NOTE

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The Legal Landscape of Wave Energy Pilot Projects on the Oregon Coast

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INTRODUCTION

In the face of climate change driven by humankind's dependence on greenhouse gas-generating fossil fuels, many are looking toward the untapped resources of our oceans as a sustainable source of energy. Offshore wind energy, ocean thermal energy conversion, tidal energy, wave energy, and ocean current energy are all potential sources of renewable energy that make use of our ocean resources. A subset of these so-called "ocean renewable energy" sources is "marine and hydrokinetic energy," which is defined as a source of electricity derived from "the motion of waves or the unimpounded flow of tides, ocean currents, or inland waterways," including wave energy.[1]

This Note focuses on wave energy development off the Oregon Coast. Specifically, it focuses on the permitting and licensing requirements related to the development of experimental facilities, pilot projects, and phased developments set against the backdrop of Oregon's commitment to develop wave energy based on a precautionary approach. This Note first reviews wave energy technology and its implementation. Then it looks at federal regulation of wave energy on the Outer Continental Shelf and state and federal

1 Press Release, Bureau of Ocean Energy Mgmt., Regulation & Enforcement & Fed. Energy Regulatory Comm'n, BOEM / FERC Guidelines on Regulation of Marine and Hydrokinetic Energy Projects on the OCS (Version 2) 2 (July 19, 2012) [hereinafter BOEM/FERC Guidelines], *available at* http://www.boem.gov/BOEM-Newsroom/Press-Releases/2012/BOEM-FERC-staff-guidelines-pdf.aspx.

regulation in Oregon's Territorial Sea. Finally, this Note examines two case studies of wave energy test facilities off the Oregon Coast.

Why Wave Energy?

The Pacific Ocean off of Oregon's coast is a prime location for wave energy development, in part because the state has over three hundred miles of coastline known for steady winds that create powerful ocean waves.[2] Furthermore, Oregon has the right infrastructure to support wave energy development: the electrical grid runs along nearly the entire coastline, there is available grid capacity to transmit the energy generated from testing facilities,[3] and the costs of integrating wave energy off the Oregon coast are predicted to be less than the cost to integrate wind energy.[4]

The wave energy industry is still in its infancy, with technological challenges representing a key barrier to further development.[5] This industry depends on availability of testing facilities to continue developing the technology.[6] Currently, there is a great need for testing infrastructure to support the final stages of commercial development involving testing in the environment.[7] At this stage of development—the pilot project stage—regulatory and environmental barriers rival the technological barriers as the greatest obstacles to further development.[8] In addition, the State of Oregon has committed to furthering development firmly based on a precautionary approach by elevating the importance of a successful pilot project or phased

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2 *The Oregon Advantage*, OR. WAVE ENERGY TR., http://oregonwave.org/information/oregon-advantage/ (last visited Apr. 15, 2015).

3 *See id.*; *see also* Elizabeth Case, *Oregon Wave Energy Stalls off the Coast of Reedsport*, OREGONLIVE.COM (Aug. 30, 2013, 10:01 AM, updated Sept. 01, 2013, 6:46 PM), http://www.oregonlive.com/environment/index.ssf/2013/08/oregon_wave_energy_stalls_off.html.

4 Ted Brekken, *Wave Energy Integration Costs Should Compare Favorably to Other Energy Sources*, News Release to *News & Research Communications*, OREGONSTATE.EDU (01/07/2015), http://oregonstate.edu/ua/ncs/archives/2015/jan/wave-energy-integration-costs-should-compare-favorably-other-energy-sources.

5 Case, *supra* note 3.

6 THE MARINE & HYDROKINETIC ENERGY TRADE ASS'N & OCEAN RENEWABLE ENERGY COAL., U.S. MARINE AND HYDROKINETIC RENEWABLE ENERGY ROADMAP 13 (2011), *available at* http://www.oceanrenewable.com/wp-content/uploads/2011/05/MHK-Roadmap-Final-November-2011.pdf.

7 *Id.*

8 *Id*.

development for the purpose of gaining approval for full-scale facilities.[9]

Oregon is currently leading the nation in the push to develop a testing infrastructure for wave energy conversion technologies. In 2007, the Oregon Wave Energy Trust (OWET), a nonprofit public-private partnership, was formed to help responsibly develop commercial wave energy projects in the State of Oregon.[10] In 2012, the first Federal Energy Regulatory Committee (FERC) license for a wave energy facility was granted for a 100-buoy project to Ocean Power Technologies (OPT) Wave Park in Reedsport, Oregon.[11] However, regulatory and financial challenges faced by OPT forced the company to drastically scale back its plans for wave energy off the Oregon Coast.[12] Ultimately, OPT filed an application to surrender its FERC license and decommission its project site, which FERC approved.[13] However, aside from the ill-fated OPT Wave Park, Oregon is home to the Northwest National Marine Renewable Energy Center (NNMREC). NNMREC is one of three centers in the United States funded by the U.S. Department of Energy to assist with the development of the wave energy industry through research, education, and outreach.[14] Taken together, the story of the OPT Wave Park and the NNMREC test site demonstrate both the bright future for wave energy development off the Oregon Coast and the importance of scaling up that development gradually through the use of pilot projects and phased development.

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9 OR. COASTAL MGMT. PROGRAM, OREGON TERRITORIAL SEA PLAN, PART FIVE: USE OF THE TERRITORIAL SEA FOR THE DEVELOPMENT OF RENEWABLE ENERGY FACILITIES OR OTHER RELATED STRUCTURES, EQUIPMENT OR FACILITIES 1 (2013) [hereinafter OREGON TERRITORIAL SEA PLAN, PART FIVE], *available at* http://www.oregon.gov/LCD/OCMP/pages/ocean_tsp.aspx.

10 *Marine Energy–Wind and Wave*, OREGON.GOV, http://www.oregon.gov/energy/RENEW/Pages/marineenergy.aspx (last visited Apr. 19, 2015).

11 Reedsport OPT Wave Park, LLC, 140 FERC 62,120 (2012) (order issuing original license), *available at* http://www.oregon.gov/energy/renew/docs/order_issuing_original_license_Reedsport_Aug_2012.pdf.

12 Steve Lindsley, *Wave Energy Developer Plans to Deploy Buoy near Reedsport in 2015*, THE WORLD (Mar. 05, 2014, 10:19 AM), http://theworldlink.com/news/local/wave-energy-developer-plans-to-deploy-buoy-near-reedsport-in/article_b9f1fa2e-a492-11e3-aa40-0019bb2963f4.html.

13 Reedsport OPT Wave Park, LLC, 148 FERC 62,137 (2014) (order accepting surrender of license).

14 *What We Do*, NORTHWEST NAT'L MARINE RENEWABLE ENERGY CENTER, OREGONSTATE.EDU, http://nnmrec.oregonstate.edu/what-we-do (last visited Apr. 19, 2015).

