Pan American Marine Energy Conference \(PAMEC 2024\)](#) will take place on 22-24 January 2024 in Barranquilla, Colombia. Pre-conference workshops will take place 19-20 January 2023. Registration is now available [here](#).

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## **New Documents on Tethys**

*[Tethys](#) hosts thousands of documents on the environmental effects of marine and wind (land-based and offshore) energy, including journal articles, conference papers, and reports.*

## **Marine Energy**

### **[Ocean Energy in Islands and Remote Locations: Insights from Five Experts](#) – Ocean Energy Systems (OES) 2023**

This publication presents a collection of interviews with five distinguished experts who have spearheaded ocean energy projects in various islands and remote locations around the world. These interviews offer valuable insights into the unique challenges and opportunities associated with harnessing ocean energy in isolated areas. Each expert

provides a compelling overview of their respective ocean energy projects, highlighting their specific island or remote location. The interviews also explore the environmental impact assessments conducted and the strategies employed to mitigate any potential harm to the fragile ecosystems of these regions.

### **Automatic classification of biofouling images from offshore renewable energy structures using deep learning – Signor et al. 2023**

Offshore Renewable Energy (ORE) is developing worldwide, for which biofouling is a crucial parameter to consider, both for engineering and environmental monitoring purposes. In this study, machine learning tools are used to classify macro-biocolonisation images into four categories: 'mussels', 'barnacles', 'calcareous worms' and 'no macro-biocolonisation' as part of the suspected “most impacting species” of the fluid/Structure behavior of colonized components. A transfer learning approach is investigated using a state-of-the-art convolution neural network (CNN) architecture and an open-source training algorithm is specifically modified to ensure rapid reproducibility of the methodology: image selection, CNN adaptation, training/validation process and quality assessment.

### **Life-Cycle Cost Assessment of Various Wave Energy Converters (Based on Energy and Carbon Intensity) – Jahangir & Bahrizadeh 2023**

The purpose of this study is to compare different types of wave energy converters, Mega Roller, Pelamis P1, and Wave Dragon, which are categorized based on their multifreedom movements in oceans. Life-cycle costing is a method for the cradle-to-grave assessment of these technologies and also a way to minimize environmental impacts throughout the wave converter’s supply chain. Hence, several case studies, from Walker and Howell to Parker et al., Thomson et al., and Hans. Chr Sørensen et al., were considered and assessed based on carbon and energy intensity in this research.

## **Wind Energy**

### **Potential Hydrodynamic Impacts of Offshore Wind Energy on Nantucket Shoals Regional Ecology: An Evaluation from Wind to Whales – National Academies of Sciences, Engineering, and Medicine 2023**

To ensure Nantucket Shoals region offshore wind energy installations are being planned, constructed, and developed in an environmentally responsible way, BOEM asked the National Academies to evaluate the potential for offshore wind farms in the Nantucket Shoals region to affect oceanic physical processes, and, in turn, how those hydrodynamic alterations might affect local to regional ecosystems. Of particular interest to BOEM are the potential effects of hydrodynamic changes on zooplankton productivity and aggregations, which may affect foraging for the critically endangered North Atlantic right whale. This report found the impacts of offshore wind projects on the North Atlantic right whale and the availability of their prey in the Nantucket Shoals region will likely be

difficult to distinguish from the significant impacts of climate change and other influences on the ecosystem.

### **[Occupancy model to unveil wildlife utilization at Yeongyang-gun wind farm management road, Korea – Kim et al. 2023](#)**

This study aimed to analyze the impact of wind-farm roads on terrestrial animals in forested areas. A camera trap survey was conducted to investigate the impact of road management on wildlife behavior. We installed 52 cameras along roads connecting wind turbines for three months (1st October to 30th December 2021) on the Yeongyang-gun wind farm in South Korea and evaluated animal occupancy and detection probabilities using an occupancy model. Factors related to terrain and vegetation were used to estimate the occupancy probability (station use). During the survey period, seven terrestrial mammals (roe deer, wild boar, water deer, raccoon dogs, badgers, leopards, cats, and martens) were captured using cameras.

