Oregon Wave Energy Trust
Utility Market Initiative

Task 2.1.3: Oregon Wave Project Database

www.oregonwave.org

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The Utility Market Initiative was prepared by *Pacific Energy Ventures* on behalf of the Oregon Wave Energy Trust.

December 2009

This work was funded by the Oregon Wave Energy Trust (OWET).

OWET was funded in part with Oregon State Lottery Funds administered by the Oregon Business Development Department. It is one of six Oregon Innovation Council initiatives supporting job creation and long term economic growth.

This Utility Market Initiative was prepared by Pacific Energy Ventures on behalf of the Oregon Wave Energy Trust.

For information about this project, please contact Justin Klure at Pacific Energy Ventures:

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About Oregon Wave Energy Trust

The Oregon Wave Energy Trust – (OWET) - with members from fishing and environmental groups, industry and government - is a nonprofit public-private partnership funded by the Oregon Innovation Council in 2007. Its mission is to serve as a connector for all stakeholders involved in wave energy project development - from research and development to early stage community engagement and final deployment and energy generation - positioning Oregon as the North America leader in this nascent industry and delivering its full economic and environmental potential for the state. OWET's goal is to have ocean wave energy producing 2 megawatts of power - enough to power about 800 homes - by 2010 and 500 megawatts of power by 2025.

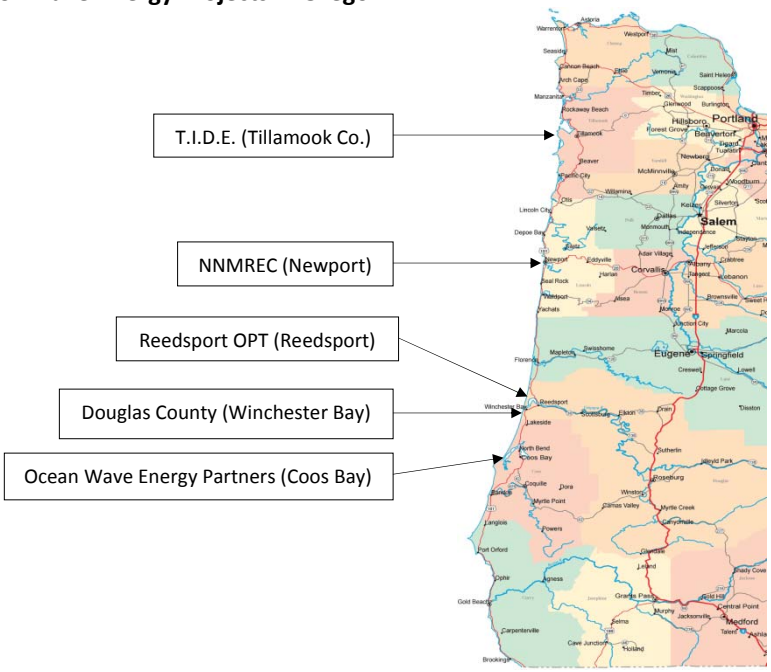
Oregon Wave-Project Database

Since March 2007, FERC has issued four preliminary permits for wave-energy projects off the coast of Oregon. Two permits were awarded to government entities and two permits were awarded to private developers. All four permits are currently active and only one applicant has not yet filed a Notice of Intent/Preliminary Application Document (NOI/PAD). As of December 2009, no applicant has submitted a FERC Hydrokinetic License application.

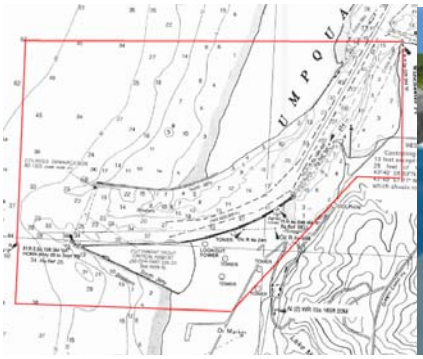
Applicant	Project Location	NOI/PAD Filed	License Application Filed
Douglas County Board of Commissioners	Winchester Bay	YES	NO
Tillamook Intergovernmental Development Entity (T.I.D.E.)	Tillamook County	NO	NO
Ocean Wave Energy Partners I, LLC	Coos Bay	YES	NO
Reedsport OPT Wave Park, LLC	Reedsport	YES	NO

In addition to these four projects, Oregon State University (OSU) and the University of Washington were awarded approximately US $6 million from the U.S. Department of Energy to develop the Northwest National Marine Renewable Energy Center (NNMREC). OSU's Hatfield Marine Science Center in Newport will be home to the United States' first Mobile Ocean Test Berth—a device that will allow developers from around the world to test new technologies in Oregon's coastal waters.