Overview of Wave Energy Conversion Technology

Ocean wave energy is essentially a concentrated form of solar energy: solar heating causes uneven warming on the earth's surface that creates global wind currents, which in turn form waves and they pass over open water.[15] Water can carry much more energy per unit of mass because water is about 800 times as dense as air, providing a much greater power density compared to offshore wind.[16] Although wave energy output is highly variable, its potential as an energy source is guaranteed and can be predicted several days in advance.[17]

No single wave energy conversion technology has yet proven to be superior to any other, but there are four main types of wave energy conversion technology currently under development: terminator, attenuator, absorber, and overtopping.[18] Terminator devices extend perpendicular to the direction of the wave, and most capture wave energy by using the push and pull of waves onshore or very close to shore to move a column of air up and down.[19] Attenuators are long, floating structures divided into segments that are oriented parallel to the direction of wave travel.[20] As the height of the water column changes as waves pass, the different segments of the attenuator flex relative to each other, driving hydraulic pumps located in the joints between segments.[21] Point absorbers capture wave energy in a single part of the water column.[22] Most point absorbers consist of a fixed cylinder and a buoyant disc inside the cylinder that moves up and down like a piston as waves pass, capturing energy through electromechanical or hydraulic generators.[23] Finally, overtopping

15 MINERALS MGMT. SERV. RENEWABLE ENERGY & ALTERNATE USE PROGRAM, U.S. DEP'T OF THE INTERIOR, TECHNOLOGY WHITE PAPER ON WAVE ENERGY POTENTIAL ON THE U.S. OUTER CONTINENTAL SHELF 2 (2006) [hereinafter MMS WAVE ENERGY WHITE PAPER], *available at* http://www.camelottech.com/CMFiles/Docs/OCS_EIS_WhitePaper_Wave.pdf.

16 *Marine and Hydrokinetic Fact Sheet*, OCEAN RENEWABLE ENERGY COALITION (Wednesday, March 2, 2011), http://www.oceanrenewable.com/2011/03/02/marine-and-hydrokinetic-fact-sheet/.

17 MMS WAVE ENERGY WHITE PAPER, *supra* note 15, at 2.

18 *Technical Research*, NORTHWEST NAT'L MARINE RENEWABLE ENERGY CENTER, OREGONSTATE.EDU, http://nnmrec.oregonstate.edu/Technical (last visited Apr. 19, 2015).

19 MMS WAVE ENERGY WHITE PAPER, *supra* note 15, at 3–4.

20 *Id.* at 4.

21 *Id.*

22 *Id.* at 5–7.

23 *Id*.

devices consist of reservoirs that are filled by waves to a water level higher than the surrounding ocean.[24] This height difference is used to drive hydro turbines when the water is released from the reservoir to the surrounding water, similarly to how hydropower dams operate in rivers.[25]

Overview of the Ocean's Political Geography

Because wave energy facilities consist of energy conversion devices in the open ocean, transmission cables that lead to shore, and facilities onshore to transmit power to the grid, a single wave energy facility may fall under the jurisdiction of the federal government, state government, and local or regional governments simultaneously. Indeed, such a jumbled regulatory scheme has caused much confusion in the developing ocean renewable energy industry.[26] Thus, an understanding of the current political geography of the ocean is essential for unraveling the various federal, state, and local regulations of wave energy facilities.

In Oregon, the State has ownership of the ocean shore, defined as the area between ordinary high tide and extreme low tide.[27] In addition, Oregon law prohibits any improvements from being constructed between the low tide line and the vegetation line without a permit.[28] The dividing line between the shore and the ocean is referred to as the "baseline": "the mean low water line along the coast . . . ."[29] Under the Submerged Lands Act, Oregon has jurisdiction over the tidelands and submerged lands from the baseline out to three nautical miles, referred to as Oregon's Territorial Sea.[30] From that point, the U.S. Territorial Sea extends an additional nine nautical miles, to twelve nautical miles from shore.[31] In addition, the United States Exclusive Economic Zone (coterminous with the Outer

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24 *Id.* at 7.

25 *Id.*

26 *See, e.g.*, Rachael Salcido, *Siting Offshore Hydrokinetic Energy Projects: A Comparative Look at Wave Energy Regulations in the Pacific Northwest*, 5 GOLDEN GATE U. ENVTL. L.J. 109 (2011).

27 OR. REV. STAT. § 390.615 (2011).

28 OR. REV. STAT. §§ 390.640, .770 (2011).

29 33 C.F.R. § 2.20 (2013).

30 *See* OR. COASTAL MGMT. PROGRAM, OREGON TERRITORIAL SEA PLAN, PART ONE: OCEAN MANAGEMENT FRAMEWORK, C.1. (2013) [hereinafter OR. TERRITORIAL SEA PLAN, PART ONE], *available at* http://www.oregon.gov/LCD/OCMP/docs/ocean/otsp_1-c.pdf.

31 Proclamation 5928, 54 Fed. Reg. 777 (Dec. 27, 1988).

Continental Shelf) overlaps part of the U.S. Territorial Sea, extending from three to two hundred nautical miles offshore.[32]

I
FEDERAL REGULATION ON THE OUTER CONTINENTAL SHELF

A. The Evolution of Federal Regulation on the Outer Continental Shelf

Until quite recently, federal jurisdiction over ocean renewable energy facilities on the Outer Continental Shelf (OCS) was a complete mess, to put it mildly. Federal agencies such as the U.S. Army Corps of Engineers (the Army Corps), the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEM),[33] and the Federal Energy Regulatory Commission (FERC) all claimed jurisdiction to regulate and permit ocean renewable energy facilities in the OCS, the area of the ocean claimed by the United States but outside any particular state's jurisdiction.[34] Frequently, those federal agencies claimed jurisdiction in conflict with one another. As a result, ocean renewable energy developers have been uncertain of which agencies to apply for permits, hampering the industry's development.[35]

In 2004, the First Circuit Court of Appeals ruled that the Army Corps was responsible for permitting a data-collection tower that would precede an offshore wind energy development on the OCS in Nantucket Sound.[36] The First Circuit based the Army Corp's jurisdiction on section 10 of the Rivers and Harbors Act of 1899.[37] In response, opponents of the Cape Wind project lobbied Congress to

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32 ALISON RIESER ET AL., OCEAN AND COASTAL LAW 31 (4th ed. 2013); Outer Continental Shelf Lands Act, 43 U.S.C. § 1301(2)(a) (2012).