### **[Vessel noise prior to pile driving at offshore windfarm sites deters harbour porpoises from potential injury zones – Gall et al. 2023](#)**

We investigated the effects of pre-piling activities on local soundscapes and harbour porpoise occurrence during the construction of two deep-water offshore windfarms in Northeastern Scotland. Arrays of echolocation click detectors deployed at a sub-set of turbine sites were used to assess porpoise occurrence within a 5 km buffer during a 48-h period prior to the initiation of piling. In parallel, we characterised local vessel activity using AIS data and underwater broadband noise levels. We then used daily engineering records to characterise variation in construction activities and explore how porpoise occurrence varied during the 48 h prior to piling. On average, vessels arrived onsite 11–15 h before the start of pile-driving activities at both windfarms.

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## **News & Press Releases**

### **Marine Energy**

#### **[EURO-TIDES: Tidal stream energy pioneer Orbital Marine Power to lead the delivery of flagship EU clean energy project.](#) – Orbital Marine Power**

Orbital, along with sector leading project partners, recently announced their selection by the European Commission's Horizon Europe Programme to deliver a multi-turbine 9.6 MW tidal energy project, EURO-TIDES (EUROpean Tidal energy pilot farm focused on Industrial Design, Environmental mitigation and Sustainability). Key workstreams will focus on accelerating the commercial deployment of Orbital's pioneering floating tidal stream technology. The project will also bring together expertise from Ocean Energy Europe, Laborelec, Marasoft, European Marine Energy Centre (EMEC), Center for Wind Power Drives (CWD) of RWTH Aachen University, Energie De La Lune and the University of Edinburgh.

## **ORPC Signs Contract with Shell Technology – Marine Renewable Program to Provide Modular RivGen Devices for Use at Shell Facility on Lower Mississippi River – Ocean Renewable Power Company (ORPC)**

ORPC has signed a contract with Shell Technology – Marine Renewable Program for the purchase of two next-generation Modular RivGen devices. The devices will be deployed as a technology demonstration at a Shell facility on the Lower Mississippi River in 2024 following detailed site characterization work this fall. This next step in the collaboration between ORPC and Shell Technology – Marine Renewable Program advances the resource characterization work undertaken in May 2023, where, in partnership with Louisiana State University, ORPC assessed three potential sites in the Lower Mississippi River, to showcase the capacity of ORPC's Modular RivGen Power System to provide renewable, predictable electricity on a kilowatt scale.

## **SSAB and CorPower Ocean to collaborate on first fossil-free steel for wave energy technology. – CorPower Ocean**

Steel company SSAB and wave energy developer CorPower Ocean have signed an agreement to explore the development of one of the world's first wave energy power plants made using fossil-free steel. CorPower Ocean will use the fossil-free steel delivered by SSAB as a structural material to build a wave energy system with significantly lower carbon emissions than what is currently on the market. The goal is to start integrating the fossil-free steel in CorPower Ocean's commercial products from 2026. CorPower Ocean makes products that harness ocean waves to generate clean energy, and recently deployed its first commercial scale device off the coast of northern Portugal. Currently around 25 percent of these products' lifetime CO2 emissions comes from the use of steel as a material in the products.

## **Official opening of Wales's first tidal stream energy site – Morlais Energy**

The First Minister of Wales Mark Drakeford officially opens the substation linked to Morlais tidal energy on Anglesey this week. Morlais, off the west coast of Holy Island is the largest consented tidal energy scheme in the UK. It is managed by Anglesey-based social enterprise, Menter Môn, who secured the Crown Estate lease for the 35KM2 zone of seabed in 2014. Since then, and having secured consent in 2021, work has been ongoing to put onshore infrastructure in place. The first tidal energy devices are expected to be deployed at sea in 2026. Once operational the site has potential to generate up to 240MW of low carbon electricity.

## **New intelligent turbine project demonstrates the cost of tidal energy could be reduced by 17 per cent – ELEMENT project**

An innovative project involving one of Scotland's tidal energy pioneers has created an intelligent control system within a tidal energy turbine that could potentially slash costs by over 17.7 per cent. The ELEMENT (Effective Lifetime Extension in the Marine

Environment for Tidal Energy) project, which completed this summer, was a four-year €5 million Horizon 2020 project, bringing together the expertise of 11 partners, including tidal energy developers Nova Innovation, and the Offshore Renewable Energy Catapult. It focussed on innovating the control system in a tidal turbine to improve performance and longevity – creating more efficient energy production. The 17.7 per cent cost reduction was achieved through gains in yield, reduction in damage and turbine lifetime extension, and based on a 10MW tidal array using Nova Innovation’s tidal turbines.

