



A Blueprint for Ocean Energy Development
2010-2015

Executive Summary

Oregon Wave Energy Trust (OWET) is a nonprofit, public-private partnership funded by the Oregon Innovation Council. Its mission is to support the responsible development of ocean energy in Oregon. OWET emphasizes an inclusive, collaborative model to ensure that Oregon maintains its competitive advantage and maximizes the economic development potential of this emerging industry. OWET's work includes: stakeholder outreach and education, policy development, environmental assessment, applied research, and market development.¹

In an effort to foster a collaborative approach to advancing the ocean energy industry, OWET convened the OWET 2010 Developers' Summit on September 27 and 28, 2010 in Portland, Oregon.

The purpose of the Summit was to create an open dialogue among developers, utilities, and regulatory and policy leaders to develop a strategy to advance ocean energy development in Oregon and the Pacific Northwest of North America by 2015.

Approximately 40 attendees gathered for two days of dialog and brainstorming sessions, information sharing, and discussion about opportunities to advance the industry.

Key topics addressed in the Summit included regulatory and permitting processes, policies to encourage and finance the early stages of ocean energy development, and connecting facilities to the electrical transmission infrastructure.

This Blueprint captures the results of the Summit, identifies goals for 2015, and recommends actions discussed at the Summit. OWET intends for this Blueprint to be used as a focused action plan to advance a responsible ocean energy industry.²

This Blueprint also introduces the concept of "Blue Tag Power" that was discussed at the Summit and developed further at Ocean Renewable Energy Conference V. Blue Tag Power is a designation that would include wave, tidal, in-stream current and offshore wind.

OWET would like to acknowledge and extend gratitude to everyone who helped make the Summit possible, including our members, funders, board, the Summit participants and speakers.

¹ OWET Website: <http://www.oregonwave.org/>

² Please note: this Blueprint for 2015 is an OWET action plan based on the discussions held at the Developers' Summit. These recommendations are not to be attributed to the attendees of the Summit.



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Introduction: A Blueprint for Ocean Energy Development 2010-2015

Why Oregon

The State of Oregon is already a leader in renewable energy development, bringing geothermal, solar and wind industry and associated development to Oregon, and serving a leadership role in the development of ocean energy. Oregon's significant ocean energy potential combines with the state's enthusiastic support for sustainability and "green" innovation to make Oregon a uniquely suitable location for ocean energy development. The State has made development of ocean energy a priority and, in partnership with the federal government, has made strategic investments to further the industry. To date, state investments in ocean energy in Oregon have exceeded \$10 million. The federal government has invested over \$15 million in Oregon, of which approximately \$10 million from the U.S. Department of Energy was invested in the Northwest National Marine Renewable Energy Center (NNMREC) at Oregon State University.

OSU's Hatfield Marine Science Center in Newport will be the home to test wave energy devices.³ When completed, the testing center will be a significant boost to research and development efforts, and will greatly contribute to advancing our understanding of ocean energy's potential. In addition to these significant research and development initiatives, individual projects in Oregon are in the licensing and permitting process, with others in feasibility and planning stages. In short, several projects are either underway or on the drawing boards for ocean energy development in Oregon.⁴

Oregonians care deeply about the preservation of natural resources, so the potential impacts of any major energy infrastructure project will be scrutinized. Marine industry leaders and project developers have conducted significant stakeholder outreach and engagement. These efforts are helping the fishing industry, coastal communities, and others to understand the proposed technologies and explore the potential impacts. Effective collaboration with interested stakeholders, strong partnerships with suppliers and project developers, and increased policy support for ocean energy are the keys to enabling this early stage technology to create economic opportunities for Oregonians, while also meeting community needs for input on decision-making.

There are tremendous economic opportunities associated with ocean energy, including research and development, manufacturing, environmental and professional services, and other initiatives in Oregon and beyond. Ocean energy will bring good, family-wage jobs to the state. In a study conducted by EcoNorthwest, titled "Economic Impacts of Wave Energy to Oregon's Economy," the researchers conclude "at the mature industrial stage, the wave energy industry could sustain over 11,000 jobs along Oregon's coast and over

³ OWET Utility Market Initiative Report, www.oregonwave.org

⁴ <http://ferc.gov/industries/electric/indus-act/integration-renew.asp>



13,000 jobs statewide.”⁵ Executing the recommendations in this Blueprint will enable ocean energy to develop as rapidly and responsibly as possible, balancing the needs of technology developers with appropriate consideration of the environmental and other potential effects.