Figure 1. Location of Wave-Energy Projects in Oregon



Douglas County Wave & Tidal Energy Power Project



Developer

Developer:	Douglas County Board of Commissioners
Contact:	Ronald S. Yockim
Address:	430 SE Main St. P.O. Box 2456 Roseburg, OR 97470
Phone:	(541) 502-6062

Project Details

Project Location:	Pacific Ocean, mouth of Umpqua River, Winchester Bay, Douglas County, OR
Technology:	WaveGen Oscillating Water Column
Capacity:	1 - 3 MW
Project Footprint:	not determined (both North and South Jetty locations are being studied for siting)
Transmission:	proposed 12.5 kV line and appurtenant facilities
Energy Generation:	average 700 - 2,200 MWh per year
Grid Connection:	not determined
Power Purchaser:	local utility, not determined

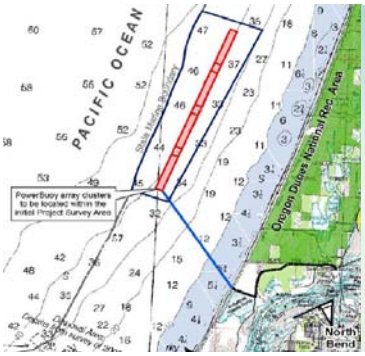
Project Status: Active

FERC Docket #:	P-12743-000
Licensing Process:	Traditional Licensing Process (TLP)
Preliminary Permit Application	FILED on 9/20/2006; AMENDED on 11/16/2006
Preliminary Permit	GRANTED on 4/6/2007; EXPIRES 4/1/2010
Notice of Intent/Pre-Application Document	FILED on 5/23/2008
License Application	NOT FILED

Potential Environmental & Socioeconomic Effects

These issues were identified and will be studied prior to the final license application: (1) impacts to fish and wildlife resources; (2) impacts to seabed and dune habitats; (3) impacts of construction and maintenance operations; (4) impacts of electro and magnetic fields; (5) impact on pinnepeds haul out; (6) potential noise impacts; (7) impact of the transmission line on terrestrial resources; (8) impact on ESA listed species; (9) impact on **surfing** and attenuation of wave energy; (10) impact on national security; (11) impacts on navigational safety; (12) aquaculture impacts; (13) decommissioning; and (14) impact to aesthetic resources.

Coos Bay OPT Wave Park




Developer

Developer:	Oregon Wave Energy Partners I, LLC
Contact:	Charles F. Dunleavy
Address:	1590 Reed Road
	Pennington, NJ 08534
Phone:	(609) 730-0400

Project Details

Project Location:	Pacific Ocean, Coos Bay, Coos County, OR
Technology:	200 OPT 500 kW PowerBuoy® wave energy converters (currently under development)
Capacity:	100 MW
Project Footprint:	0.93 sq miles (593 acres)
Transmission:	proposed 13.8 kV line and appurtenant facilities
Energy Generation:	average 275 GWh per year
Grid Connection:	Pacific Power at Coos Bay North Spit Substation
Power Purchaser:	local utility, likely PGE

