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Siting Offshore Hydrokinetic Energy Projects: A Comparative Look at Wave Energy Regulation in the Pacific Northwest

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SITING OFFSHORE HYDROKINETIC ENERGY PROJECTS: A COMPARATIVE LOOK AT WAVE ENERGY REGULATION IN THE PACIFIC NORTHWEST

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I. INTRODUCTION

Americans have long relied on the oceans to improve our quality of life-enabling renewal, recreation, providing food, facilitating trade, and in more recent history delivering vast quantities of petroleum.[1] The April 20, 2010, oil spill in the Gulf of Mexico emphasized the human dependence on a healthy marine environment. All energy development comes at an environmental cost, but the imperative to reduce our use of nonrenewable energy sources, as well as the environmental impacts of such use, has become clear.[2] For those interested in energy policy, the

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[1] Minerals Management Service outer continental shelf (OCS) statistics from 1954 to 2006 indicate that oil and natural gas production on the OCS has steadily increased over time. In the early 2000's it accounted for almost 30% of our total domestic production. MINERALS MGMT. SERV., U.S. DEP'T OF THE INTERIOR, FEDERAL OCS OIL AND GAS PRODUCTION AS A PERCENTAGE OF TOTAL OF U.S. PRODUCTION: 1954-2006 (2008).

[2] *See* Scott Johnson, *Wave Energy: "New-Wave" Interest in an Old Alternative Resource*, 7 SUSTAINABLE DEV. L. & POL'Y 21 (2007). Research indicates that state Renewable Energy Portfolios are popular due to perceived individual state interests in energy security and economic development, with perceived climate/environmental benefits seen as ancillary rather than a primary driver. *See* BARRY G. RABE, PEW CTR. ON GLOBAL CLIMATE CHANGE, RACE TO THE TOP: THE EXPANDING ROLE OF U.S. STATE RENEWABLE PORTFOLIO STANDARDS 6 (2006).

disaster[3] highlights the need to develop domestic energy sources "beyond petroleum."[4]

The United States has the largest Exclusive Economic Zone of any nation, and therein lies significant opportunity for non-petroleum energy generation.[5] Hydrokinetic energy is derived from waves, tides, or currents.[6] Both inland and offshore[7] domestic hydrokinetic energy projects are poised to add non-carbon sources of electricity to the U.S. market.[8] The Electric Power Research Institute (EPRI)[9] has conducted multiple studies to estimate the amount of energy that could be provided by offshore hydrokinetic projects; while estimates vary, 400 twh/year (terawatt-hours per year),[10] which is the equivalent of 10% of the national demand in 2004, appears quite plausible.[11] These ocean energy projects trail the development of other renewable energy sources for many reasons. One of the major stumbling blocks is the development of

[3] To most accurately characterize the event, some have entitled it the "BP/Deepwater Horizon Oil and Gas Disaster." Elliott A. Norse & John Amos, *Impacts, Perception, and Policy Implications of the Deepwater Horizon Oil and Gas Disaster*, 40 ENVTL. L. REP. NEWS & ANALYSIS 11,058, 11,059 (2010) (explaining significance of using the term "spill" as too innocuous to describe "what is arguably the worst environmental event in U.S. history").

[4] Miriam Cherry & Judd Sneirson, *Beyond Profit: Rethinking Corporate Social Responsibility and Greenwashing After the BP Oil Disaster*, 85 TULANE L. REV. 983 (2011).

[5] *See, e.g.*, Peter J. Schaumberg & Ami M. Grace-Tardy, *The Dawn of Federal Marine Renewable Energy Development*, 24 NAT. RESOURCES & ENV'T 15 (2010). For an argument that federal public lands policy should be used to help move the United States to more sustainable energy policy, *see* John Leshy, *Federal Lands in the Twenty-First Century*, 50 NAT. RESOURCES J. 111, 131 n.93 (2010) (noting that wind and wave energy projects could be located on the outer continental shelf).

[6] The Federal Energy Regulatory Commission (FERC) defines "hydrokinetic" projects as those which "generate electricity from waves or directly from the flow of water in ocean currents, tides, or inland waterways." *Hydrokinetic Projects*, FED. ENERGY REGULATORY COMM'N, www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp (last visited Apr. 8, 2011).

