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[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

2024 State of the Science Report

Ocean Energy Systems (OES)-Environmental has released a draft of the [OES-Environmental 2024 State of the Science Report: Environmental Effects of Marine Renewable Energy Development Around the World](#) for public comment. If you would like to provide feedback on the draft report, please [complete this review form](#) by 28 June 2024. The draft report serves as an update to the [2020 State of the Science Report](#) and features several new sections, including resources to advance marine renewable energy and moving beyond stressor-receptor interactions.

Pacific Research Projects Finder

Did you know the U.S. Offshore Wind Synthesis of Environmental Effects Research ([SEER](#)) project launched a [Pacific Coast Offshore Wind Environmental Research Project Finder](#) on Tethys? The tool compiles information on environmental research projects related to offshore wind energy development along the U.S. Pacific Coast (California, Oregon, Washington), including key project details and links to relevant project outputs (e.g., reports, journal articles, datasets). If you would like to submit a project for inclusion, please complete this [survey](#).

ETIPP Applications Open

The U.S. Department of Energy (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.

BOEM Seeking Public Input

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking public input on its Draft Environmental Analysis for its [Gulf of Maine](#) Offshore Wind Area through 22 July 2024. BOEM is also [seeking ideas](#) for baseline environmental and socioeconomic studies to inform decisions on potential offshore wind energy activities in the U.S. territories, as well as information on entities in the U.S. territories that have the capabilities, expertise, and interest in carrying out environmental monitoring and conducting studies. The deadline to respond is 23 August 2024.

Calls for Abstracts

The [Call for Abstracts](#) for the [Nova Scotia Offshore Wind Research & Development Conference](#) is now open through 24 June 2024. The conference will take place 23-24 September 2024 in Halifax, Nova Scotia, alongside the [OCEANS 2024 Halifax Conference & Exhibition](#).

The American Geophysical Union (AGU) has opened the [Call for Abstracts](#) for the [AGU 2024 Annual Meeting](#) through 31 July 2024. AGU 2024 will take place 9-13 December 2024 in Washington, D.C. and will feature a session on [Marine Energy to Power the Blue Economy](#).

The Ocean Thermal Energy Association has opened the Call for Speakers for the [10th International Ocean Thermal Energy \(OTEC\) Symposium](#) through 31 July 2024. The symposium will take place 4-5 December 2024 in Rio de Janeiro, Brazil.

The Call for Abstracts for [7th Asian Offshore Wind, Wave and Tidal Energy Conference \(AWTEC 2024\)](#) has been extended through 31 July 2024. AWTEC will take place 20-24 October 2024 in Busan, South Korea.

The [Call for Abstracts](#) for [Floating Wind Solutions 2025](#) is now open through 1 August 2024. Floating Wind Solutions will take place 15-17 January 2025 in Houston, Texas, U.S.

The [Call for Abstracts](#) for [WindEurope's Annual Event 2025](#) is now open through 6 September 2024. The annual event will take place 8-10 April 2025 in Copenhagen, Denmark.

The [Call for Abstracts](#) for the [Offshore Technology Conference \(OTC 2025\)](#) is open through 10 September 2024. OTC will take place 5-8 May 2025 in Houston, Texas, U.S.

Funding & Testing Opportunities

The National Fish and Wildlife Foundation is soliciting proposals to promote the development and adoption of innovative technologies that can help reduce vessel strikes of the endangered North Atlantic right whale. The [Vessel Strike Avoidance Fund 2024](#) will award up to \$6 million in grants, pending availability of funding. Pre-proposals are due 25 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.

The National Offshore Wind Research and Development Consortium (NOWRDC) intends to run a competitive solicitation, “[Solicitation 4.0 - Innovations in Floating Offshore Wind](#)”, that will fund \$10.6 million of projects that address several major areas of need for floating offshore wind, including uncrewed underwater vehicles for environmental monitoring. The full solicitation is expected to be published in August 2024.