Why Wave Energy

Recent studies by the Electric Power Research Institute⁶ conclude that wave resources could provide up to 500 megawatts (MW) of energy off the Oregon coast. This is particularly important given that Oregon’s major population centers are in the western part of the state, relatively close to the coast, thus potentially reducing transmission costs. As compared to other renewable generation assets, wave energy has the potential to be highly predictable, which enhances its value to the utility industry and its customers. The reliability of the ocean as an energy resource could reduce the costs associated with integrating the energy into the grid. In addition to the local load absorption, current transmission capacity on the Oregon coast has the potential to accommodate approximately 430 MW of additional generation from ocean energy, without requiring significant transmission infrastructure improvements.⁷ Bringing this renewable, local energy resource to the grid benefits local communities, the state, and the national interest, assuming it is done in a way that considers and respects existing ocean users and public trust resources. Accordingly, pilot and demonstration projects using a phased approach to install 10-to-25 MW, in order to learn more about the cumulative effects of ocean energy, is a realistic and responsible development path that is sensitive to existing users.

The Summit: A Collaborative Approach

OWET believes that communication, collaboration, and coordination among a broad base of stakeholders are essential to realizing meaningful growth of ocean energy. In an effort to foster collaboration, OWET convened the Developers’ Summit on September 27 and 28, 2010, in Portland, Oregon. The purpose was to create an open dialogue among developers, utilities, and regulatory and policy leaders to identify goals for 2015 and to create an action plan for successfully producing and using ocean energy in Oregon and Western North America by 2015. Developers from around the world, western utilities, and federal and state regulators and policy leaders gathered for the Summit. (The list of attendees can be found in Appendix A.) This Blueprint details the goal for ocean energy development through 2015, existing barriers and proposed solutions, and plans for actions to achieve the goal.

⁵ Economic Impacts of Wave Energy to Oregon’s Economy: A Report to Oregon Wave Energy Trust, by ECONorthwest, www.oregonwave.org, retrieved 10/21/10

⁶ [Ocean Tidal and Wave Energy: Renewable Technical Assessment Guide, www.my.epri.com](http://www.my.epri.com), retrieved 10/14/10

⁷ OWET Utility Market Initiative, Task 4.2 Systems Scenario Analysis, www.oregonwave.org



Goal and Objectives for Oregon Ocean Energy Development by 2015

OWET's overarching goal for 2015 is to make Oregon the most attractive state in the United States for developing ocean energy, and one of the leading ocean energy centers in the world.

Summit participants identified numerous objectives essential to achieving the above goal, including the following.

- **Oregon is a leader in ocean energy development in the U.S. and the world.**
Developers recognize that Oregon provides virtually all requisite components needed to develop an ocean energy project, including: engineering, design, manufacturing, transportation, deployment, operation and maintenance, and professional services.
- **Real progress is achieved in getting projects installed in the water.**
 - Diverse scales and technologies are installed, including both larger grid-connected systems and smaller research and development-stage projects:
 - Some larger installations, perhaps one site with up to 10 MW
 - Some smaller installations of 1-2 MW
 - Progress on advancing regulatory process from pilot to small scale, and from small scale to larger scale installations (i.e. phased development)
 - This responsible, phased approach gains knowledge of cumulative effects as a means to the long-term goal of 500 MW that is consistent with coastal loads and transmission infrastructure.
- **Policies are adopted and economic incentives are in place to assist in developing ocean energy, within Oregon, on the west coast, and nationally.**
Bridging the gap between pilot and commercial projects will require access to capital and incentives. These two requirements synergistically advance the industry by increasing installed capacity, reducing cost, and moving the industry toward price parity with other renewable generation sources and fossil fuels.
- **Regulatory and permitting processes are coordinated and improved.** Increased communication and a more collaborative approach enable more effective and efficient licensing and permitting processes.



- **The quality and quantity of environmental data is increased and information is shared more broadly.**
 - Our knowledge and understanding of the environmental, social, and other impacts of ocean energy increase while information and data across all experiences are shared, helping advance mutual understanding of ocean energy effects.
 - Best practices emerge for environmental information gathering, monitoring protocols, and adaptive management.

- **Public support for ocean energy development increases.**
 - The fishing industry, coastal communities, and other stakeholders are actively involved and informed on ocean energy, and there is a spirit of collaboration and partnership throughout.

- **Marine spatial planning and renewable energy development planning is advanced enabling smart, informed selection of potential ocean energy sites.**



A Blueprint for Ocean Energy Development, 2010-2015

The intent of this Blueprint is to encourage developers, utilities, regulatory and policy leaders to take proactive steps to implement the recommended solutions developed at the Summit.

Prior to the Summit, participants responded to a survey intended to help frame the agenda and identify the most important topics for discussion. (The survey can be found in Appendix B.) The respondents identified numerous issues, largely falling under three key topics:

- Connecting to the electrical grid
- Regulatory and permitting processes
- Policies to encourage, finance, and advance ocean energy development

The section below is a summary of the full list of barriers, real or perceived, and suggestions for solutions. It is followed by a section that highlights the priority actions as recommended by Summit participants both through the survey mentioned above and through Summit discussions. These issues do not necessarily represent OWET's priorities.