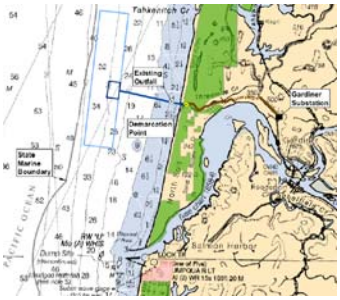
Project Status: Active

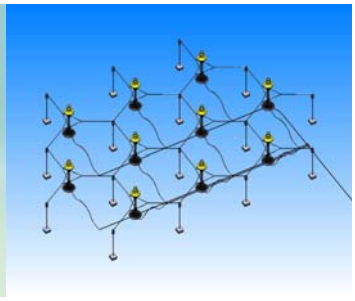
FERC Docket #:	P-12749-000
Licensing Process:	Traditional Licensing Process (TLP)
Preliminary Permit Application	FILED on 11/2/2006
Preliminary Permit	GRANTED on 3/9/2007; EXPIRES 3/1/2010
Notice of Intent/Pre-Application Document	FILED on 3/7/2008
License Application	NOT FILED

Potential Environmental & Socioeconomic Effects

These issues were identified and will be studied prior to the final license application: (1) potential effects on cetaceans; (2) potential attraction of pinnepeds to the area; (3) electromagnetic fields; (4) seabird collisions; (5) underwater noise/vibration; (6) direct effects to the benthic community from placement of project components on the seabed; (7) changes to marine community composition and predator/prey interactions; (8) macroalgae; (9) potential fluid leakage/spills during construction and installation; (10) leachate from antifouling paint; (11) effect on marine recreation; (12) effect on navigational safety and site security; (13) effect on commercial fishing; (14) aesthetic impact; (15) wave, current, and transport issues; (16) impact on cultural resources; (17) economic effects; and (18) terrestrial effects.

Reedsport OPT Wave Park





Developer

Developer:	Reedsport OPT Wave Park, LLC
Contact:	Charles F. Dunleavy
Address:	1590 Reed Road
	Pennington, NJ 08534
Phone:	(609) 730-0400

Project Details

Project Location:	Pacific Ocean, Reedsport, Douglas County, OR
Technology:	14 OPT 150 kW PowerBuoy® wave energy converters
Capacity:	2.1 MW
Project Footprint:	0.25 sq miles (800 meters x 800 meters)
Transmission:	proposed 13.8 kV line and appurtenant facilities
Energy Generation:	average 414 MWh per year
Grid Connection:	Douglas Electric Cooperative at the Gardiner Substation
Power Purchaser:	local utility, possibly PNGC

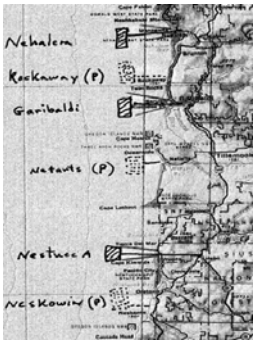
Project Status: Active

FERC Docket #:	P-12713-000
Licensing Process:	Traditional Licensing Process (TLP)
Preliminary Permit Application	FILED on 7/14/2006
Preliminary Permit	GRANTED on 2/16/2007; EXPIRES 2/1/2010
Notice of Intent/Pre-Application Document	FILED on 7/2/2007
License Application	NOT FILED

Potential Environmental & Socioeconomic Effects

These issues were identified and will be studied prior to the final license application: (1) marine mammal injury/entanglement/acoustic guidance; (2) effects of EMF on sharks, rays, salmon, and plankton; (3) pinneped haul out; (4) impact of installation/removal on aquatic community; (5) mooring line fouling; (6) alteration of seabed habitat; (7) impacts to seabirds (nesting, collisions, lighting); (8) oil leakage/spills during construction/installation; (9) macroalgae; (10) effects of noise/vibration; (11) impacts on recreation; (12) project lighting; (13) aesthetic impact; (14) impact on navigational safety; (15) effect of transport moratorium (crabbing) and transit lanes; (16) impact of subsea cable; (17) impact on commercial fishing; (18) erosion/accretion; (19) impact on cultural resources; (20) decommissioning; (21) economic impacts/additional uses; (22) terrestrial effects.