Career Opportunities

Biodiversity Research Institute (BRI) is seeking a conscientious and detail-oriented [Marine Staff Scientist](#) to work on offshore wind and wildlife issues for its non-profit organization located in Portland, Maine, U.S.

The European Marine Energy Centre (EMEC) is looking for a [Project Portfolio Manager](#) to manage the delivery of decarbonisation projects underneath the Islands Centre for Net Zero (ICNZ) and a [Business Development Coordinator](#) to identify, develop, and secure opportunities for EMEC to grow its portfolio of projects. Applications are due 21 June 2024.

Renewable Energy Wildlife Institute (REWI) is launching a search for a new [Executive Director](#) to lead REWI to its next level of financial, programmatic, and organizational success. Applications are due 31 July 2024.

Upcoming Events

Upcoming Webinars

The National Renewable Energy Laboratory's Enabling Coexistence Options for Wind Energy and Wildlife ([ECO Wind](#)) project is hosting the inaugural webinar in a multi-part series, “[Perspectives on Wind-Wildlife Constraints to Buildout Webinar 1: Siting](#)”, on 21 June 2024 from 11:00am-12:00pm MDT (5:00-6:00pm UTC). [Register here.](#)

The U.S. DOE is hosting a webinar, “[Pathways to Commercial Liftoff: Offshore Wind](#)”, on 25 June 2024 from 3:00-4:00pm EDT (7:00-8:00pm UTC). The webinar will deep dive into the recently published [Offshore Wind Pathways to Commercial Liftoff report](#). [Register here.](#)

Oceanic Network is hosting a new monthly [Research + Innovation Webinar Series](#) that features the latest research in offshore wind and ocean renewables. The first webinar, “[Whale Mortalities & Offshore Wind in the News: Analyzing Community Perceptions in New England](#)”, will take place on 18 July 2024 from 11:00am-12:00pm EDT (6:00-7:00pm UTC) and review the results of 35 community interviews carried out in 2022. [Register here.](#)

The [SEER](#) team is continuing its free, public webinar series to share the latest research on the potential environmental effects of offshore wind energy development. The next webinar, [Oceanographic Responses to Offshore Wind: From First Principles to Potential Effects](#), will take place on Tuesday, July 23, 2024 from 9:00-10:00am PDT (4:00-5:00pm UTC). The speakers will describe the models and methods used to study interactions between oceanographic processes and offshore wind, highlighting studies from Europe and the United States. [Register here.](#)

Upcoming Workshop

The Supergen Offshore Renewable (ORE) Hub is hosting a virtual [Flexible Funding Call Brokerage Workshop](#) on 4 July 2024 from 2:30-4:30pm BST (1:30-2:30 UTC) to facilitate industry-academia collaborations and develop high-quality submissions to the upcoming call.

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

Protecting the Ocean and Supporting Rural Coastal Communities through Responsible Marine Renewable Energy – Ocean Conservancy 2024

The burning of fossil fuels for energy is having widespread and cascading consequences on the ocean. Thus far, the ocean has absorbed more than 90% of the heat and 30% of the carbon dioxide emissions produced from burning oil and gas. This is causing ocean waters to warm and become more acidic, driving sea level rise, and habitat degradation and loss, including coral bleaching. Coastal communities are also experiencing the effects of climate change—from more destructive storms, to flooding and erosion. Yet, at the same time, many of the most vulnerable of these seaside communities are also highly reliant on the importation of environmentally damaging fossil fuels for electricity and heat generation. While adapting to the effects of climate change will be critical for communities, the best path forward for a healthy and safe future for people and the environment is to end the use of fossil fuels and shift to clean renewable energy sources.

