

Powering the Future on Our Shores: Pacific Marine Energy Center – South Energy Test Site (PMEC-SETS)

Problem Statement

The emerging wave energy industry represents an opportunity for developing clean, reliable electricity to meet rising worldwide energy demands. Harnessing the untapped energy from ocean waves has significant potential to meet future global and national energy demand while addressing energy needs of the developing world. The worldwide marine energy market is projected to be nearly \$700 billion by 2050¹. At present, the wave energy industry lacks the testing infrastructure to commercialize the conversion technology.

Project Description

The Northwest National Marine Renewable Energy Center (NNMREC) at Oregon State University (OSU) is poised to address these infrastructural issues and to accelerate the growth of the emerging wave energy industry through the construction of its Pacific Marine Energy Center South Energy Test Site (PMEC-SETS). Located off the coast of Newport, Oregon, PMEC-SETS will be the first full-scale, grid-connected wave energy test site in the United States to support the development, testing, and commercialization of wave energy conversion technology. The site will provide four test berths for up to 20 wave energy converters (WECs) at a time. The site will be pre-permitted and designed as a one-stop shop for commercial testing, alleviating the regulatory and technical burdens for developers. While this test site is not intended as a permanent wave energy generation site, at any given time PMEC-SETS could support delivery of up to 20 MW of electricity to the grid.

PMEC-SETS will offer a robust wave energy environment allowing clients to better understand overall system performance and cost reduction strategies for deployment and operation in future regional energy production facilities. PMEC-SETS will advance technologies toward commercial readiness and cost-effective power delivery. Over the long run, PMEC-SETS will help the country increase the supply of renewable energy, improve economic development along coastal regions, and further diversify energy sources. This project has the potential of replacing the operation of conventional fossil-fueled facilities, avoiding carbon-based emissions and reducing the overall effects of climate change.

Recently, NNMREC was awarded a \$35 million U.S. Department of Energy (DOE) cooperative agreement to design, construct, and operate PMEC-SETS to test WECs and develop the infrastructure necessary to build this emerging energy source. PMEC-SETS is anticipated to become operational in 2021-2022.

Support and Funding Opportunity

PMEC-SETS has developed broad support from numerous marine industry leaders including national labs, regulatory agencies, scientific experts from around the world, industry partners, government representatives, the U.S. Navy, congressional leaders, Oregon Sea Grant, Oregon Fisherman Involved in Natural Energy (FINE), and coastal community collaborators throughout the Pacific Northwest. The project also has a group of potential clients that have expressed interest in testing at the facility.

The full cost for the test site is projected to be \$50 million. OSU has partnered with the OSU Foundation to help secure additional funding to support this project.

¹ Oregon Wave Energy Trust (OWET); Oregon Opportunity: Pacific Marine Energy Center, South Energy Test Site

Benefits of Participation in the Development and Construction of PMEC-SETS

The successful development of PMEC-SETS depends heavily on engagement and participation by a broad diversity of key stakeholders. While NNMREC will ensure strong project management and leadership of the multi-phase effort, the following potential partners' involvement and financial contributions will provide additional value and benefits to the project as follows:

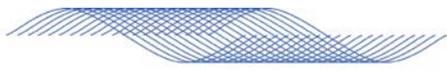
- State Government:
 - Local economic stimulation through subcontracting jobs during construction;
 - Continuation of Oregon's long tradition of environmental innovation and leadership;
 - Global recognition of Oregon's leadership in advancing the utilization of renewable energy; and
 - Potential for sustained educational opportunities to train new generation of energy engineers and technicians.
- Industry:
 - Market development for next generation wave energy harvesting technology;
 - Risk mitigation for new product lines;
 - Dynamic product development and testing opportunities easily accessible to U.S. production facilities; and
 - Corporate social responsibility through support of a renewable energy portfolio.
- Non-Governmental Organizations:
 - Visible support for an under-invested renewable energy source; and
 - Educational opportunities for public awareness of global energy issues and potential solutions.
- Private philanthropy:
 - Stimulation for a more diversified energy production market;
 - Demonstration of U.S. leadership in a leading-edge technological arena; and
 - Social responsibility through support of a renewable energy portfolio.