33 In 2010, the Minerals Management Service became the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEM). *The Reorganization of the Former MMS*, BOEM.GOV, http://www.boem.gov/About-BOEM/Reorganization/Reorganization.aspx (last visited Apr. 19, 2015). For consistency, both agencies will be referred to hereinafter as "BOEM," even when the agreement, decision, or article cited predates the name change.

34 OR. TERRITORIAL SEA PLAN, PART ONE, *supra* note 30, at C.1.

35 *See generally* Mark Sherman, Comment, *Wave New World: Promoting Energy Development Through Federal-State Coordination and Streamlined Licensing*, 39 ENVTL. L. 1161 (2009).

36 Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep't of the Army, 398 F.3d 105, 110–11 (1st Cir. 2005).

37 *Id*.

change federal jurisdiction over ocean renewable facilities on the OCS.[38] As a result of those lobbying efforts, Congress passed the Energy Policy Act of 2005.[39]

The Energy Policy Act of 2005 amended the Outer Continental Shelf Lands Act (OCSLA) to extend BOEM's jurisdiction to issue leases on the OCS for any activities that "produce or support production, transportation, or transmission of energy."[40] Enacted in 1953, OCSLA originally governed the development of oil and gas resources on the OCS.[41] Under OCSLA, BOEM administers the leasing process as well as the development and decommissioning processes for oil and gas development.[42] After the Energy Policy Act amended OCSLA to extend jurisdiction to non-oil and gas energy development on the OCS, it was unclear whether BOEM's jurisdiction extended merely to leases on the OCS or whether it also extended to the development of all ocean renewable energy facilities.

In October 2008, FERC asserted that it had preliminary permitting authority over two wave energy test facilities off the California coast.[43] The preliminary permit essentially stakes a developer's claim on a portion of the OCS pending approval of the FERC license.[44] FERC claimed that, because hydrokinetic power facilities generated electricity from water in the form of ocean waves and were located in the "navigable waters of the United States," the developers' claims were hydroelectric power projects required to be licensed by FERC under the Federal Power Act.[45] FERC argued that the authority to issue preliminary permits derived from its licensing authority.[46] Subsequently, BOEM challenged FERC's assertion of jurisdiction over hydrokinetic facilities.[47]

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38 Kenneth Kimmell & Dawn Stolfi Stalenhoef, *The Cape Wind Offshore Wind Energy Project: A Case Study of the Difficult Transition to Renewable Energy*, 5 GOLDEN GATE U. ENVTL. L.J. 197, 205 (2011).

39 *Id*.

40 Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005), 42 U.S.C. §§ 15801–16538 (2012).

41 *See* Outer Continental Shelf Lands Act, 43 U.S.C. §§ 1301–1356(a) (2012).

42 *Id.*

43 *See* Pacific Gas & Electric Co., 125 FERC 61,045 (2008), *available at* http://www.ferc.gov/whats-new/comm-meet/2008/101608/H-2.pdf.

44 *Id.* at ¶ 24.

45 *See id.* at ¶¶ 48, 55.

46 *Id.* at ¶ 40 n.60.

47 Oregon Wave Energy Partners II, LLC, 126 FERC 62,059 (2009) (order issuing preliminary permit).

In April 2009, BOEM (through the Department of the Interior and formerly known as Minerals Management Service) and FERC entered into a memorandum of understanding to clarify the jurisdiction of each agency over ocean renewable energy projects located on the OCS.[48] The agreement stipulated that Minerals Management Service (MMS) would issue the leases, easements, and rights-of-way required for hydrokinetic projects located on the OCS under section 8(p) of OCSLA, but that FERC would have authority over licensing those projects.[49]

The agreement clarified that a hydrokinetic energy developer must obtain a lease from BOEM before FERC can issue a license for the facility.[50] BOEM would also conduct the necessary environmental reviews under the National Environmental Policy Act (NEPA) required for those actions.[51] FERC would have the option to cooperate in BOEM's environmental review process, at FERC's discretion.[52] In return, BOEM would have the option to cooperate in the environmental review process under FERC's licensing process.[53]

BOEM and the Coast Guard also entered into a memorandum of understand in July 2011.[54] That agreement clarifies that, under the Energy Policy Act of 2005, BOEM is the lead agency under NEPA responsible for the appropriate environmental review.[55] Under the agreement, "[BOEM] will utilize the [Coast Guard]'s expertise during the NEPA process and invite the [Coast Guard] to be a cooperating agency during the preparation of NEPA documentation."[56] In addition, Coast Guard will provide subject-matter expertise on issues such as maritime safety, the management of marine commerce and

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48 Memorandum of Understanding Between the U.S. Dep't of the Interior and Fed. Energy Regulatory Comm'n (Apr. 9, 2009) [hereinafter DOI/FERC Memorandum of Understanding], *available at* http://www.ferc.gov/legal/mou/mou-doi.pdf.

49 *Id*. FERC may still issue a preliminary permit for projects in state waters only. On the OCS, a preliminary permit and a BOEM lease would be duplicative.

50 *Id.*

51 *Id.*

52 *Id.*

53 *Id.*

54 Memorandum of Agreement Between the Bureau of Ocean Energy Mgmt., Regulation, and Enforcement—U.S. Dep't of the Interior & the U.S. Coast Guard—U.S. Dep't of Homeland Sec. (July 27, 2011), *available at* http://www.boem.gov/Renewable-Energy-Program/MOA_USCG_BOEMRE_July_27_2011-pdf.aspx.

55 *Id.*

56 *Id.* at 4.

navigation, national defense, and protection of the marine environment.[57]

B. Federal Regulation of Experimental Facilities and Pilot Projects

1. Experimental Facilities Exempted from FERC Licensing Requirements

In August 2012, BOEM (formerly MMS) and FERC jointly issued guidelines on the regulation of hydrokinetic energy projects in the OCS.[58] Importantly, the guidelines clarified that a BOEM lease is required for experimental hydrokinetic facilities in the OCS that do not require a FERC license.[59] Previously, FERC had declared that experimental facilities do not require a license if

> (1) the technology in question is experimental; (2) the proposed facilities are to be used for a short period for the purpose of conducting studies necessary to prepare a license application [or provide an educational experience]; and (3) power generated from the test project will not be transmitted into, or displace power from, the [interstate] electric grid,

and thereby exempted the project from the requirements of the Federal Power Act.[60]

The guidelines retained FERC's rule for exempting experimental facilities from its licensing requirements. However, such facilities are required to obtain a lease from BOEM if the project supports the production, transportation, or transmission of energy, is to be located on the OCS, and involves the attachment of a structure or device to the seabed.[61]

2. Leasing and Licensing Requirements for Pilot Projects

BOEM and FERC have also issued guidelines to expedite the permitting process for hydrokinetic pilot projects that do not meet the criteria under *Verdant*.[62] Unlike an experimental facility for which no FERC license is needed, an expedited license for a pilot project may

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57 *Id.*

58 *See generally* BOEM/FERC Guidelines, *supra* note 1.