The Electric Transmission Grid: Barriers and Solutions

Electric Transmission Grid Capacity

Barrier

- Grid capacity to absorb ocean energy is not widely known or understood.

Proposed Solutions

- In addition to coastal loads, the transmission capacity on Oregon's coast has the potential to integrate several small projects, adding up to 430 MW of generation without additional major system upgrades.⁸ Developers should be made aware of this asset.
- Ensure that future coastal upgrades consider ocean energy.
- Long-term goal of 500 MW that is consistent with coastal loads and transmission infrastructure.

Electric Transmission Grid Interconnection

Barrier

- The transmission system is very complex, and it is difficult to understand the process for transmission connections. This leads to challenges in planning for the timeframes and costs involved.

⁸ OWET Utility Market Initiative, Task 4.2 Systems Scenario Analysis, www.oregonwave.org



Proposed Solutions

- Educate developers on the necessary steps for grid interconnection, including but not limited to:
 - Work with the utility to conduct a feasibility study, including potential system impacts to the transmission. If the project is deemed feasible, then proceed with appropriate planning and studies
 - Fulfill NEPA requirements associated with connecting to the transmission system
 - Prepare a facility study addressing what needs to be developed for the project
 - Permit and construct needed facilities for transmission connection.
- Identify how to coordinate planning and permitting early in the process.
- Increase coordination and planning among the developer, the local utility, the permitting agencies, and the entity with which a power purchase agreement will be established to facilitate connection to the grid.
- Locate generation close to the center of demand, where possible.
- Develop empirical data on forecasting, predicting and dispatching ocean energy generation sources as a possible means to avoid the instability charges associated with intermittent renewable generation sources such as solar and wind.

Supply and Demand Management**Barrier**

- The current system for balancing, planning, and scheduling electric supply and demand is extremely complicated.

Proposed Solutions

- Modify electric load balancing rules without compromising system operators' abilities to balance loads.
- Consider whether structural changes are appropriate.
- Identify opportunities with BPA to facilitate and streamline interconnection and integration, reflecting the initially small generation from ocean energy.
- Develop empirical data on the forecasting, predicting and dispatching ocean energy generation sources as a possible means to avoid the instability charges associated with intermittent renewable generation sources such as solar and wind.



Regulatory and Permitting Issues: Barriers and Solutions

Coordination Among Licensing and Permitting Agencies

Barriers

- Many federal and state agencies are involved in permitting and lack of coordination among agencies creates a lengthy, cumbersome ocean energy siting process.
- Licensing and permitting processes tend to involve duplication of effort and resources.
- Information and environmental analysis needed by various agencies is different and results in multiple environmental documents (e.g., a federal environmental impact statement or environmental analysis, and state equivalent documents, biological opinions and other documents).

Proposed Solutions

- Consider developing MOUs among the federal agencies involved in licensing and permitting that include timeframes for the licensing and permitting process; consider identifying consequences of not upholding the MOU; consider similar MOUs for state agencies.
- Develop best practices for agencies, applicants, and interested stakeholders to achieve effective and efficient licensing and permitting.
- On specific projects, develop integrated agency timelines combining all processes and deadlines so that federal and state agencies, applicants, and all stakeholders are aware of the needs, timeframes, and processes to help establish a shared commitment to execute according to the timeline.
- Develop improved coordination on environmental documents so that they not only meet FERC licensing requirements, but also meet Endangered Species Act and other federal and state needs.
- Consider developing a “One-Stop-Shop” for permitting ocean energy projects; Marine Scotland is an example.

Agency Resources

Barriers

- Agency staffing is inadequate to efficiently process the added demand for ocean energy license and permitting requests.
- Agency expertise on these early stage technologies is just developing on the few projects currently in the licensing process.
- The lack of experience and knowledge by participants of the Integrated Licensing Process and its associated recommendations make the process appear cumbersome.



Proposed Solutions

- Provide dedicated staff from federal and state agencies to work on ocean energy projects to increase their expertise consistency across projects. Dedicated staff can then also become more knowledgeable on the environmental information available across projects around the world.
- Develop multi-agency, cross-disciplinary teams to evaluate and license projects.
- Consider payment mechanisms where the applicant can pay for agency staff to be dedicated to project licensing/permitting assignments.

