



**18 February 2022**

[Tethys](#) is an online knowledge hub that facilitates the exchange and dissemination of information on the environmental effects of wind and marine energy. The bi-weekly *Tethys Blast* highlights new publications in the [Tethys Knowledge Base](#); relevant announcements, opportunities, and upcoming events; and news articles of international interest. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. Email [tethys@pnnl.gov](mailto:tethys@pnnl.gov) to contribute!

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## **Announcements**

### New Podcast Episode

Pacific Northwest National Laboratory's Andrea Copping was recently interviewed by Sea Change Radio on [The Latest on Marine Energy Projects](#). Listen to the full episode for free now!

### Request for Information

The US Department of Energy (DOE) Wind Energy Technologies Office recently released a [Request for Information](#) to solicit feedback on social science research needs relating to the effects of offshore wind development on communities, in the context of a clean and just energy transition. Responses must be submitted by 5:00pm EST (10:00pm UTC) on 11 March 2022.

### Biofouling Survey

As part of the GloFouling Partnerships Project, the World Ocean Council is conducting a [survey](#) to identify challenges, priorities, trends, and management practices related to biofouling and invasive species in various ocean industries, including offshore renewable energy. The deadline to submit responses is 28 February 2022.

## OES-BECS Call for Proposals

The International Network on Offshore Renewable Energy recently announced the [2022 Call for Blue Energy Collaborative Scholarships \(BECS\) Proposals](#) is now open through 15 April 2022. Sponsored by Ocean Energy Systems (OES), the BECS grant aims to advance research and promote collaboration amongst early-career professionals from diverse disciplines and nations.

## Calls for Abstracts

The [Call for Abstracts and Symposia](#) for the New York State Environmental Technical Working Group's [2022 State of the Science Workshop on Wildlife and Offshore Wind Energy](#) is now open through 14 March 2022. The hybrid event will be held on 26-28 July 2022 in New York, US.

The [Call for Abstracts](#) for the [Pan-American Marine Energy Conference \(PAMEC 2022\)](#) is now open through 27 March 2022. PAMEC is planned for 12-15 June 2022 in Ensenada, Mexico.

The [Call for Abstracts](#) for the International Conference on Ocean Energy (ICOE) and Ocean Energy Europe (OEE)'s annual event is now open until 31 March 2022. The Basque Energy Cluster and OEE will host [ICOE-OEE 2022](#) on 18-20 October 2022 in San Sebastián, Spain.

## Funding & Testing Opportunities

The US DOE recently launched the [Inclusive Energy Innovation Prize](#), which will provide cash prizes of up to \$250,000 to groups and organizations that support entrepreneurship and innovation in communities historically underserved in climate and energy technology funding. Phase One submissions are due by 5:00pm EST (10:00pm UTC) on 25 February 2022.

The US National Offshore Wind Research and Development Consortium has released their [Innovations in Offshore Wind Solicitation 2.0](#). Concept papers for Round 2: Environmental Shared Use, Power Systems & Interconnection are due 9 March 2022.

The [US Testing Expertise and Access for Marine Energy Research \(TEAMER\)](#) program, sponsored by DOE and directed by Pacific Ocean Energy Trust, is offering [open water support for marine energy testing](#). Open Water Support applications may be submitted at any time, while applications for its [6<sup>th</sup> Request for Technical Support](#) are now available and due 17 March 2022.

The Oceanic Platform of the Canary Islands (PLOCAN) recently announced the launch of its [Winter Access Call](#) for the use of its facilities and services by public research groups and by the private sector, both national and international communities. Applications are due 20 March 2022.

## Student & Employment Opportunity

The Environmental Research Institute, part of North Highland College, is recruiting an [Energy Research Associate](#) to join its multidisciplinary group working at the forefront of the energy transition across Scotland and internationally. Applications are due 2 March 2022.

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## Upcoming Events

### Upcoming Workshops

The [12<sup>th</sup> Hawai'i Okinawa Clean Energy Workshop](#) will take place online on 15-24 February 2022. This year features four primary themes including, “Renewable Ocean Energy Utilization.” Presentations will be available on-demand, and a real-time panel discussion will take place on 24 February 2022 at 3:00pm HST (1:00am UTC). Register for free [here](#).

OES-Environmental is hosting a two-part Innovation Session on the future of wave energy in Hawaii as part of the [2022 Ocean Sciences Meeting](#) (OSM) from 11:30am-1:30pm PST (7:30-9:30pm UTC) on 1-2 March 2022. The interactive event will use online breakout sessions, engaging marine scientists to brainstorm what it would take to extract power sustainably and efficiently from waves in Hawaii. Register [here](#).