59 *Id.* at 2.

60 Verdant Power LLC, 112 FERC 61,143 (2005), *available at* https://www.ferc.gov/whats-new/comm-meet/072105/H-4.pdf.

61 BOEM/FERC Guidelines, *supra* note 1, at 2.

62 *See id.* at 3.

lead to full commercial license under the Federal Power Act.[63] In addition, power from a licensed pilot project or test facility can be transmitted to the power grid.[64]

FERC will consider expediting the license for a pilot project when the project is small, short term, not located in a sensitive area, and able to be shut down and removed on short notice.[65] In addition, the test facility must be removed and the site fully restored at the end of the license term if a new license is not granted.[66] Finally, to participate in the expedited licensing process, the draft application must include "sufficient information to support environmental analysis."[67] FERC estimates that its expedited process for pilot projects will take as little as six months to complete.[68] FERC's pilot project guidelines also require the applicant to work with state and federal agencies and members of the public when preparing a draft application, just as the applicant must do when preparing a full application for a commercial license.[69]

A BOEM lease is required for an ocean renewable energy project located on the OCS. Generally, BOEM issues leases on a competitive basis.[70] In addition, BOEM may issue leases on a noncompetitive basis if it determines that there is no competitive interest in a proposed lease site, or if a developer makes an unsolicited request for lease.[71]

On a case-by-case basis, BOEM can issue a limited or research lease for test or pilot projects.[72] Generally, BOEM will consider granting a limited lease for projects with durations of five years or less that generate five megawatts of power or less.[73] BOEM may consider granting a research lease to a federal or state agency to study "activities that support the future production, transportation, or

63 FED. ENERGY REGULATORY COMM'N, LICENSING HYDROKINETIC PILOT PROJECTS (2008) [hereinafter FERC WHITE PAPER], *available at* http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/pdf/white_paper.pdf.

64 *Id.*

65 BOEM/FERC Guidelines, *supra* note 1, at 4.

66 *Id.*

67 *Id.*

68 FERC WHITE PAPER, *supra* note 63.

69 *Id*.

70 *See* 30 C.F.R. §§ 585.210–.216 (2015).

71 §§ 585.212, .230.

72 BOEM/FERC Guidelines, *supra* note 1, at 4.

73 *Id.*

transmission of renewable energy."[74] However, BOEM will not issue a limited lease for any project requiring a FERC license, so most commercial developers will be required to obtain a standard commercial lease through BOEM before applying for an expedited license through FERC.[75] Commercial leases are generally issued for thirty-year terms, but BOEM may adjust the lease terms on a case-by-case basis to accommodate FERC relicensing for a pilot project.[76]

II
REGULATION IN OREGON'S TERRITORIAL SEA

A. Federal and State Licensing and Permitting in Oregon's Territorial Sea

1. FERC Licensing in the Territorial Sea

Nonfederal wave energy facilities located within Oregon's Territorial Sea, like those located on the OCS, are subject to FERC licensing requirements under the Federal Power Act. As noted in Part II, a project developer has the option of requesting a preliminary permit from FERC to retain the priority of their license application while the developer studies the proposed site.[77] In addition, some experimental facilities may be exempted from FERC licensing requirements if the facility is experimental, if it will be used only for a short period of time to conduct studies or provide for an educational experience, and if the power generated is not transmitted into the grid.[78]

In 2008, the State of Oregon entered into a memorandum of understanding with FERC over regulation of non-federal wave energy projects.[79] The purpose of the agreement was "to coordinate the procedures and schedules for review of wave energy projects in the Territorial Sea of Oregon and to ensure that there is a coordinated

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74 *Id.*

75 *Renewable Energy Lease*, OCEAN RENEWABLE ENERGY COALITION, http://www.oceanrenewableenergy.com/content/renewable-energy-lease (last visited Nov. 28, 2013).

76 *Id.*

77 28 U.S.C. § 798 (2012).

78 Verdant Power LLC, 112 FERC 61,143 (2005).

79 Memorandum of Understanding Between the Fed. Regulatory Comm'n & the State of Or. By & Through Its Dep'ts of Fish & Wildlife, Land Conservation & Dev., Envtl. Quality, State Lands, Water Res., Parks & Recreation, & Energy 1 (Mar. 26, 2008) [hereinafter Or./FERC MOU], *available at* http://www.ferc.gov/legal/mou/mou-or-final.pdf.

review of proposed wave energy projects . . . ."[80] Oregon agreed to support FERC's efforts to expedite licensing for test facilities, or to exempt facilities from licensing altogether.[81] For pilot project applications, both agencies agreed to confer "as early in the process as possible" to expedite approval of the project.[82]

2. Ocean Energy Facility Leases and Temporary Use Permits

Projects within Oregon's Territorial Sea must also obtain an ocean energy facility lease or a temporary use permit from Oregon's Department of State Lands.[83] An ocean energy facility lease authorizes a wave energy developer to occupy an authorized area for a commercial energy facility.[84] The ocean energy facility lease essentially mirrors the FERC license for a project; it cannot take effect until the FERC license is granted and its term will be the same as that under the FERC license.[85]

A temporary use authorization allows a developer to use an authorized area either for monitoring equipment or for an ocean energy facility that is a research project or demonstration project.[86] To qualify as a research project, a wave energy project must be a limited duration, noncommercial facility, operated by an educational research institution, for the purpose of obtaining scientific data related to ocean wave energy or for testing an experimental wave energy conversion device.[87] To qualify as a demonstration project, a wave energy project must also be a limited duration, non-commercial facility.[88] A demonstration project is a project designed to test the viability of a commercial operation and may be connected to the regional power grid for testing purposes only.[89]

To obtain an ocean energy facility lease or a temporary use permit, the applicant must meet the Department of State Lands staff to

80 *Id.*
81 *Id.* at 2.
82 *Id.*
83 OR. ADMIN. R. 141-140-0010(4) (2015).
84 OR. ADMIN. R. 141-140-0020(16).
85 *Id.*
86 *Id.* at (25).
87 *Id.* at (21).
88 *Id.* at (7).
89 *Id.*

discuss the project.[90] In addition, the applicant must meet with affected ocean users and government agencies with jurisdiction over the affected area to discuss possible use conflicts, impacts on habitat, and other issues related to the proposed facility or monitoring equipment.[91] The facility must also meet the requirements of Statewide Planning Goal 19, the Oregon Ocean Management Program, and the Oregon Territorial Sea Plan, (discussed below) or the Department of State Lands must determine that the facility would not conflict with any other ocean uses already occurring in the proposed area.[92]

3. Other Important State Regulations

Finally, wave energy facilities in Oregon also fall under the regulatory jurisdiction of the Water Resources Department, which issues state licenses for hydroelectric facilities. However, wave energy projects are exempted from regulation by the Water Resources Department if the project is within Oregon's Territorial Sea, generates less than five megawatts of power, and is exempted from a FERC license.[93] Wave energy facilities that generate less than five megawatts of power but are not exempted from a FERC license are statutorily exempted from hydroelectric permit standards if the project is operated under an agreement with the Water Resources Department, the Department of State Lands, the Department of Land Conservation and Development, and other specified state agencies.[94]

An ocean shore alteration permit is also required for any improvements made to the "ocean shore," including buried cable lines connecting an offshore wave energy facility to an onshore data collection facility or to the grid.[95] The Oregon Parks and Recreation Department oversees the Ocean Shore Alteration Permit process, but for the case of transmission lines, the authorizing agency for that alteration acts as the lead permitting agency.[96]

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90 *Id*.