[7] Jurisdiction over the nation's waters is a complex subject. Generally speaking, land is divided from the ocean at the "baseline." Beyond this, several jurisdictional lines are relevant for domestic and international law. Colloquially, the term "inland" is used here to delineate projects that may be proposed in rivers, while the term "offshore" refers to projects in ocean waters.

[8] There is also interest in the development of in-stream hydrokinetic projects. This Article is limited in scope to offshore development of wave energy and its unique challenges.

[9] EPRI, founded in 1972, is a nonprofit scientific research consortium that provides energy-related products and services to more than 700 organizations in forty countries. The World Energy Council credited EPRI's extensive studies for "rekindling" interest in wave energy in the United States. *See* WORLD ENERGY COUNCIL, 2007 SURVEY OF ENERGY RESOURCES COUNTRY NOTES 562 (2007), *available at* www.worldenergy.org/documents/wave_country_notes.pdf.

[10] A terawatt is equal to one trillion watts. Merriam-Webster online dictionary defines "terawatt" as "a unit of power equal to one trillion watts." *Terawatt Definition*, MERRIAM-WEBSTER, www.merriam-webster.com/dictionary/terawatt (last visited Apr. 14, 2011).

[11] *See* ELEC. POWER RESEARCH INST., PRIMER: POWER FROM OCEAN WAVES AND TIDES 3 (2007).

a cohesive regulatory framework for such projects offshore. Experts engaged in representing project proponents have noted that the regulatory framework is being developed as the projects move forward, which in itself is a challenge to this industry.[12]

Interest in marine hydrokinetic energy is peaking at the same time that the federal government and states are engaging in marine spatial planning. As a tool used for more comprehensive ocean management, marine spatial planning will be central to the prioritization that must occur in offshore development. Much like zoning on land, ocean zoning requires decisions about human preferences that have long been delayed under the false premise that oceans were vast and unable to be destabilized by our use.[13]

Though in the abstract public support for renewable energy is robust in the Pacific Northwest states examined here, this does not necessarily translate into support for individual siting decisions.[14]

This Article considers the approaches that Oregon, California, and Washington have taken to address the need for additional renewable energy while also undertaking a shift to comprehensive ocean management. Discussion of offshore federalism, a component of the opportunities and challenges of this nascent industry, is highlighted at various points. The Memoranda of Understanding that these coastal states have entered into with the Federal Energy Regulatory Commission have been central to facilitating hydrokinetic energy development. While each state has taken a slightly different approach to folding wave energy into its alternative energy and marine management agendas, the progress made is encouraging for the development of a robust ocean energy

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[12] *See* STOEL RIVES LLP, THE LAW OF MARINE AND HYDROKINETIC ENERGY ch. 3, at 21-22 (4th ed. 2011), www.stoel.com/webfiles/LawofMarine.pdf.

[13] *See* Elliott A. Norse, *Ending the Range Wars on the Last Frontier: Zoning the Sea*, *in* MARINE CONSERVATION BIOLOGY: THE SCIENCE OF MAINTAINING THE SEA'S BIODIVERSITY 422, 423 (Elliott A. Norse & Larry B. Crowder eds., 2005) (pointing to the "still-widespread belief that the sea is an inexhaustible cornucopia" as one reason for the decline in marine health and highlighting the continued primacy of consumptive user groups in dictating marine management decisions by government officials); *see also* Robin Kundis Craig, *Taking the Long View of Ocean Ecosystems: Historical Science, Marine Restoration, and the Oceans Act of 2000*, 29 ECOLOGY L.Q. 649, 650 (2002) (discussing how the cultural perception that oceans were "inexhaustible, far too grand, too mighty, too deep for beings as puny as humans to damage" influenced development of ocean management laws).

[14] This was noted as a challenge for states with renewable energy portfolio targets in RABE, *supra* note 2, at 23. His case studies revealed that "much of the early planning for RPS [Renewable Portfolio Standard] targets assumed public support for renewable energy not only in general terms but also in presumed receptivity to siting facilities and related transmission capacity." *Id.* Drawing on the Cape Wind project controversy, Rabe's analysis concludes that "[t]his problem may become increasingly common for those states with relatively concentrated and populated areas for outstanding renewable sources and it raises a new set of challenges for policy proponents." *Id.*

industry.