### Upcoming Webinars

As part of the [SEER project](#), the National Renewable Energy Laboratory and Pacific Northwest National Laboratory are hosting their [final webinar](#) on the environmental effects of offshore wind energy from 8:00-9:30am PST (4:00-5:30pm UTC) on 24 February 2022. The webinar will feature presentations and panel discussions on the effects of electromagnetic fields and vessel collision on marine life. Register [here](#). Recordings of the past three webinars are available [here](#).

Open Communications for the Ocean is hosting a webinar on a new tool for assessing the ecological risks of wave energy converters at 12:00pm EST (5:00pm UTC) on 1 March 2022. Developed by AZTI, the [WEC-ERA Tool](#) is a new open-access tool for managers, decision makers, industry, and others to assess environmental impacts of new projects. Register [here](#).

The US DOE's Water Power Technologies Office (WPTO) is hosting its Semiannual Stakeholder Webinar from 1:00-2:00pm EST (6:00-7:00pm UTC) on 10 March 2022. During the webinar, WPTO leadership will review accomplishments, preview what's yet to come, and discuss investments that will come from the Bipartisan Infrastructure Law. Register [here](#).

### Upcoming Conferences

The [International Network on Offshore Renewable Energy](#) is hosting its 2021-2022 Annual General Meeting from 3:00-4:00pm UTC on 24 February 2022 online. Register [here](#).

Bureau Waardenburg and the Dutch government are hosting the [6<sup>th</sup> Conference on Wind Energy and Wildlife Impacts](#) (CWW 2022) on 4-8 April 2022 in Egmond aan Zee, the Netherlands. Early bird registration is available through 1 March 2022.

The National Hydropower Association is hosting [Waterpower Week 2022](#) on 5-7 April 2022 in Washington, DC, US. Early bird registration has been extended through 18 February 2022.

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## New Documents on *Tethys*

### Marine Energy

#### [Application of Marine Spatial Planning tools for tidal stream farm micro-siting](#) – Álvarez et al. 2022

The operation of tidal stream energy farms may interfere with other uses of the marine space, especially in depth-limited areas (estuaries, rivers, etc.) which are typically subject to multiple demands of use. The Marine Spatial Planning Directive (MSP) was passed by the European Commission in 2014 to ensure a harmonic coexistence between different maritime activities and to protect the marine environment. In this context, the objective of this work is to present a methodology based on MSP tools for tidal-farm siting in depth-limited areas. The methodology is illustrated through a case study: Ria de Ribadeo, a shallow-water estuary in NW Spain. Having considered a number of uses (archaeological, biodiversity, fishing, aquaculture, recreational and navigation), two exploitable tidal farm sites with annual energy densities of 1 GWhm<sup>-2</sup> were found.

#### [It Is a Balancing Act: The Interface of Scientific Evidence and Policy in Support of Effective Marine Environmental Management](#) – Lonsdale et al. 2022

The marine environment is a complex system, and with growing human demand, the sustainable use of multiple marine resources is continually challenged. The increasing complexity of overlapping marine activities causes pressures on the environment. Here, we review the fundamental aspects for effective marine management, particularly the role of science and scientific evidence to inform marine policy and decision making. The outcomes of internal expert workshops were used to analyse currently applied marine management practices in the UK using four marine sectors in English waters based on the expertise: environmental impact assessments; dredge and disposal operations; marine protected areas; and offshore renewable energy.

#### [Sector Locational Guidance: Enabling Evidence for Sustainable Development Wave Energy](#) – Welsh Government 2022

The purpose of this document is to support characterisation of areas in Wales where there is good potential for wave energy projects to prosper. Bringing together technical and environmental knowledge with information on key social, cultural, and economic issues and using this to understand future potential opportunities that can support and enable the sustainable development of the sector. This Sector Locational Guidance provides a relevant evidence base for wave energy developers interested in operating in Welsh waters, highlighting key considerations and issues that may need to be addressed during project development and licensing processes. It will also inform the ongoing marine planning process.

## Wind Energy

### [Climate change effects on the ecophysiology and ecological functioning of an offshore wind farm artificial hard substrate community](#) – Voet et al. 2022

In the effort towards a decarbonised future, the local effects of a proliferating offshore wind farm (OWF) industry add to and interact with the global effects of marine climate change. This study aimed to quantify potential ecophysiological effects of ocean warming and acidification and to estimate and compare the cumulative clearance potential of suspended food items by OWF epifauna under current and future climate conditions. To this end, this study combined ecophysiological responses to ocean warming and acidification of three dominant colonising species on OWF artificial hard substrates (the blue mussel *Mytilus edulis*, the tube-building amphipod *Jassa herdmani* and the plumose anemone *Metridium senile*). In general, mortality, respiration rate and clearance rate increased during 3- to 6-week experimental exposures across all three species, except for *M. senile*.