## **Wind Energy**

### **Scotland’s largest offshore wind farm now fully operational – SSE Renewables**

SSE Renewables, part of SSE plc, and its partner TotalEnergies have announced all 114 Vestas V164-10.0 MW turbines at the 1.1GW Seagreen Offshore Wind Farm off the coast of Scotland are now fully operational and are generating clean, renewable energy to Britain’s power grid. Situated 27km off the Angus coast in the North Sea’s Firth of Forth, Seagreen is now Scotland’s largest wind farm as well as the world’s deepest fixed-bottom offshore wind farm, with its deepest foundation installed at a record 58.7 metres below sea level<sup>^</sup>. Seagreen is operated from a dedicated onshore Operations and Maintenance Base at Montrose Port. The 1,075MW project has the capacity to generate enough renewable electricity to power almost 1.6 million homes annually, equivalent to two-thirds of all Scottish homes.

### **Governor Hochul Announces Nation’s Largest-Ever State Investment in Renewable Energy is Moving Forward in New York – New York State**

Governor Kathy Hochul recently announced the largest state investment in renewable energy in United States history, demonstrating New York’s leadership in advancing the clean energy transition. The conditional awards include three offshore wind and 22 land-based renewable energy projects totaling 6.4 gigawatts of clean energy, enough to power 2.6 million New York homes and deliver approximately 12 percent of New York’s electricity needs once completed. When coupled with two marquee offshore wind blade and nacelle manufacturing facilities, this portfolio of newly announced projects is expected to create approximately 8,300 family-sustaining jobs and spur \$20 billion in economic development investments statewide, including developer-committed investments to support disadvantaged communities.

### **Commission sets out immediate actions to support the European wind power industry – European Commission**

The European Commission recently presented a European Wind Power Action Plan to ensure that the clean energy transition goes hand-in-hand with industrial competitiveness and that wind power continues to be a European success story. The Action Plan will help to maintain a healthy and competitive wind energy supply chain, with a clear and secure pipeline of projects, attracting the necessary financing and competing on a level playing field globally. It is accompanied by a Communication on delivering on the EU’s offshore



energy ambition, including wind power, following up on the EU Offshore Renewable Energy Strategy adopted three years ago.

### **Avangrid and Copenhagen Infrastructure Partners Announce Largest Single Asset Tax Equity Financing and First Large-Scale Offshore Transaction in the U.S. – Avangrid**

Avangrid, Inc., a leading sustainable energy company and member of the Iberdrola Group, and Copenhagen Infrastructure Partners (CIP), a global leader in green energy investment, recently announced that the Vineyard Wind 1 project closed a first-of-its-kind tax equity package for commercial scale offshore wind with three US-based banks. The \$1.2 billion investment transaction was reached with J.P. Morgan Chase, Bank of America and Wells Fargo, making it the largest single asset tax equity financing and the first for a commercial scale offshore wind project. Vineyard Wind 1 is an 800 MW project located 15 miles off the coast of Martha's Vineyard and will be the first commercial scale offshore wind project in the United States.

### **Technology collaboration secures new £4.7m investment in high value design for next-generation composite offshore wind turbines – Offshore Renewable Energy (ORE) Catapult**

The Joule Challenge, the UK Government-funded collaborative programme aimed at helping develop a manufacturing capability for the large components integral to the offshore wind turbines of the future, will focus on the demonstration of radical new composite-based components in its next phase. Funded by the Department for Energy Security and Net Zero's £1 billion Net Zero Innovation Portfolio, the new £4.7 million 18-month phase of the programme brings together UK Government, offshore wind industry experts and the composite supply chain to drive a step-change in technology and manufacturing processes to make the turbines of the future today's reality. The Joule Challenge explores the significant performance and lightweighting opportunities of composites, to address the technical challenge of developing the next generation floating wind turbine platforms up to 20 MW.