Existing Licensing and Permitting Processes**Barriers**

- Mitigation standards can be confusing. Sometimes it appears as though all potential effects need to be fully mitigated, when some of the potential effects are not as significant as others.
- Currently, the preliminary permit area reserved with FERC is restricted to the first phase of the development. The larger, long-term site subsequently must be reserved as well, subject to additional licensing and permitting requirements. This scenario creates an unnecessarily expensive and cumbersome hurdle to this emerging industry, because, as an early stage technology, it is appropriate to initially install a smaller project and then build-out over time, as technologies are tested and impacts are understood and addressed.
- The required process to move from the preliminary phase of installation to a larger, more complete commercial development is unclear.

Proposed Solutions

- Create a matrix that identifies the potential impacts to a resource, the information needed, and then set priorities on which resource concerns are the most significant.
- Develop monitoring and adaptive management plans to address the priority concerns and needs.
- Consider creating an Office for Renewable Energy within Oregon to develop and enforce a standardized, efficient licensing and permitting processes for ocean energy projects. Also, explore if this could be done on the federal level. (This approach is being used for siting marine projects in Scotland.)
- Clarify the expectations and the process for a pilot project. If it's truly intended to have more modest monitoring and adaptive management requirements because it is a short-term project, then develop guidelines or best practices to accomplish this.
- Create policies or procedures that enable applicants with a smaller scale project to reserve a larger area for potential future build-out.
- Develop guidelines or best practices (e.g. criteria or metrics applied to principles of adaptive management) required for early phases of smaller scale build-out to later phases for larger build-out. Identify best practices for efficiently moving through the steps.



Environmental Information Collection

Barriers

- Information is collected by individual projects; knowledge gained from one project is not necessarily shared with others, resulting in duplicative efforts. (This includes global sharing, not only in the U.S.).
- Baseline information being collected is not shared and understood by all involved, particularly across various regions of the country and around the world.
- Information is gathered within different agencies, but not necessarily shared and made available to all interested stakeholders thus creating a “silo effect”.

Proposed Solutions

- Support and appropriately fund testing facilities, including the Northwest National Marine Renewable Energy Center (NNMREC).
- Consider lessons learned from the European Marine Energy Centre (EMEC) and share these with the larger community interested in ocean energy.
- Increase information sharing:
 - For example, there is currently a seven-country effort to gather and share environmental information that will be integrated into DOE’s Knowledge Management System and Environmental Risk Evaluation System.
 - Conduct conferences and outreach so that all interested stakeholders, including state and federal resource agencies, are aware of the resources, the data, and the effects of ocean energy projects.
- Collect and compile Oregon-based marine and coastal environmental information, including information derived from different agencies, developed or funded by OWET, and from others.

Siting Ocean Energy Projects

Barriers

- There is a lack of identified “opportunity zones” for ocean energy developments that minimize conflict with existing uses and minimal environmental effects.
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Proposed Solutions

- Coordinate ocean energy planning with the Marine Spatial Planning process, with a special emphasis on identifying viable areas.
- Reserve priority energy development zones.
- Identify areas and activities suitable for possible joint and/or collaborative use.
- Evaluate different categories of Marine Protected Areas and identify any that allow ocean energy as a compatible use. Recognize that an ocean energy Area To Be Avoided will preclude trawling and should count toward total area protected.

Policy and Finance Topics: Barriers and Solutions

Federal and State Funding for Ocean Energy

Barriers

- Currently it is difficult to obtain consistent, multi-year funding for research and development projects.
- There is a gap between research and development of early stage technology and fully commercial projects.
- Federal funding often requires state or other matching funds.
- Federal funding does not commit for longer term efforts, making the viability of projects uncertain.

Proposed Solutions

- Advocate for a dedicated, significantly funded federal and state ocean energy program that can make multi-year grants or awards.
- Identify and develop federal and state funding match opportunities.
- Develop an approach that solicits federal funds combined with state funds that can be used for project development over a multi-year effort.
- Consider a feed-in tariff program.
- Advocate for an incrementally imposed carbon tax.
- Secure U.S. Navy commitment to purchase biodiesel; consider establishing an equivalent for ocean energy.
- Advocate for a state legislative initiative to create a dedicated revenue stream that is not so dependent on the General Fund.
- Consider modifying the Business Energy Tax Credit (BETC) specifically for wave energy development.
- Modify the Small Energy Loan Program to provide financing for project risk not absorbable by traditional lenders.
- Trade tax credits to the Energy Trust.
- Reinvigorate the proposal for the State of Oregon Renewable Energy Feasibility Fund, which provides loans or grants to public agencies to help finance renewable energy feasibility studies.
- Consider having the state fund part of the infrastructure such as the cable; set up a cost sharing system.
- Attract stimulus funds for ocean energy.
- For municipal, consumer-owned utilities, consider further encouraging ocean energy through rural development funds, or selling renewable energy bonds.
- Secure State of Oregon commitment to purchase the first 500 MW of “Blue Tag Power” for state electrical loads to provide certainty of demand for ocean renewable energy thus incentivizing the industry and creating jobs.