A Promising Future and Further Applications

Wave energy is highly desirable due to its predictability, consistency, and close proximity to 50 percent of the world's population. The World Energy Council estimates that about 10 percent of worldwide electricity demand could be met by harvesting ocean energy. This renewable resource can be accurately forecast to provide the energy needs of utility scale or off-grid electricity production. Wave energy lends itself to a variety of applications beyond producing grid power, such as the potential for cooling data centers, supporting national security objectives by delivering on-site power for defense bases or navy hardware, and providing power production capabilities for remote communities that rely on carbon-based fuels. Wave energy is a clean, reliable solution for addressing many of the challenges associated with conventional energy systems.

PMEC-SETS is the gateway to this promising industry and to more accessible energy for the world.

Please support investing \$4.6 million in state matching funds for this important project.



COLUMBIA POWER TECHNOLOGIES
power from the next wave



VIGOR



February 6, 2018

Senate President Peter Courtney
State Representative Nancy Nathanson
Co-Chairs, Joint Ways & Means Committee
900 Court St. NE, Room H-178
Salem, OR 97301

Dear Co-Chairs Courtney and Nathanson:

We are writing in support of appropriating \$4.6 million in state funds to Oregon State University (OSU) during the 2018 legislative session to support the development of an offshore wave energy test facility six miles off the Oregon coast, near Newport.

Thanks to an initial state appropriation of \$800,000 during the 2016 session, OSU successfully competed for a \$5 million grant from the US Department of Energy (DOE) to continue planning and design for the offshore test facility. Since then, OSU has sought, and won, an additional \$30 million in federal funding appropriated by Congress to DOE.

As active participants nationally and internationally in the development of new, carbon-free marine renewable energy technologies, we urge you to support this effort. The offshore test facility will reinforce Oregon's international reputation as the destination for developers who are designing and creating marine energy conversion devices. Additionally, this project will support hundreds of jobs in the state, through construction and operations and management. Without the state matching funds, these federal investments will be lost. This modest commitment of state funds will ensure that Oregon retains its well-deserved reputation as an innovation hub – especially for new, reliable, and clean energy.

As important, it will create economic and environmental dividends that will reach far into the years ahead. Independent, third party analyses estimate this project will deliver significant returns to state and local economies as developers build, test, and refine their devices in Oregon. It is estimated that the project will result in over \$38 million in economic impacts statewide, including nearly \$18 million in labor income and 212 in new jobs. About \$5 million of these benefits will occur in Lincoln County.

Over the long term, wave-generated electricity poses significant global promise, particularly in coastal and island environments that currently rely on high-cost fossil fuels for generating electricity.

We urge you to support \$4.6 million funding in 2018 to continue development of the first world class offshore wave energy test facility in the United States. Please contact us should you have any questions or require additional information. Thank you in advance for your favorable consideration of this request.

Sincerely,



Tim Mundon
Chief Engineer, Oscilla Power



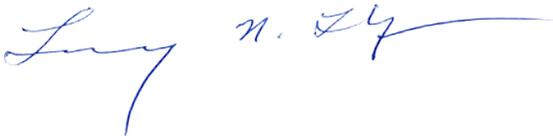
Jonathon Wright
Reedsport City Manager



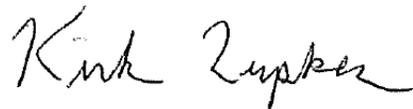
Bud Shoemake
Port Manager, Port of Toledo



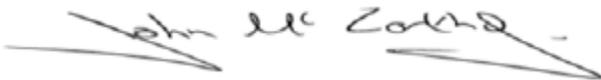
Corey Yraguen
Executive Vice President – Fabrication, Vigor



Reenst Lesemann
CEO, Columbia Power Technologies



Kirk Lupkes
Dresser-Rand, A Siemens Business
Seattle Technology Center Engineering Manager



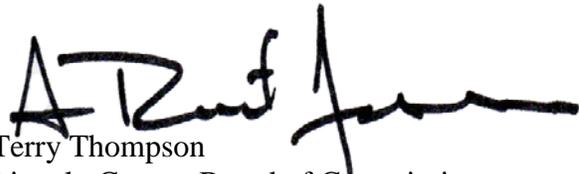
John McCarthy
CEO, Ocean Energy USA, LLC



Caitlin Sause
VP Government and Public Affairs, Sause Bros.



Debra Smith
General Manager, Central Lincoln PUD



Terry Thompson
Lincoln County Board of Commissioners