PMEC South Energy Test Site

Frequently Asked Questions About SETS

What is SETS?

SETS will be the utility scale, grid-connected, open ocean test facility for prototype and commercial scale wave energy converters (WECs) in the US, expected to be available in 2016. SETS will offer four test berths connected by subsea cables to a substation onshore, each with the capacity to test full-scale devices or arrays. The site will also gather weather and wave data from each test berth.

What is a "test berth"?

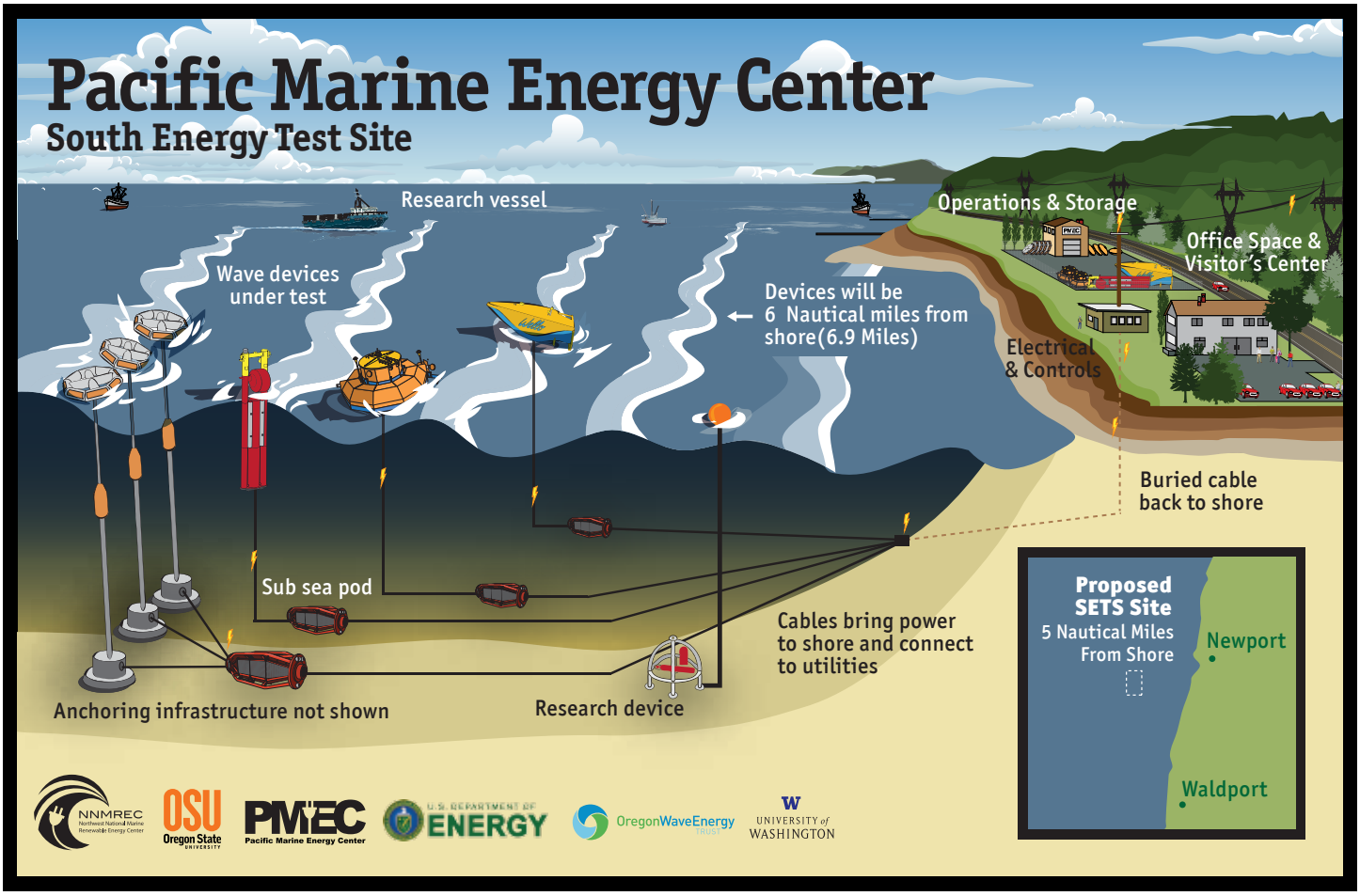
A test berth is a location in the ocean where a WEC (or small array of WECs) will be moored for testing. At the berth, the WEC will be connected to buried subsea cable through which electricity will be transmitted to an onshore facility, and then to the electrical grid.