Renewable Portfolio Standards

Barriers

- Lack of national renewable portfolio standards inhibits incentives to develop ocean energy.
- Renewable energy standards currently favor use of technologies that are closer to competitive commercial costs.
- Renewable energy standards in Oregon currently are only a requirement of investor owned utilities and the larger publics, and not all municipal utilities currently participate. (Ratepayers of the investor owned utilities are paying to achieve these renewable goals, yet all of Oregonians benefit.)

Proposed Solutions

- Advocate for national renewable portfolio standards.
- Increase Renewable Portfolio Standards with a carve-out for ocean energy, or new and emerging technologies.
- Consider establishing mechanisms that address both ratepayers and taxpayers for the state renewable goals.
- Create a market for “Blue Tags” where individual ratepayers can voluntarily pay extra to support ocean energy projects.
- Evaluate how our current renewable portfolio standards system applies primarily to investor-owned utilities and large publics, yet the benefits accrue to all Oregon consumers.
- Consider other mechanisms for encouraging renewable energy development in Oregon that applies to all Oregonians, not only investor owned utility customers.

Understanding the Potential of Ocean Energy

Barrier

- There is a lack of understanding of the potential of ocean energy.

Proposed Solutions

- Better promote wave energy, emphasizing that it is easier to forecast, predict and dispatch than other resources.
- Conduct a cost evaluation comparing ocean energy with other generation assets, including production, transmission interconnection and integration, and demonstrate that, when considering the full set of costs, ocean energy may be able to avoid instability charges and be competitive sooner than expected.
- Demonstrate the potential cost savings of ocean energy reflecting the fact that significant additional transmission improvements will not be needed on the coast of Oregon.



Developer Funding for Early Stage Technologies

Barrier

- Due to their focus on technology demonstration, developers do not have adequate funds to fully develop projects.
- Financial approaches are not in place to enable early stage technologies to close the gaps between research and development and commercialization.
- There are neither adequate incentives nor market demand to assist this emerging energy source.

Proposed Solutions

- Reduce the risk to developers by firming up the supply chain, including establishing partnerships with purchasers of Blue Tag energy.
 - Consider establishing loan guarantees for developers that can help mitigate financial risk to a certain degree and can create the necessary capital (modified SELP).
 - Establish a role for the state as financier, or purchaser of the power, to establish certainty for the developers. (Perhaps accomplished through the Department of Administrative Services or the Oregon Public Utilities Commission.)
 - Secure Oregon commitment to purchase the first 500 MW of “Blue Tag Power” for state electrical loads to provide certainty of demand for ocean renewable energy thus incentivizing the industry and creating jobs.
- Consider establishing a feasibility fund to test ocean energy in Oregon.
- Seek partnerships with tribes that are interested in renewable energy and economic development.
- Establish a cooperative arrangement between DOD and DOE to assist in establishing ocean energy and testing facilities in Oregon.
- Have an owner/investor lease facilities to project developers, similar to buying mining rights and then renting the rights to the mine operating company; sell the rights as a loan against the future energy production – energy being the collateral.
- Pursue power purchase agreements with National Oceanic and Atmospheric Administration in Newport, Oregon State University, and other large institutions.
- Create a market-pull mechanism -- an incentive to put ocean energy into the grid (e.g., for the first 40 MW installed, we will pay \$XX); this could be either a state or federal program.
- Consider establishing a location charge – if you are close to the grid connection you pay less.



Understanding the Benefits of Developing Wave Energy in Oregon

Barriers

- International developers do not fully appreciate the benefits and opportunities of developing projects in Oregon.
- The benefits of ocean energy, including transmission access, reliability and predictability, are not well understood.

Proposed Solutions

- Promote the opportunities and benefits of developing ocean energy in Oregon to international partners and developers.
- Quantify the value of ocean energy in rates, reflecting all the identified benefits, such as high predictability, lower intermittency, lower integration costs, etc.

Community and Public Awareness of Ocean Energy

Barrier

- Broad community support for and awareness of ocean energy is not well established.

Proposed Solutions

- Establish a Blue Tag program where utility customers sign up for an additional charge to support Blue Tag energy.
- If a Blue Tag program is set up, set up signs that track how much ocean energy is being produced, similar to a solar energy sign in FERC's headquarters.
- Promote the benefits and interest in Oregon becoming a leader in ocean energy development.



Actions Identified by Summit Participants to Achieve 2015 Objectives

Following are recommended key priorities based on the Summit discussions. These priorities were developed by the full group in the last session and are deemed as those that will best achieve the vision and goals for a strong, robust ocean energy sector in Oregon by 2015. There was no consensus vote taken and the priority actions are based on diverse participants' viewpoints.