Oregon Coastal Wave Energy Project



Specific Technology

Not Selected

Developer

Developers:	Tillamook Intergovernmental Development Entity (T.I.D.E.) Green Wave Energy Solutions, LLC
Contact:	Patrick Ashby, T.I.D.E.
Address:	c/o Tillamook People's PUD 1 115 Pacific Avenue Tillamook, OR 97141
Phone:	(503) 842-8535

Project Details

Project Location:	Pacific Ocean, Tillamook County, OR
Technology:	5 to 90 buoys at each location: Nehalen, Kockaway, Garabaldi, Netarts, Netucci, Neskowin
Capacity:	20 - 180 MW at each location
Project Footprint:	not determined
Transmission:	proposed 24.9 kV transmission line and appurtenant facilities
Energy Generation:	average 87.5 - 790 GW-h
Grid Connection:	not determined
Power Purchaser:	local utility, not determined

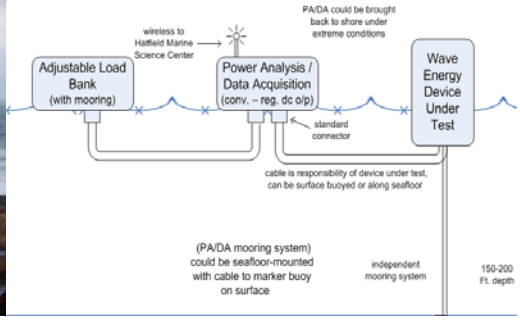
Project Status: Active

FERC Docket #:	P-13047-000
Licensing Process:	Integrated Licensing Process (ILP)
Preliminary Permit Application	FILED on 10/1/2007
Preliminary Permit	GRANTED on 5/23/2008; EXPIRES 5/1/2011
Notice of Intent/Pre-Application Document	NOT FILED
License Application	NOT FILED

Potential Environmental & Socioeconomic Effects

Detailed information on potential environmental and socioeconomic effects will be included in T.I.D.E.'s NOI/PAD. To date, intervenors and commentators have expressed concerns with construction of the proposed project and its impacts on commercial fisheries, communications infrastructure/cables, and ocean transit. Commentators also expressed concern that the project could adversely impact protected avian species, fish, and marine mammals. The U.S. Department of Interior provided a list of information to be obtained during the studies to address potential impacts and requested that T.I.D.E. be required to consult with NOAA Fisheries, the U.S. Fish and Wildlife Service (FWS), the National Park Service, any affected Indian Tribe or Nation, as well as any other relevant agency.

Northwest National Marine Renewable Energy Center (NNMREC)
Mobile Ocean Test Berth (MOTB)



Developer

Developers:	Northwest National Marine Renewable Energy Center (NNMREC)
Partners:	Oregon State University; University of Washington; U.S. Department of Energy
Contact:	Meleah Ashford, Program Manager
Address:	Oregon State University (OSU) Northwest National Marine Renewable Energy Center (NNMREC) College of Engineering Corvallis, OR 97331-2409
Phone:	(541) 737-6138

Project Details

NNMREC envisions potentially *two* Research, Development, and Demonstration (RD&D) facilities over the next five years. The first project, the Mobile Ocean Test Berth (MOTB) will be completed in the next three years. The second could be a grid-connected, multi-test berth facility, permanently secured to the ocean floor and a land-based utility system.

The MOTB will provide the critical infrastructure required to test and validate ocean energy devices. The MOTB will consist of two test modules. Each test module will include a Power Analysis/Data Acquisition device and an Adjustable Load Bank. Although NNMREC assumes that the modules will be utilized primarily off the coast of Newport, the design allows for 'portability,' enabling relocation to any project site along the Oregon coast. NNMREC assumes that one module will always be available at the Newport site for device testing.

Project Status: Active

NNMREC is working with local stakeholder groups to identify an optimum site location for the MOTB. The test location will not require FERC licensing but will require other mandatory state and federal authorizations. NNMREC is currently developing pre-design and engineering specifications for the MOTB which should be operational by 2011.

Potential Environmental & Socioeconomic Effects

In its NEPA analysis, NNMREC will study how the physical structure of the MOTB will impact the key ecosystem components affected by wave energy development including marine mammals, seabirds, benthic ecosystems, and fish and fisheries. Impacts to the physical environment (e.g., altered sediment transport patterns, altered near-shore currents) and the human environment (e.g., socioeconomic impacts on the Newport area) will also be studied.