91 OR. ADMIN. R 141-140-0040(1)–(2) (2015).

92 OR. ADMIN. R 141-140-0030(4)(a) (2015).

93 OR. REV. STAT. § 543.014 (2013).

94 2011 Or. Laws 152, §§ 1–4 (2011).

95 OR. REV. STAT. §§ 390.640–.650; *see also* OR. ADMIN. RULES 736-020-0040–0120 (2013).

96 PAC. ENERGY VENTURES ON BEHALF OF THE OR. WAVE ENERGY TRUST, WAVE ENERGY DEVELOPMENT IN OREGON: LICENSING & PERMITTING REQUIREMENTS 10 (2009), *available at* http://hinmrec.hnei.hawaii.edu/wp-content/uploads/2010/01/owet-licensing-permitting-report.pdf.

B. Siting Ocean Renewable Facilities Within Oregon's Territorial Sea

1. Goal 19 and Oregon's Territorial Sea Plan

Goal 19 is part of Oregon's statewide planning goals and guidelines, related to the conservation of marine resources in Oregon's Territorial Sea.[97] As part of Goal 19, Oregon has undertaken to plan the development of uses of the Territorial Sea. Oregon's Territorial Sea Plan (the Plan) is essentially a form of ocean zoning. Part Five of the Plan, adopted in January of 2013, relates to the use of Oregon's Territorial Sea for the development of renewable energy facilities and their related equipment.[98] The Plan represents an effort on the part of the State of Oregon to develop these ocean renewable energy facilities in a precautionary manner.[99] In making decisions related to permits, licenses, leases, or other authorizations for any renewable energy facility or supporting facility in Oregon's Territorial Sea, all State agencies are required to comply with the requirements of Part Five of the Plan.[100]

2. Area Designations Under Oregon's Territorial Sea Plan

Part Five of the Plan includes six different area designations, which delineate areas within the territorial sea based on their resources and compatible uses.[101] Renewable energy facilities, including wave energy facilities, may be sited within every area designation, with the exception of Renewable Energy Exclusion Areas, which are special management areas including dredge material disposal sites, marine reserves, and marine protected areas.[102] Renewable energy facilities may be permitted in the remaining five area designations, with different use conditions and standards of review applying within each type of area.[103]

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97 OREGON'S STATEWIDE PLANNING GOALS & GUIDELINES, GOAL 19: OCEAN RESOURCES, OAR 660-015-0010(4), 1 (2010), *available at* http://www.oregon.gov/LCD/docs/goals/goal19.pdf.

98 *Marine Energy–Wind and Wave*, *supra* note 10.

99 OREGON TERRITORIAL SEA PLAN, PART FIVE, *supra* note 9, at 1.

100 *Id.* at 2.

101 *Id.* at 33–34.

102 *Id.* at 34.

103 *Id.* at 33–34.

Among these areas, the most permissive designations for citing renewable energy facilities are Renewable Energy Permit Areas (REPA) and Renewable Energy Facility Suitability Study Areas (REFSSA).[104] A REPA is an area in which renewable energy testing, research, or commercial facilities are already authorized.[105] An application for a renewable energy facility in a REPA must merely comply with the requirements of the existing authorization for the site.[106] The Plan originally included only two areas designated as REPA.[107] The first of these areas was located off the coast of Reedsport within the FERC-licensed area designated for wave energy development by Ocean Power Technologies (the OPT Wave Park).[108] The second area is the NNMREC's North Experimental Testing Site.[109]

A REFSSA is an area in which renewable energy facilities are predicted to have the least potential adverse impact on marine resources.[110] To obtain a permit for a facility in an REFSSA, an applicant must supply the Department of State Lands with the required information to complete a Resource Use Inventory and Effects Evaluation and apply the Special Resource and Use Review Standards.[111] These tools are designed to allow the Department to evaluate the potential impacts of the project and to allow the applicant to address deficiencies in its application.[112]

The Plan originally designated most of the area to be covered by the OPT Wave Park as a REFSSA (except for the small portion designated as a REPA), but the plan provides that the area will revert to a Resources and Uses Management Area (RUMA) if OPT fails to maintain its FERC license.[113] Subsequently, when OPT surrendered its license to FERC, the area off the coast of Reedsport that had been

104 *Id.* at 33.

105 *Id.*

106 *Id.*

107 *Id.*

108 *See id.* While it appears these two locations are mentioned under the section on REFSSA, it is not apparent how these relate to REPA.

109 *See id.*

110 *Id.*

111 *Id.*

112 *See id.*

113 *See id.*

designated REFSSA reverted to a conservation area.[114] A RUMA is an area with important or significant ecologic resources or areas that are economically important.[115] A facility located within a RUMA must demonstrate that it will have no significant adverse impact on marine resources uses in that area.[116]

The vast majority of Oregon's Territorial Sea is designated as a Resources and Uses Conservation Area (RUCA).[117] A RUCA is an area in which there are important, significant, or unique ecologic reserves.[118] While renewable energy facilities could theoretically be located within an RUCA, the Plan anticipates that most facilities proposed in the area would have a significant adverse impact on marine resources and uses.[119] Thus, the Plan requires that a proposed project have "no reasonably foreseeable adverse effects."[120]

Finally, some areas are designated as a Proprietary Use and Management Area (PUMA).[121] A PUMA is a sort of catch-all designation for areas in which special uses are already authorized.[122] Examples of such uses are undersea fiber-optic instruments, cable corridors, navigation channels, and safety corridors.[123] Renewable energy facilities sited in a PUMA must be otherwise "legally permissible" and must be compatible "with the authorized use of the area."[124]

3. Requirements for Pilot Projects and Phased Development

The Territorial Sea Plan provides for the permitting of pilot projects and phased-development projects as part of a precautionary approach toward the development of ocean renewable energy off Oregon's coast.[125] When a permit applicant cannot supply enough

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114 Devan Schwartz, *Wave Energy Developer Pulls Plug on Oregon Project*, OPB.ORG (Mar. 5, 2014, 5:18 p.m.; updated Feb. 18, 2015, 8:21 a.m.), http://www.opb.org/news/article/wave-energy-developer-pulls-plug-on-oregon-project.