The Electric Transmission System

- Conduct outreach to help inform developers about the steps involved in connecting to the grid.
- Encourage developers to start early in planning grid connections; include grid connections and associated costs in business plans.
- For these early stages, consider modifying the standards and requirements associated with scheduling and load balancing.
- Begin conversations with planning entities to evaluate if there are ways to restructure the system for easier and less expensive grid connection.
- Better highlight the value of the reduced east/west and north/south transmission load scenario resulting from new ocean energy generation off the Oregon coast.
- Share information on the merits of ocean energy's predictability, and negotiate reduced balancing costs requirements.

Regulatory/Permitting

- Establish a coordinated licensing and permitting process including:
 - Clarifying how the process will work up front with the applicant, federal and state regulatory and permitting agencies, and other stakeholders.
 - Developing a coordinated plan across all licensing and permitting agencies, with specifics on timeframes, environmental documentation needs and other aspects of licensing and permitting.
 - Establishing MOUs with agencies, including timeline commitments and consequences if the timelines are not met.
 - Considering establishing a clear lead organization, with coordination responsibilities to address all permitting and regulatory needs.
- Prepare policies and guidelines for protecting larger areas associated with initial smaller projects.
 - Develop policies and guidelines within state waters that enable larger areas to be protected in preliminary permits for future development by the developer who initially is obtaining a license for a smaller project area, but is interested in expansion to a larger contiguous area over time.
 - Develop clear guidance or best practices on how phased build-out of projects will work from a regulatory/permitting perspective. Ensure the



procedures and best practices are clear and transparent to all involved.

- Develop a programmatic approach for demonstration sites, as distinct from commercial projects
 - Use renewable energy spatial planning to determine the best locations for demonstration sites.
 - Develop an approach that validates different types of technologies and prioritizes them based on anticipated potential impacts.
- Share environmental information.
 - Establish the DOE knowledge management system, the environmental risk evaluation system and other data sharing tools. Establish mechanisms (e.g., conferences and web-based tools) to build broad awareness and understanding of the information that exists and as it evolves over time.
 - Prepare a matrix identifying resource concerns, potential impacts, existing information, data gaps and prioritized topics to be addressed.
 - Increase sharing of project and test case experiences among all stakeholders involved in ocean energy in the U.S. and internationally.
- Address agency staffing and resource constraints
 - Provide dedicated staff from federal and state agencies to work on ocean energy projects to increase their expertise consistency across projects. Dedicated staff can then also become more knowledgeable on the environmental information available across projects around the world.
 - Develop multi-agency, cross-disciplinary teams to evaluate, license and permit projects.
 - Consider payment mechanisms where the applicant can pay for dedicated staff for project licensing/permitting assignments.
- On all efforts, conduct early and up front work with all potentially interested stakeholders. Establish this as a standard on all ocean energy projects.



Policy/Finance

- Create incentives to support the development of wave energy, including:
 - Creating an RPS carve-out for emerging technologies, including 50 MW of ocean energy;
 - Incorporating diversity criteria into renewable energy portfolio standards so that diverse renewable energy is generated in Oregon;
 - Developing ways for the grid interconnection costs to be understood and minimized;
 - Highlighting the economic potential for this industry in Oregon.
- Create market demand for ocean energy by establishing a commitment up front for the state and other customers to purchase the power.
- Develop federal and state matching grants to fund ocean energy projects with longer-term commitments.
- Offer loan guarantees to developers to help lower the cost of capital.
- Create a Blue Tag program offering customers the opportunity to pay a premium to support ocean energy research and development.
- Demonstrate the full cost of competing resources, transmission and integration, and compare these costs with those of ocean energy, transmission and grid integration to demonstrate the more competitive cost for ocean energy.
- Establish a federal commitment to ocean energy.



Conclusion

In conclusion, the Summit resulted in a number of concrete steps that must be taken to achieve measurable results in ocean energy development by 2015 and beyond. The Summit is an example of how working collaboratively and sharing lessons learned with a wide array of partners, from Oregon, the U.S. and across the world will help foster an environment of mutual gains as we work aggressively toward the responsible development of ocean energy. After review, OWET believes that the following priorities represent the most advantageous and achievable objectives.

Electric Grid

- Develop and maintain a centralized place on the OWET website to maintain useful information and resources for ocean energy developers, including the benefits of investing in Oregon, information regarding connecting to the grid, and guidelines for working with federal and state regulatory and permitting agencies and other stakeholders.
- Develop better relationships with Bonneville Power Administration and other important regional utility entities. Establish and maintain relationships to facilitate collaboration and serve a leadership role in helping developers to connect with utility entities around the state.
- Ensure that future coastal energy facility and transmission system upgrades anticipate ocean energy.
- Consider becoming involved in the broader conversation regarding structural changes to the current system for balancing, planning, and scheduling, perhaps as an affiliate to an entity already engaged in working on these issues.