Impact of Wave Energy Converters and Port Layout on Coastal Dynamics: Case Study of Astara Port – Moradi & Ilinca 2024

In the face of depleting fossil energy and the imperative of sustainable development, there is a compelling drive towards advancing renewable energies. In this context, sustainable and predictable alternatives, like marine energy, gain prominence. Marine energy presents a cleaner option devoid of the adverse effects associated with fossil fuels, playing a crucial role in environmental sustainability by safeguarding coastlines against erosion. This study focuses on Astara Port in the Caspian Sea, exploring the utilization of wave energy converters (WECs). The originality of this study's research lies in exploring WECs' dual role in energy generation and coastal protection. Using MIKE21 software simulations, the impact of number, location, arrangement, and orientation of WECs across various scenarios was investigated.

Cultural Licence to Operate in the Blue Economy: Final Project Report – Hunter et al. 2024

In an era of heightened awareness of environmental protection and sustainability, the legitimacy of industry operations is increasingly being questioned by the public. Industries are needing to obtain the trust and ongoing broad acceptance of the community for business continuity. The need to attain a Cultural Licence to Operate (CLO) by respectfully and fairly working alongside First Nations People is not a topic that is well explored. In this study, we develop a preliminary CLO framework as a responsive way to guiding the implementation pathway to improve change. This report presents outcomes from a Trans-Tasman scoping project funded by the Blue Economy CRC for 18 months. This Indigenous-led study set out to build the architecture of the CLO framework, without such clarity, CLO risks not being a credible concept for the purposes for which it can be used for responsible and equitable development.

Wind Energy

Integrated Environmental & Social Sensitivity Mapping: Guidance for Early Offshore Wind Spatial Planning – World Bank Group 2024

While offshore wind is critical to reducing carbon emissions and helping to achieve universal energy access as envisioned by the United Nations' Sustainable Development Goal 7, we must ensure that such turbines are installed in a way that they do not endanger marine life or harm human development. Coastal communities rely on a healthy ocean to run businesses, secure food, and prosper. Therefore, when planning and building offshore wind projects, stakeholders must consider appropriate environmental and social (E&S) sensitivities to protect biodiversity and marine and coastal ecosystem services that underpin economic activity and food security. This guidance document, Integrated Environmental and Social Sensitivity Mapping—Guidance for Early Offshore Wind Spatial Planning (SenMap), is designed to support government planners in emerging market countries to identify potential areas for offshore wind development with the lowest E&S sensitivity.

Spatial planning offshore wind energy farms in California for mediating fisheries and wildlife conservation impacts – White et al. 2024

Achieving a blue economy will require reconciling the value of emerging ocean uses with their impacts on the seascape and sectors with historical access to marine resources and areas. To meet this challenge, we developed an analytical framework for conducting marine spatial planning through tradeoff analysis, and applied it to prospective offshore wind energy development in the ~974 km² Morro Bay, California, USA Wind Energy Area (WEA). We generated spatial data layers estimating MW power production and impacts on fisheries value and marine wildlife conservation (seabird and cetacean populations) from wind farm development. We then quantified each sector's response to plans of development across the WEA and inside three leases recently acquired by the energy industry for prospective development.

Perspectives on using Protected Species Observer (PSO) data to fill knowledge gaps about marine species distributions and habitat use – Ganley et al. 2024

Responsible offshore wind energy development requires addressing knowledge gaps of marine mammal distribution and response to wind energy development. Data collected by Protected Species Observers (PSOs) could help fill these gaps if they were used to fit species distribution models. However, because PSO data are not systematically collected, a critical exploration of their potential utility is needed. We reviewed PSO data collected during offshore wind geophysical surveys. Our intention was to compare predictions from two species distribution models—one model fit with systematically collected data and the second model fit with PSO data. However, developing a model using the PSO data was impossible due to data collection and reporting procedures. Therefore, we reframed our question to “What changes would be necessary for PSO data to be used to understand species distributions?”