115 OREGON TERRITORIAL SEA PLAN, PART FIVE, *supra* note 9, at 33–34.

116 *Id.*

117 *See id.* at 34–35.

118 *Id.* at 34.

119 *See id.*

120 *Id.*

121 *Id.*

122 *Id.*

123 *Id.*

124 *Id.*

125 *Id.* at 1.

information about their proposed project due to a lack of available data, the Plan provides that the permitting agency with three options.[126] First, the agency, at its discretion, may terminate the state permitting process altogether until the applicant is able to provide more information.[127] Second, the regulating agency may recommend that the applicant complete a pilot project to gather the information needed.[128] Third, the agency may recommend that the project be conducted as a phased development.[129]

Under the Plan, a pilot project is a renewable energy facility that is able to be removed or shut down quickly, is not located in a sensitive area, and is for the purpose of testing new technologies or locating an appropriate site.[130] Authorization for pilot projects cannot exceed five years.[131] In addition, the pilot project cannot harm any "important marine habitat" or "critical marine habitat" and cannot interfere significantly with other uses of marine resources.[132] The applicant for a pilot project must submit a work plan that details how the pilot project will allow the applicant to obtain the information required to obtain a standard permit.[133] If the necessary information is provided, a pilot project may lead to a phased development.[134]

A phased development is a renewable energy facility that produces energy for commercial sale but is limited in scale and area.[135] In order to get a permit for a phased development, an applicant must provide more information and data than required for a pilot project.[136] The goal of a phased development is to obtain information about the incremental effects of each phase of development before the complete build-out of the project is allowed.[137]

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126 *Id.* at 12–14.
127 *Id.* at 12.
128 *Id.*
129 *Id.* at 14.
130 *Id.* at 12.
131 *Id.* at 13.
132 *Id.* at 13.
133 *Id.*
134 *Id.* at 14.
135 *Id.*
136 *Id.*
137 *Id.*

4. Federal Consistency Under the Federal Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) was enacted in 1972 to address public concern over the increasing stresses being placed on coastal lands and waters.[138] Under the CZMA, states have the option to participate in coastal zone management planning, with states initially receiving federal funding for such efforts.[139] The CZMA is administered by the National Oceanic and Atmospheric Administration (NOAA), with individual state's management plans requiring federal approval to fall under the CZMA. One important aspect of the CZMA is the federal consistency requirement, which requires federal agency activities affecting a state's coastal zone to be consistent with approved state management plans.[140]

The Oregon Coastal Management Program was approved by NOAA under the CZMA in 1977, with the Oregon Department of Land Conservation and Development (DLCD) serving as the lead agency.[141] The Oregon Territorial Sea Plan is a part of this NOAA-approved program. Thus, under the CZMA, any federal action, such as permitting or licensing of wave energy facilities, must comply with the requirements of Part Five of the Territorial Sea Plan discussed above.[142] In addition, in the 2008 memorandum of understanding between FERC and Oregon, FERC agreed to consult Part Five of the Plan to ensure consistency when making preliminary permitting or licensing decisions.[143]

III
PILOT PROJECT CASE STUDIES

A. Ocean Power Technologies

As of yet, there have been only two FERC-licensed wave energy facilities in the nation, the first of which was the Ocean Power

138 RIESER ET AL., *supra* note 32, at 249.

139 *Id.* at 250.

140 Coastal Zone Management Act, 16 U.S.C. § 1456(c)(1)(A) (2012).

141 *Ocean & Coastal Management in Oregon*, NOAA OFF. FOR COASTAL MGMT. NAT'L OCEANIC & ATMOSPHERIC ADMIN., http://coast.noaa.gov/czm/mystate/#oregon (last visited Apr. 19, 2015).

142 OREGON TERRITORIAL SEA PLAN, PART FIVE, *supra* note 9, at 2; 16 U.S.C. § 1455b(a)(2) (2012).

143 Or./FERC MOU, *supra* note 79, at 3.

Technologies (OPT) Wave Park off the Oregon Coast at Reedsport.[144] In 2007, FERC granted OPT a preliminary permit for its facility.[145] The facility is only two miles off the Oregon Coast, a federal BOEM lease was not required for the facility. As a condition of the permit, OPT was required to submit to FERC a proposed schedule of activities under the permit with target dates for completion, as well as progress reports every six months.[146] OPT was also required to file a Notice of Intent to file a license application and a Pre-Application Document including a timeframe for consulting with other federal, state, and local agencies.[147] The term of the preliminary permit was three years, after which OPT would no longer retain its priority for a FERC license.[148]

As part of the licensing process, FERC policy encourages applicants to enter into settlement agreements with regulatory agencies and other stakeholder groups.[149] OPT engaged in a three-year long settlement process with eleven federal and state agencies and three nongovernmental stakeholder groups.[150] The settlement agreement requires OPT to conduct a phased development, beginning with the installation and testing of a single PowerBuoy.[151] The agreement also contains an adaptive management plan and a number of other requirements designed to protect and enhance ocean resources, including numerous monitoring requirements.[152] The

144 U.S. FED. ENERGY REGULATORY COMM'N, *Preliminary Permits*, http://www.ferc.gov/industries/hydropower/gen-info/licensing/pre-permits.asp#skipnav (last updated Apr. 9, 2015); *Marine Energy–Wind and Wave*, *supra* note 10.

145 *See* Reedsport OPT Wave Park, LLC, 118 FERC 61,118 (2007), *available at* http://www.oceanrenewable.com/wp-content/uploads/2009/01/optstrictscrutord215071.pdf.

146 *Id.* at ¶ 12.

147 *Id.* at ¶ 11.

148 *Id.* at ¶ 12.

149 U.S. FED. ENERGY REGULATORY COMM'N, POLICY STATEMENT ON HYDROPOWER LICENSING SETTLEMENTS (2006), *available at* http://www.ferc.gov/whats-new/comm-meet/092106/H-1.pdf.

150 Cassandra Profita, *Wave Energy: First a License, then . . . the World*, OPB.ORG (Aug. 5, 2010, 2:25 AM; updated Feb. 19, 2013 1:47 PM), http://www.opb.org/news/blog/ecotrope/wave-energy-buoys-in-reedsport/. For the list of signatory agencies and stakeholders, see Reedsport OPT Wave Park, LLC, 140 FERC 62,120 (2012) (order issuing original license).

151 140 FERC 62,120.