Regulatory and Permitting

- Encourage the development of MOUs among the state and federal agencies involved in licensing and permitting, OWET, and developers to identify roles and responsibilities, clarify the intention to share information and work cooperatively, and establish a mutual understanding regarding best practices for licensing and permitting in Oregon.
- Encourage and support early work with all potentially interested stakeholders, and work to establish this as a standard on all ocean energy projects.
- Encourage and work with federal agencies to make modifications to the current preliminary permit application process, to identify ways that the permit and environmental review processes can accommodate phased projects.
- Continue on-going conversations with FERC and other federal and state resource agencies regarding how best to accommodate phased development within the current regulatory structure.
- Encourage environmental information sharing, especially from international researchers and developers, and federal and state agencies.



Policy and Finance

- Create a Blue Tag program offering customers the opportunity to pay a premium to support ocean energy.
- Create a new program to mandate utilities to put an option on their monthly bills as a mechanism to finance an alternative energy research and development program in Oregon.
- Reach out to large public and private institutions to make upfront commitments to support and/or purchase ocean derived electricity.
- Collect data and create an enhanced value model that will demonstrate the full cost of competing resources, transmission and integration, and compare this data with costs of ocean energy, transmission and grid integration to demonstrate the more competitive cost for ocean energy.

OWET commits to diligently work on the above priority actions, as well as keep abreast of new opportunities to continually enhance the development of ocean energy through 2015 and beyond.

OWET Developers' Summit 2011

OWET will host the second annual Developers' Summit on August 2, 2011. This event will again be held in conjunction with OWET's annual conference, Ocean Renewable Energy Conference VI, which will be held August 3 and 4 at the Oregon Convention Center in Portland, Oregon.



APPENDIX A

OWET Developers' Summit Attendees

September 28-29, 2010

Ellen Aronson
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Ty Bettis
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OWET/Oregon Iron Works

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PNGC Power

Hans Christian Sørensen
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Lee Sparling
Oregon Public Utility Commission

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Shift Power Solutions

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APPENDIX B

Oregon Wave Energy Trust Developers' Summit

Pre-Summit Survey Questions and Summary of Feedback

Pre-Summit Survey Questions

1. Understanding that this session is focused on developing a “blueprint” for ocean energy development by 2015, what are the top 2-3 issues/concerns you would like to address at the Developers' Summit?
2. Below are potential topics the session will cover. Please rate them (5 being high importance, 3 medium, 1 low) as priority topics to address:
 - a. Finance
 - b. Regulatory processes for ocean energy
 - c. Technology development/advancement
 - d. Environmental information
 - e. Power purchase agreements, partnerships between developers and utilities
 - f. Ocean mapping and planning ocean energy development sites
 - g. Stakeholder engagement
 - h. Other
3. For developers, why would or are you considering doing business in Oregon? (and/or in the U.S.?)
4. For developers, why would you *not* consider doing business in Oregon? (and/or in the U.S.?)
5. This will have been a successful workshop, if:

Summary of Survey Feedback

1. Utilities and Developers, Connecting to the Grid

- Creating a market for buyers (utilities) and supplies (developers)
- Market conditions to address (price, capability, reliability)
- Building utility/buyer support for ocean energy
- How to connect with buyers/utilities
- Hourly forecasting, curtailment, reliability, O&M
- Grid interconnection (interconnection of ocean projects to the grid; metering and telemetrics; protective relaying; transmission service issues)
- A review/summary of what are the processes/steps involved in planning for and obtaining interconnection of ocean energy projects to the electric transmission grid



2. Regulatory and Policy Topics

Regulatory

- How to successfully work with a regulatory agency to gain its support and approval
- Streamlining permitting processes
- Coordination of information needs and permitting (FERC, BOEM, NOAA, FWS, state CZM and WQC, other)
- Agencies agree to talk about how to work together (information needs and timely permitting) to expedite siting marine energy projects while considering environmental effects

Policy

- Innovative policies that may be inexpensive, but can advance the commercialization of the industry (if not a feed-in tariff, then what?)
- More public money to draw R&D or demonstration level ventures? (perhaps at the state level?)
- “Shovel ready” zones set aside for demonstration projects that meet certain criteria?
- Establish federal marine support for market take-off phase
- Actions federal and state government can take to expedite broader deployment of marine energy
- Incentives
- Carbon pricing
- National leadership for ocean energy to push the industry forward
- Low energy prices inhibit marine energy development