News & Press Releases

Marine Energy

Inyanga Marine Energy Group and Verdant Morlais agree pioneering tidal energy partnership – Inyanga Marine Energy Group

Inyanga Marine Energy Group and Verdant Morlais Ltd (VML) have signed a Memorandum of Understanding to deliver a 4.9MW tidal stream energy project at Morlais in Wales, the largest consented tidal energy scheme in Europe. The project will take place in a berth close to the 10MW project awarded to Inyanga through the UK Government ‘Contracts for Difference’ Allocation Round 5 in September 2023, which will utilise Inyanga’s patented HydroWing tidal stream technology. VML was also awarded a 4.9MW tidal project at Morlais in Allocation Round 5. VML is a joint venture company established by Verdant Power, Inc. (New York, USA) and Duggan Brothers

Contractors Ltd (Ireland) to assess and develop tidal energy projects in Ireland and the United Kingdom.

MacArtney's GreenLink enhances wave energy testing at world-class marine site – MacArtney Underwater Technology

MacArtney's GreenLink terminations will connect innovative technology at PacWave South. This cutting-edge platform, run by Oregon State University, is for testing and optimising marine energy devices in open-ocean environments, driving the application of wave energy as a reliable power source. Through PacWave South (PWS), a full-scale test facility featuring four offshore test berths, Oregon State University (OSU) provides the necessary infrastructure for U.S. and international wave energy innovators to feed the electricity grid with alternative power sources. The project received significant investment from the U.S. DOE to support the development of carbon-free wave energy conversion (WEC) technologies. PWS covers an area of 2 square nautical miles and is licensed to support testing up to 20 commercial-scale WECs.

Green Marine UK Partners with US-Based C-Power to Advance Autonomous Offshore Power Systems – Green Marine

Green Marine (UK) has joined US-based C-Power's Partner Engagement and Co-development (PEC) Program to advance autonomous offshore power systems. C-Power is a leader in the emerging ocean energy sector, with decades of wave-energy technology development experience. As a PEC Program member, Green Marine UK will participate as a collaboration partner in an upcoming demonstration of C-Power's industry-leading SeaRAY autonomous offshore power system (AOPS). The 18-month SeaRAY field test is expected to commence in the first quarter of 2025 at the PacWave South wave energy test site off the Oregon coast. During the deployment, C-Power plans to demonstrate the breadth and depth of the SeaRAY's capabilities simultaneously supporting surface and subsurface mobile and static assets in the ocean with power and data communications.

InfinityWEC shows significant improvement in energy output and motion control with moment-based MPC – Ocean Harvesting

Ocean Harvesting is currently developing generation 6 of its wave energy converter InfinityWEC in close collaboration with ball screw manufacturer NSK. A ball screw is a very good actuator providing a high ratio between linear motion and rotation to the generator, high efficiency, low weight, and long life. However, ball screws are sensitive to the side forces and bending moments in the Power Take-Off (PTO) caused by the surge motion of the buoy and high speeds that may occur in large waves. This challenge in the design of the PTO has been solved with a new linear guide system and increased control force. Ocean Harvesting is now implementing and evaluating a moment-based MPC (model predictive control) in InfinityWECs simulation model, showing significant improvement in energy output and computation time.

Lloyd's Register awards Quoceant an IECRE Feasibility Statement for the Q-Connect system – Lloyd's Register

Innovative offshore engineering consultants Quoceant Ltd. have received an IECRE Feasibility Statement from Lloyd's Register, a recognised renewable energy certification body (RECB), for their modular, quick connection system, Q-Connect. This statement was issued following a robust assessment of the Q-Connect system through the Technology Qualification process in accordance with IEC TS 62600-4 and IECRE OD 310-4. The Q-Connect system is designed to integrate with a range of mooring and cabling technologies to support offshore floating wind systems, wave and tidal energy systems, floating substations and other harsh environment floating offshore applications. The technology provides a 'hands free', fast, remote connection and disconnection operation for both moorings and electrical systems either simultaneously or individually, without the intervention of personnel or taut lines on deck.