152 *Id.*

requirements related to environmental quality, crabbing and fishing, and recreation are perhaps the most significant.[153]

In February 2010, OPT filed an application for a commercial license for its Reedsport Wave Park for the first two phases of its project and filed for a preliminary permit for the third and final phase of the project.[154] In March 2011, FERC issued the preliminary permit for the third phase, for full build-out of 100 PowerBuoys with 50-MW total capacity.[155] In August 2012, FERC granted OPT a 35-year license for the first two phases, fully incorporating the terms of the settlement agreement for the 1.5 megawatt facility consisting of ten wave PowerBuoys (a type of point absorber) spread over thirty acres.[156]

However, almost immediately after OPT was granted its license, problems arose. In fall 2012, OPT began the process of installing the anchors for its first PowerBuoy. In February 2013, OPT temporarily lost track of one of those anchors.[157] That June, FERC ordered OPT to stop installation until it filed the appropriate status report documents as part of its phased development plan.[158] Following that order, officials from the Department of State Lands ordered OPT to remove the remaining anchor installation equipment until it had resolved the license issues with FERC.[159] Subsequently, OPT surrendered its preliminary permit for the final phase of the project.[160] Finally, in

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153 *See* Alex Morales, *Ocean Power Takes Step Toward First Commercial U.S. Wave Farm*, BLOOMBERG NEWS (Aug. 4, 2010, 1:05 AM PDT), http://www.bloomberg.com/news/2010-08-04/ocean-power-takes-step-toward-first-commercial-u-s-wave-farm-with-accord.html.

154 *See* 140 FERC 62,120; Wyco Power and Water, Inc., 134 FERC 62244 (2012) (order denying request for rehearing and clarification), *available at* http://www.ferc.gov/whats-new/comm-meet/2012/051712/H-1.pdf.

155 134 FERC 62,244.

156 140 FERC 62,120.

157 Case, *supra* note 3.

158 *Id.*; EDGAR Online via COMTEX, *10-K: Ocean Power Technologies, Inc.*, MARKETWATCH.COM (July 12, 2013, 3:25 p.m. ET), http://www.marketwatch .com/story/10-k-ocean-power-technologies-inc-2013-07-12.

159 Letter from Mary M. Abrams, Or. Dep't State Lands, to Reedsport OPT Wave Park LLC (Aug. 30, 2013), *available at* http://oregon.surfrider.org/wp-content/uploads/2013/09/43010-OE-Extension-of-time.pdf.

160 *See* Reedsport OPT Wave Park Phase III Project (FERC P-13666) Notice of Surrender (Feb. 28, 2014), *available at* http://oregon.surfrider.org/wp-content/uploads/2014/03/Reedsport-Expanded-Project-Preliminary-Permit-Notice-of-Surrender-February-28-2014.pdf [hereinafter OPT Notice of Surrender].

May 2014, OPT filed to surrender its FERC license altogether, and FERC granted the request in August.[161]

In surrendering its FERC license and preliminary permit for its full scale wave park, OPT has surrendered its competitive advantage as the first FERC-licensed wave energy facility in the nation.[162] Even worse for OPT, if it decides to renew its efforts toward a wave energy facility in Oregon in the future, it will face a much steeper battle getting the appropriate permits from the State of Oregon the second time around. As noted, the Oregon Territorial Sea Plan originally designated the area consisting of the OPT Wave Park as either a Renewable Energy Permit Areas (REPA) or a Renewable Energy Facility Suitability Study Area (REFSSA), but that the area reverted to a Resources and Uses Management Area when OPT surrendered its FERC license.[163] Thus, if OPT decides to apply for a second set of Oregon state permits in a second attempt at the FERC licensing process, OPT will face a much higher burden of proof in demonstrating that the Wave Park will not interfere with ocean resources and uses.[164]

With the present uncertainty over when and where OPT or another private energy company will renew the pursuit for commercial wave energy in the Pacific Northwest, perhaps the greatest lesson learned from the OPT story has been the settlement agreement process. That multi-year effort toward a permit that all the stakeholders could agree upon represents a huge step forward for the wave energy industry, no matter what comes next for commercial wave energy in Oregon.[165] OPT's settlement agreement process serves as a valuable model for future commercial wave energy developers, who will be required not only to navigate a complex state and federal regulatory system, but also many diverse groups of coastal resource stakeholders.

B. Northwest National Marine Renewable Energy Center

As noted, Oregon is home to the Northwest National Marine Renewable Energy Center (NNMREC), the premier testing center for wave energy devices in the nation. In addition to laboratory testing

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161 *See* Reedsport OPT Wave Park, LLC, 148 FERC 62,137 (2014) (order accepting surrender of license).

162 Case, *supra* note 3.

163 OREGON TERRITORIAL SEA PLAN, PART FIVE, *supra* note 9, at 33.

164 *See id.* at 33.

165 *See* Morales, *supra* note 154.

facilities, NNMREC operates the Newport Open Ocean Test Site, also known as the North Energy Test Site (NETS). NNMREC has plans to open the world's second full utility-scale test site in Newport, Oregon, the Pacific Marine Energy Center, also known as the South Energy Test Site (SETS).

To test wave energy devices in its open ocean test site, NETS, NNMREC has deployed the high-tech research vessel *Ocean Sentinel*. In part because of its small size and high mobility, the vessel is exempt from many state and federal regulations.[166] Data collection on the Ocean Sentinel herself is an alternative to running data cables and electrical lines to shore, thereby avoiding shore alteration permit requirements.[167] The *Ocean Sentinel* and NETS have also been exempted from FERC licensing; the vessel easily meets the three-part test under the *Verdant* decision.[168] While NETS is entirely within the state's territorial sea, even if it were deployed on the OCS, it would not require a lease from BOEM because no equipment is fixed to the seafloor.[169]

In keeping with Oregon's dedication to a precautionary approach to wave energy, NNMREC was required to conduct an environmental review for NETS and the *Ocean Sentinel*.[170] As a part of that process, NNMREC and Oregon Sea Grant worked extensively with state agencies, local fisherman, and other community members who rely on the ocean.[171] In part because NNMREC developed a strong working relationship with state agencies and local communities, NNMREC test sites were included in the development of Part Five of Oregon's Territorial Sea Plan as a special-use site.[172]

The next step for NNMREC is to open their South Energy Test Site off the shore of Newport, which will allow for full utility-scale device

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166 PAC. ENERGY VENTURES ON BEHALF OF OR. WAVE ENERGY TRUST, OREGON WAVE ENERGY TRUST UTILITY MARKET INITIATIVE: TASK 2.1.3: OREGON WAVE PROJECT DATABASE 6 (2009), *available at* http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/19037/Task-2.1.3-Oregon-Wave-Project-Database.pdf?sequence=8; *see also Wave Energy: Testing the Future in Oregon*, NOAA COASTAL SERVICES (Nov./Dec. 2012), http://www.csc.noaa.gov/magazine/2012/06/article1.html (noting that the project did require an U.S. Army Corps of Engineers Permit).