Part II presents a background on the efforts to regulate hydrokinetic wave energy projects in the Pacific Northwest. Part III discusses the legal background of the shared offshore jurisdiction between state governments and the federal government. Part IV explores the Federal Energy Regulatory Commission procedures relating to offshore hydrokinetic wave projects. Part V reviews licensing regimes in Washington, Oregon, and California. Part VI discusses preliminary conclusions that can be drawn from the analysis of state regimes. Part VII discusses regional efforts and comparative insights. Part VIII discusses the long-term sustainability of offshore hydrokinetic energy.

II. BACKGROUND ON PACIFIC NORTHWEST REGULATORY EFFORTS

Hydrokinetic energy can be generated from waves, tides, or currents. Wave and tidal projects, both offshore and inshore, are in various stages of research, development, and deployment in various parts of the country.[15] This Article specifically focuses on offshore hydrokinetic wave energy in the Pacific Northwest region of the United States.[16]

Although there is great potential, the technological feasibility of commercial scale offshore hydrokinetic energy production is not yet established. Converting waves and tides into energy is still a work in progress.[17] The federal government first established a research program in marine and hydrokinetic energy in 2007.[18] Across the world many

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[15] *See* PAC. VENTURES, LLC, U.S. DEP'T OF ENERGY, SITING METHODOLOGIES FOR HYDROKINETICS: NAVIGATING THE REGULATORY FRAMEWORK 14 (2009) (evaluating Alaska, California, Florida, Hawaii, Maine, Massachusetts, Oregon, Rhode Island, and Washington as "nine key states where hydrokinetic development is underway or is likely to occur in the near future").

[16] The Pacific Fishery Management Council collected information on West Coast projects and reported the findings. *See Habitat and Communities: Wave, Tidal, and Offshore Wind Energy*, PACIFIC FISHERY MANAGEMENT COUNCIL, www.pcouncil.org/habitat-and-communities/wave-tidal-and-offshore-wind-energy/ (last visited Apr. 8, 2011). FERC also maintains a website where issued and pending licenses in the United States can be searched. *See Hydrokinetic Projects*, FED. ENERGY REGULATORY COMM'N, www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp (last visited Apr. 8, 2011).

[17] *See, e.g.*, *The Coming Wave*, THE ECONOMIST, June 5, 2008, *available at* www.economist.com/node/11482565 ("In theory the world's electricity needs could be met with just a tiny fraction of the energy sloshing around in the oceans. Alas, harnessing it has proved to be unexpectedly difficult.").

[18] *See* 42 U.S.C.A. § 17212 (Westlaw 2011). In 2007, Congress passed the Energy Independence and Security Act (EISA), an omnibus energy policy law. Pub. L. No. 110-140, 121 Stat. 1492 (2007); *see* FRED SISSINE, CONG. RESEARCH SERV., RL 34294, ENERGY INDEPENDENCE AND SECURITY ACT OF 2007: A SUMMARY OF MAJOR PROVISIONS (2007). Therein, Congress emphasized development of renewable energy and authorized funding of marine renewable energy

different technologies have been tested, employing fixed buoys, turbines, or other mechanical devices to capture wave energy (wave energy conversion) and deploy it to the electricity grid. As one might imagine, the offshore environment requires that deployed equipment withstand extreme weather conditions while at the same time optimizing design for the more common natural conditions offshore. It has been a rocky road for developers contending with these realities, in practical,[19] political, and financial ways. At this point countries such as Scotland and Portugal have conducted small-scale deployments and are pursuing commercial development.[20] Many other countries are also expressing growing interest in this form of renewable energy.[21] As yet there is no technology leader,[22] which means that the industry is still in a stage of research and development at the same time it pushes toward deployment.[23] This has made for a sense of the "wild west" as competitors vie for the best

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research centers. *See* 42 U.S.C.A. § 17213 (Westlaw 2011). Although passed by the House with a Renewable Energy Portfolio, that provision was removed from the bill by the Senate. *See id*. at 2; FRED SISSINE, CONG. RESEARCH SERV., RL34162, RENEWABLE ENERGY: BACKGROUND AND ISSUES FOR THE 110TH CONGRESS (2008); FRED SISSINE, CONG. RESEARCH SERV., RL 34116, RENEWABLE ENERGY PORTFOLIO STANDARD (RPS): BACKGROUND AND DEBATE OVER A NATIONAL REQUIREMENT (2007) (explaining further proposals to eliminate oil and gas tax subsidies passed in the House but failed in the Senate); SALVATORE LAZZARI, CONG. RESEARCH SERV., RL33578, ENERGY TAX POLICY: HISTORY AND CURRENT ISSUES (2008) (discussing oil and gas tax subsidies).