Where will SETS be located?

SETS will be located in Newport, Oregon. The exact ocean location for SETS will be finalized during the permitting process in a zone that has been selected in collaboration with ocean stakeholders – an area that will not impede shipping lanes and takes environmental impacts into consideration.

Why was Newport chosen?

The selection was ultimately based on ocean site characteristics, marine and on-shore cable routes, port and industry capabilities, impacts to existing ocean users, permitting challenges, stakeholder participation in the proposal process, and support of the local fishing communities.



This illustration is an artistic rendition of what PMEC-SETS may look like.

PMEC South Energy Test Site

Why a grid-connected site in Oregon?

The absence of standardized testing facilities has been identified as a key barrier to the development of the marine energy industry. Oregon is uniquely poised to fill the testing needs of the industry with its tremendous ocean energy resource, available infrastructure, technical expertise, and political support.

What is the permitting process?

The sea- and land-based infrastructure associated with SETS will require local, state, and federal regulatory approvals. The Federal Energy Regulatory Commission (FERC) is the lead federal agency for the process and the Department of Interior's Bureau of Ocean Energy Management (BOEM) is a cooperating agency.

What are the potential benefits of SETS?

SETS's facilities will serve as an integrated test center for wave energy developers to evaluate performance and ecosystem impacts of a utility scale WEC or small array. At SETS, developers will have the opportunity to optimize their devices and arrays, learn about deployment, retrieval, operations and maintenance, while minimizing environmental impact and increasing reliability and survivability. Additionally, SETS will provide a training ground for future jobs in the ocean energy industry. The environmental clearance process and permitting for testing will be streamlined for developers testing WECs at SETS.

What onshore infrastructure is needed?

SETS will require a building near the location where the electrical cable comes onshore for equipment that will analyze and record data coming from the test berths. The electricity from the berths will then be transmitted to the electrical grid. Depending on the site and capacity, there may also be a need to upgrade the local electricity grid.

How long will SETS be in place?

Based on experiences of other renewable energy test facilities, such as the National Renewable Energy Laboratory in Colorado, we expect that SETS could be active for 20 to 30 years.

What are the potential environmental impacts?

Installing SETS might affect some existing users of the sea and its environment. Concerns exist with regard to interference with fish or marine mammal migration, reduction of wave height and release of lubricants used within wave energy devices. A primary role of SETS is to understand any effects so that sound decisions about marine energy development can be made.

Environmental Considerations: Monitoring will be undertaken by SETS to ensure that there are only minimal effects upon the environment, and to help plan for future projects.

Pollutant-Free: Wave devices produce no greenhouse gases unlike conventional fossil fuelled energy generation. The technologies under development have carefully designed moving parts and where lubricants and hydraulic fluids are needed, biodegradable and non-toxic liquids can be used in compliance with federal and international laws.

Visibility: Marine renewable energy devices come in a variety of shapes and sizes. Some are very low to the surface or even underwater entirely; others may have a height above surface that would require lighting. The test site will be several miles from shore and therefore will most likely not impose any adverse visual impacts.

Wave Energy Displacement: Wave devices take energy out of the sea. They will not noticeably reduce the size of the waves reaching the shore, and will not stop the waves. SETS will not affect surfing, swimming or other watersports.

Where does the SETS funding come from?

The first installment of funding for SETS was received in September, 2012, consisting of $4 million from the U.S. Department of Energy, along with a non-federal cost match. NNMREC, the Northwest National Marine Renewable Energy Center, will be applying for additional federal and non-federal funding to complete the project.

PMEC Pacific Marine Energy Center · Oregon State University OSU · NNMREC Northwest National Marine Renewable Energy Center · University of Washington