Wind Energy

First wind turbine installed at Borkum Riffgrund 3, Germany's largest offshore wind farm – Ørsted

The first wind turbine has successfully been installed at the German offshore wind farm Borkum Riffgrund 3. With an installed capacity of 913 MW, it will be the largest offshore wind farm in Germany once in operation. Borkum Riffgrund 3 is also the first offshore wind farm to be awarded without subsidies in the world. This has primarily been made possible by several long-term corporate power purchase agreements (CPPA), which Ørsted has signed with industrial and technology customers. Borkum Riffgrund 3 is jointly owned by Ørsted and Nuveen Infrastructure. This important milestone for Borkum Riffgrund 3 follows shortly after the successful delivery of first power from the 253 MW Gode Wind 3 Offshore Wind Farm, which Ørsted and Nuveen Infrastructure are constructing simultaneously with Borkum Riffgrund 3.

MPS Signs Agreement with Associated British Ports to Support the Deployment of Floating Offshore Wind in the Celtic Sea – Marine Power Systems

To coincide with the start of Renewable UK's Global Offshore Wind trade show in Manchester, Associated British Ports (ABP), the UK's largest and leading ports operator has announced a new collaboration with Marine Power Systems (MPS), a Wales based floating wind technology developer to accelerate the advancement of floating offshore wind technology in the Celtic Sea. The Memorandum of Understanding (MOU) will involve working with MPS' to develop solutions that support the deployment of their advanced floating platform technology, PelaFlex, in the Celtic Sea from ABP's Port of Port Talbot. The platform is designed to support the rapid deployment of industrial scale floating offshore wind whilst maximising local benefits and reducing both risk and overall project costs.

RWE Announces Start of Site Investigation Campaign for its Canopy Offshore Wind Project off the Coast of Northern California – RWE

RWE recently announced the upcoming start of the site investigation survey work for its Canopy Offshore Wind Farm (Canopy) project off the coast of Northern California. This is a key milestone in the development of RWE's first commercial scale floating offshore wind farm. The planned 1.6 GW project has the potential to power 640,000 homes with clean offshore wind energy. Utilizing state-of-the-art technology, RWE's Canopy project will gather data about the federal lease area and the area between the lease and shore in federal waters. RWE has selected Argeo, a subsea service provider that has supported development of clean energy projects around the world, to perform the site investigation work for Canopy. Due to the water depths in the lease area off the Pacific Coast of the U.S., Argeo will utilize an autonomous underwater vehicle to conduct the surveys.

Equinor, Oceanex Energy Secure Feasibility Licence for Wind Project Offshore Australia – Offshore Wind

The Albanese government in Australia has offered Norway's Equinor and its partner Oceanex Energy a feasibility licence for the Novocastrian Wind offshore wind project in the Hunter region. If the feasibility for the Novocastrian Wind Pty Ltd project is proven, the developer can then apply for a commercial licence to build an offshore wind project to generate electricity commercially. Should the project go ahead, it would employ around 3,000 workers during construction and create around 200-300 permanent local jobs. The offshore wind farm would also inject development expenditure worth hundreds of millions of dollars into the Hunter region. The proposed offshore wind farm could generate over 2 GW of electricity, equivalent to powering 1.2 million homes.

World's Largest Offshore Wind Turbines Begin Testing in China – The Maritime Executive

Chinese manufacturers are pushing forward with their efforts to upsize turbines for offshore wind farms. Two of the largest turbines ever built, Envision Energy's 16.7 MW prototype and Dongfang Electric's 18 MW prototype, have both begun testing while even larger turbines are in the offing. The Chinese manufacturers are competing for the domestic market as well as looking to expand the international market for wind turbines. Envision Energy, founded in 2007 in Shanghai, reports that it completed the first grid connection for its 16.7 MW turbine. This surpasses the 16 MW turbine launched by China's Goldwind and installed offshore in Fujian Province in Southeast China. Last September, the 16 MW turbine claimed a new record reportedly producing 384.1 megawatt hours in 24 hours helped by the strong winds from an approaching typhoon.