### [An Updated Review of Hypotheses Regarding Bat Attraction to Wind Turbines](#) – Guest et al. 2022

Patterns of bat activity and mortalities at wind energy facilities suggest that bats are attracted to wind turbines based on bat behavioral responses to wind turbines. For example, current monitoring efforts suggest that bat activity increases post-wind turbine construction, with bats making multiple passes near wind turbines. We separated the attraction hypothesis into five previously proposed explanations of bat interactions at or near wind turbines, including attraction based on noise, roost sites, foraging and water, mating behavior, and lights, and one new hypothesis regarding olfaction, and provide a state of the knowledge in 2022. Our review indicates that future research should prioritize attraction based on social behaviors, such as mating and scent-marking, as this aspect of the attraction hypothesis has many postulates and remains the most unclear.

### [Effects of pile driving sound on local movement of free-ranging Atlantic cod in the Belgian North Sea Auteurs](#) – van der Knapp et al. 2022

The construction of offshore wind farms contributes to the ocean soundscape as steel monopile foundations are commonly hammered into the seabed to anchor wind turbines. This pile driving activity causes repeated, impulsive, low-frequency sounds, reaching far into the environment, which may have an impact on the surrounding marine life. In this study, we investigated the effect of the construction of 50 wind turbine foundations, over a time span of four months, on the presence and movement behaviour of free-swimming, individually tagged Atlantic cod. The turbine foundations were constructed at a distance ranging between 2.3-7.1 km from the cod, which resided in a nearby, existing wind farm in the southern North Sea.

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## News & Press Releases

### Marine Energy

#### [Nova Innovation wins seabed lease to help drive Shetland's clean energy future](#) – Nova Innovation

Nova Innovation (Nova) plan to develop their largest tidal energy array to date at Yell Sound in Shetland and boost decarbonisation of the local energy supply. Nova has been awarded an Option Agreement from Crown Estate Scotland to develop a 15MW tidal array at Yell Sound, between the islands of Yell and Bigga, that is predicted to meet over a third of household electricity demand in Shetland. This new tidal energy site will build on the success of the world's first offshore tidal array that Nova created in neighbouring Bluemull Sound. Since 2016, the Shetland Tidal Array in Bluemull Sound has been transforming the raw power of the North Atlantic into clean, predictable energy, powering Shetland's homes, businesses and grid. The turbines will be manufactured at Nova's facility in Edinburgh.

#### [ITSASDRONE gearing up for wave energy monitoring mission at BiMEP \(Video\)](#) – Offshore Energy

The ITSASDRONE, an Autonomous Surface Vehicle (ASV) developed by Spanish research institute AZTI, has completed the first sea trials ahead of deployment at BiMEP to monitor Wello's Penguin wave energy device. Suitable for long term missions of three months or more, the drone operates 100% on renewable energy in the marine environment and with a zero-emission propulsion system. Built by Branka Composites and AZTI, the applications of the drone may range from oceanographic, meteorological, or biological research to control by marine authorities, including target monitoring. ITSASDRONE will be used at the Biscay Marine Energy Platform (BiMEP) around Wello's Penguin wave energy device, to monitor the potential reef effect of the presence of structures in the surface of the water, AZTI said.

#### [A Window Into the Future of Wave Energy: Award Helps Move Cost-Effective, Productive, Robust Wave Energy Design a Step Closer to Commercialization and Widespread Use](#) – National Renewable Energy Laboratory

Wave energy technology needs to be cheaper, produce more energy, and brave the ocean's brawn better and for longer. Now, the marine energy team at the National Renewable Energy Laboratory (NREL), has designed a system that could achieve all three needs. The variable-geometry, oscillating, surge wave energy converter creates windows for waves to pass through so wave energy devices don't bear the full force of their power. The design could also be more cost-effective, productive, and resilient. Two years ago, that concept earned a competitive award from the U.S. Department of Energy's Technology Commercialization Fund (TCF), a nearly \$30-million funding opportunity designed to help promising, high-impact energy technologies move toward commercialization.

## **Carnegie awarded EuropeWave PCP Contract – Carnegie Clean Energy**

Carnegie, via its wholly owned subsidiary, CETO Wave Energy Ireland Limited, has been selected as 1 of 7 contractors to deliver Phase 1 of the €20m EuropeWave Pre-Commercial Procurement (PCP) Programme, a competitive programme to advance wave energy. Carnegie has been awarded €291k (A\$463k) for Phase 1 to deliver a CETO tank testing campaign and a CETO concept design for sites in Scotland and the Basque Country, subject to contract signing. Phase 1 will commence on 3rd January 2022 and run for 7 months. With almost €20 million in funding for the 3 phases of the programme, which runs from 2022 to 2026, the EuropeWave PCP is a collaboration between Wave Energy Scotland (WES), a subsidiary of the Scottish Government's Highlands and Islands Enterprise and the Basque Energy Agency (EVE).