167 *Wave Energy: Testing the Future in Oregon*, *supra* note 166.

168 *See id.*

169 *See* OREGON TERRITORIAL SEA PLAN, PART FIVE, *supra* note 9.

170 *Wave Energy: Testing the Future in Oregon*, *supra* note 167.

171 *Id.*

172 *Id.*

testing and will be connected to the grid. The test site will occupy about two square-miles, consisting of four test berths anchored to the seafloor.[173] The permitting and licensing of SETS will be much more involved than NETS; SETS will be grid-connected, with equipment attached to the sea floor on the OCS (five miles from shore) and cables running to shore through Oregon's Territorial Sea.[174] Its anticipated capacity is no more than ten wave energy devices, totaling ten megawatts of power generation.[175]

In October 2013, NNMREC submitted an unsolicited lease request to BOEM for a lease on the OCS.[176] Next, BOEM published a Request for Competitive Interest.[177] In June 2014, BOEM made a finding of no competitive interest and proceeded with its non-competitive lease process to lease the site to NNMREC.[178] After the finding of no competitive interest, NNMREC will submit its site plan and lease applications to BOEM, followed closely by a draft license application to FERC.[179] After a FERC license is granted, NNMREC can pursue other state permits under the Territorial Sea Plan for the cables running to shore through Oregon's jurisdiction. Because the total capacity of SETS is predicted to be more than five megawatts, NNMREC may also be required to obtain a state hydroelectric power license from the Water Resources Department.[180] NNMREC predicts that the permitting process will be far enough along to begin construction on the anchoring systems in 2016.[181]

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173 NORTHWEST NAT'L MARINE RENEWABLE ENERGY CENTER AT OR. STATE UNIV., UNSOLICITED REQUEST FOR RENEWABLE ENERGY RESEARCH LEASE 5 (2013) (redacted), *available at* https://secure.ous.edu/bid/system/attachments/3642/original/NNMREC_Unsolicited_Lease_Request_REDACTED.pdf?1390931274 [hereinafter NNMREC UNSOLICITED LEASE REQUEST].

174 *Id.* at 5.

175 *Id.* at 16–17.

176 *See id.* at 1.

177 Potential Marine Hydrokinetic (MHK) Research Lease on the Outer Continental Shelf (OCS) Offshore Oregon Request for Competitive Interest, 79 Fed. Reg. 16,050 (Mar. 24, 2014); *see also* 30 C.F.R. § 585.231(b) (2013).

178 Notice of Determination of No Competitive Interest for the Pacific Marine Energy Center South Energy Test Site Project Offshore Newport, Oregon, 79 Fed. Reg. 35,377 (Jun. 20, 2014); *see also* 30 C.F.R. § 585.231(b), (d)–(h).

179 Notice of Determination of No Competitive Interest for the Pacific Marine Energy Center South Energy Test Site Project Offshore Newport, Oregon, 79 Fed. Reg. at 35,377; § 585.231(b), (d)–(h).

180 See *supra* III.A.3. regarding Oregon hydroelectric license requirements.

181 Nancy Steinberg, *Who SETS NETS? Not Just Fishermen!*, NORTHWEST NAT'L MARINE RENEWABLE ENERGY CENTER, OREGONSTATE.EDU, http://nnmrec.oregonstate.edu/who-sets-nets-not-just-fishermen (last visited Apr. 19, 2015).

Throughout the process thus far, NNMREC has worked extensively with the local fishing communities and Oregon Sea Grant, and has kept both FERC and BOEM apprised of their progress.[182] NNMREC especially considered the input of community stakeholders when deciding to locate SETS off the Newport coast.[183] Because NNMREC has taken a very pro-active approach to include stakeholders from the beginning, it is likely that the rest of the permitting process will proceed without significant conflicts or the need for an extensive settlement agreement as was required of OPT.

Furthermore, NNMREC's cautioned approach has always focused heavily on supporting pilot projects and phased development. For this reason, NNMREC is also unlikely to face the same intersection of technical and regulatory challenges faced by OPT that lead the company to abandon its plans for a commercial utility-scale wave park.

CONCLUSION

Wave energy facilities are subjected to a complex web of state and federal permitting and licensing requirements, only some of which have been discussed here. On the one hand, it could be argued that these requirements act to severely delay development of the wave energy industry. On the other hand, many argue that these requirements are necessary to ensure that Oregon's ocean resources and existing ocean uses are protected up-front. Some Oregonians note the comparisons between the developing wave energy industry and the conventional hydropower industry, and wish to avoid the damage to fisheries and recreation caused by the dams of the last century.

The State of Oregon and the federal government can adequately accommodate both concerns by encouraging pilot projects and phased development. Those projects embody a precautionary approach in that they are smaller in scale, and thus have smaller potentially adverse impacts.[184] Pilot projects and phased development give the industry and regulators more time to study the technology, which will hopefully minimize the occurrence of OPT-like failures and lead to the most efficient, least resource-intensive technology prevailing. In addition, expedited permitting and or the waiver of permitting

182 NNMREC UNSOLICITED LEASE REQUEST, *supra* note 174, at 7–8.

183 *Id.*

184 *Wave Energy: Testing the Future in Oregon*, *supra* note 167.

requirements altogether allows for testing to be completed more rapidly, lessening the overall time to full utility-scale deployment of wave energy facilities.

Finally, it is imperative that stakeholder groups continue to be consulted and allowed to participate in the permitting and licensing process. The ocean renewable energy community has already seen what it looks like when stakeholder groups are not on the same side as renewable energy developers with the protracted Cape Wind debacle in Massachusetts.[185] As demonstrated in the OPT settlement process and with NNMREC's progress toward SETS, wave energy developers in Oregon are making it a priority to work with stakeholder groups and community members. As a whole, Oregonians strongly value both environmental quality and renewable energy initiatives.[186] Thus, although there are still technological and regulatory obstacles to overcome, the future looks very bright for wave energy in Oregon.

185 For a review of the saga of Cape Wind, see Tom Zeller, Jr., *Cape Wind: Regulation, Litigation and the Struggle To Develop Offshore Wind Power in the U.S.*, HUFFINGTON POST (Mar. 1, 2013, 3:02 PM), http://www.huffingtonpost.com/2013/02/23/cape-wind-regulation-liti_n_2736008.html.

186 *Summaries*, OR. VALUES & BELIEFS PROJECT, http://oregonvaluesproject.org/findings/summaries (last visited Feb. 22, 2015) (follow links to *Economy & Environment* and *Energy*).