3. Finance

- Are there additional innovative partnerships that can be created or leveraged to increase access to capital markets?
 - What about ocean deployment conglomerates with Oregon in the market for a space?
- Ensure a business climate for wave energy beyond the initial devices. Venture capital injection is needed for large scale development and they want to see more than 3 years ahead
- Public support/money for ocean energy for economic development
- Technology development financing at an attractive cost
- Lack of financing for early stage and demonstration ventures is an issue
- Establish federal marine support for market take-off phase

Economics

- How to ensure the price of devices will go down with scale



4. Other Topics

- Environmental effects
- Technology engineering and safety
- Linking technology suppliers with project developers (international to U.S.)
- Infrastructure
- Create attractive test/pre-commercial sites
- Access to talented engineers and support personnel
- Stakeholder engagement
- Port and manufacturing capacity
- Are we reliably developing technologies that will work and be commercially viable?

Workshop Success

- Focus on practical, realistic, tangible resources for developers
- Technology developers, project developers, financiers, manufacturers *unite* and agree to influence public policy in the right direction
- Agencies agree to talk about how to work together (information needs and timely permitting) to expedite siting marine energy projects while considering environmental effects
- Public awareness of the potential value of our marine renewable energy resources is raised
- Actions are identified to advance the industry
- Utilities understand how manufacturers are going to be able to lure developers into developing this type of resource
- We create a common understanding among stakeholders (developers, utilities, policymakers) on where the technologies are and what is required to bring them to market, and we identify strategies to get there.
- Clarity on whether the will is there to energize the market in OR/the U.S. (or will it be left to Europe?) Consensus on the issues would help
- Understanding the issues is important; a clearer vision for the future and ocean energy development
- We make progress on the topics identified
- A better understanding of how to do wave business in Oregon/the U.S. and hope to bring some of the key problems realized in Europe to the surface in the U.S.



APPENDIX C

Developers' Summit

The Leftbank Annex
101 North Weidler Street
Portland, OR 97227

Monday, September 27, 2010: 12:00 pm – 5:00 pm

Tuesday, September 28, 2010: 9:00 am – 5:00 pm

Agenda - Day 1

Meeting Objectives:

- Identify barriers to successful development of ocean energy projects in the U.S.
- Identify solutions to the barriers to achieve industry development goals, while also protecting the environment and addressing other potential impacts from ocean energy development.
- Develop the content for a “Blue Print” for ocean energy development by 2015, including actions and initiatives critical for success.

11:30-12:00	Doors Open - Room is Available
12:00 – 1:00	Lunch - Provided by OWET
1:00 – 1:30	Session Overview, Introductions and Agenda Review <ul style="list-style-type: none"> • Welcome and Introductions – <i>Jason Busch, OWET Executive Director</i> • Session Overview, Survey Feedback, Ground Rules and Agenda Review – <i>Anna West, facilitator, Kearns & West</i>
1:30 – 2:45	State of Ocean Energy Development, 2015 Goals <ul style="list-style-type: none"> • An overview of ocean energy development in Oregon and nationally, overview of other activities – <i>Jason Busch</i> • Discussion
2:45 – 3:00	Break
3:00 – 4:15	Barriers and Solutions to Ocean Energy Development, Part 1: Utilities and Developers, Connecting to the Grid <ul style="list-style-type: none"> • Group discussion and break out groups
4:15 – 5:00	Group Reports on Utilities and Developers and Recommended Actions for Success
5:00	Reception - hosted by UK Trade & Investment



Agenda - Day 2

8:00 – 9:00	Coffee, Tea, Light Breakfast
9:00 – 9:15	Reflections on Day 1 and Day 2 Overview
9:15 – 10:15	Barriers and Solutions to Ocean Energy Development, Part 2: Regulatory and Policy Topics <ul style="list-style-type: none">• Group Discussion and Break Out Groups
10:15 – 10:30	Break
10:30 – 11:00	Group Reports and Recommended Actions on Regulatory, Policy Topics for Success
11:00 – 12:00	Barriers and Solutions to Ocean Energy Development, Part 3: Finance <ul style="list-style-type: none">• Group discussion and Break Out Groups
12:00 – 1:30	Lunch Co-Hosted by OWET and Greenlight Greater Portland <ul style="list-style-type: none">• Keynote speaker: Oregon Governor Ted Kulongoski
1:30 – 2:00	Group Reports and Recommended Actions on Finance Topics for Success
2:00-3:00	Barriers and Solutions to Ocean Energy Development, Part 4: Topics Identified for the Survey (not already covered by above, which are the priority topics from the survey)
3:00-3:15	Break
3:15 – 4:45	Blueprint 2015 Action Plan <ul style="list-style-type: none">• Group discussion on solutions for all topics• Develop plan for action, recommendations to achieve the Goals of 2015
4:45 – 5:00	Next Steps and Summary
5:00 – 6:00	Networking Reception