## **Ocean Oasis to test at PLOCAN in Gran Canaria – Ocean Oasis**

Ocean Oasis COO Sebastian Feimblatt and CTO Thomas Berge Johannessen recently visited PLOCAN (Oceanic Platform of the Canary Islands) CEO Jose Joaquin Hernandez Brito and team to formalize the plan towards the research and testing taking place at PLOCAN's offshore test site later this year. PLOCAN provides multipurpose technical-scientific service infrastructure that provides support supporting research, technological development and innovation in the marine and maritime sectors. PLOCAN will provide the necessary research infrastructure and support for the testing of Ocean Oasis' full-scale pilot desalination buoy. Ocean Oasis will establish an office and part of its R&D activities in Gran Canaria.

## **Wind Energy**

### **Governor Hochul Announces Start of Construction of New York's First Offshore Wind Project – South Fork Wind**

Governor Kathy Hochul recently, alongside United States Secretary of the Interior Deb Haaland and other elected officials, celebrated the start of construction of South Fork Wind, New York's first offshore wind project, jointly developed by Ørsted and Eversource off the coast of Long Island. Building on the Bureau of Ocean Energy Management's (BOEM) January issuance of the Final Sale Notice for the New York Bight, the recent key offshore wind contract milestone, and the State of the State announcement of a nation-leading \$500 million investment in offshore wind ports, manufacturing, and supply chain infrastructure to accompany New York's next offshore wind solicitation, New York continues to advance the Climate Leadership and Community Protection Act goal to develop 9,000 megawatts of offshore wind by 2035.

### **Norway to launch 1.5 gigawatt offshore wind tender – Reuters**

Norway will launch later this year its first tender for bottom-fixed offshore wind turbines in the southern North Sea, planning to develop 1.5 gigawatt of electricity that will supply

the Norwegian mainland, the country's government said on Wednesday. Offshore wind is seen as a key new industry offering a potential transition for Norway's dominant oil and gas sector to a renewable energy future, while building on the existing industry's technical know-how. The first turbines could be completed in the second half of this decade, Prime Minister Jonas Gahr Støre said in a news conference, adding that government subsidies may be needed to get the project going. A planned second development phase, in the same area of the southern North Sea, will come later, have the same capacity and may supply power to the European continent, Støre said.

### **Engineers are building bridges with recycled wind turbine blades – The Verge**

On a former train track bed connecting the towns of Midleton and Youghal in County Cork, Ireland, workers recently excavated the rusted remains of an old railway bridge and installed a pedestrian one in its place. The bridge would have been an unremarkable milestone in the development of a new pedestrian greenway through the Irish countryside, if not for what it's made of: recycled wind turbine blades. That makes it just the second "blade bridge" in the world. The first, installed last October in a small town in western Poland, officially opened in early January. The engineers and entrepreneurs behind these bridges are hopeful they represent the beginning of a new trend: repurposing old wind turbine blades for infrastructure projects. It keeps them out of landfills and saves energy required to make new construction materials.

### **The first turbine of Italy's first offshore wind farm, Beleolico, has been installed – Eni**

The first of ten turbines of the Beleolico offshore wind farm, the first in Mediterranean waters, has been installed. It is a fixed foundation wind turbine with a capacity of 3 MW, positioned in the roadstead off the port of Taranto, about 100 metres from the coast. To be precise, the facility is more likely to be classified as *nearshore* but, terminology aside, this is a decisive moment for exploitation of wind energy in the Mediterranean Sea. When fully operational, the plant will consist of ten turbines with a total capacity of 30 MW, able to produce over 58,000 MWh, equal to the annual energy needs of 60,000 people. In environmental terms, this means that it will save around 730,000 tonnes of CO<sub>2</sub> during its planned 25-year life.

### **UK Government grants consent for Vattenfall's Norfolk Vanguard Offshore Wind Farm – Vattenfall**

The UK Government has recently awarded planning consent for Vattenfall's Norfolk Vanguard Offshore Wind Farm. Both projects in Vattenfall's proposed Norfolk Offshore Wind Zone have now been approved, in a major boost to the UK Government's plans to deploy 40GW of offshore wind by 2030. The zone will produce enough power annually for the equivalent of 3.9million UK homes, with Norfolk Vanguard and Norfolk Boreas providing up to 3.6GW of renewable electricity capacity once operational. Helene Biström, Head of Business Area Wind at Vattenfall, said: "Norfolk Vanguard and Norfolk Boreas are industry leading projects, with their designs coordinated to minimise the impact on the environment and communities.