[19] *See, e.g.*, Miriam Widman, *While Finavera's Buoy Sinks, Hopes of Harnessing Ocean Energy Survive*, RENEWABLEENERGYWORLD.COM (Nov. 8, 2007).

[20] *See* Vladimir Pekic, *Marine Energy Projects Advance Worldwide as India Prepares to Launch Tidal Power Plant*, PLATT'S RENEWABLE ENERGY REPORT (Feb. 7, 2011). The first commercial scale wave farm opened in Portugal in 2008. However, technical problems required that the devices be removed. *See* E. On, *U.K. Wave Technology Generates First Test Power*, PLATT'S RENEWABLE ENERGY REPORT (Nov. 15, 2010). Scotland and Portugal are seeking to become wave and tidal energy leaders, along with Ireland. *See Seize the Day, Harness the Sea*, IRISH TIMES, Nov. 26, 2010, *available at* www.irishtimes.com/newspaper/finance/2010/1126/1224284166788.html; *Energy and Electricity Report Portugal, January 2011*, ECONOMIST INTELLIGENCE UNIT ENERGY & ELEC. FORECAST 9 (Jan. 27, 2011) (noting Portugal's quest to become marine energy technology leader); *see also* Holly V. Campbell, *A Rising Tide: Wave Energy in the United States and Scotland*, 2 SEA GRANT L. & POL'Y J. 29 (Winter 2009/2010), *available at* nsglc.olemiss.edu/SGLPJ/Vol2No2/Campbell.pdf.

[21] *See* WORLD ENERGY COUNCIL, 2010 SURVEY OF ENERGY RESOURCES (2010), *available at* www.worldenergy.org/documents/ser_2010_report_1.pdf.

[22] *See id*. at 566 ("At least 100 separate technologies are represented by the wave energy devices currently being developed."); *see also* Julie Rehmeyer, *Equation: Gauging the Awesome Power of Waves*, WIRED MAGAZINE, Sept. 2010, at 51 (pointing out that half of the U.S. electrical need could be met by using U.S. waters for wave energy and lamenting, "Now all we need is a formula for building machines to transform all that endless up-and-down to electrical current.").

[23] *See* MINERALS MGMT. SERV., U.S. DEP'T OF THE INTERIOR, TECHNOLOGY WHITE PAPER ON WAVE ENERGY POTENTIAL ON THE U.S. OUTER CONTINENTAL SHELF 3 (May 2006) [hereinafter MINERALS MGMT. SERV. WHITE PAPER] (noting that technologies were in "too early a stage of development to predict what technology or mix of technologies would be most prevalent in future commercialization").

technology suited to capture energy and to identify and lay claim to those offshore areas where the technology could be used.[24]

A. REGIONAL ALTERNATIVE ENERGY CONTRIBUTIONS

The type of alternative energy contributed to the electricity grid follows the particular type of energy source in question. As with solar, geothermal, and wind energy, hydrokinetic energy production (wave energy conversion) will be feasible to undertake only in particular fixed locations. Thus, as policymakers in the United States are looking toward the deserts to supply solar power, and the Eastern Seaboard to supply wind power, the Pacific Northwest offshore region is attracting attention for its significant hydrokinetic power potential. According to studies by EPRI, the Pacific Northwest region could be a major source of hydrokinetic power.[25] Further, unlike the criticisms related to alternative energy projects in locations that are remote from energy demand,[26] coastal populations are already large and growing in energy demand.[27] More preliminary permits to investigate wave energy have been issued in California than any other state, and Oregon has announced its intention to be the leader in wave energy.[28]

B. ZONING OFFSHORE: MARINE SPATIAL PLANNING

While it is true that hydrokinetic power may be best harvested in a particular location offshore, there may be other demands related to the site that compete or are inconsistent with energy production. In fact, our

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[24] This has made the issue of "site banking" sensitive to the Federal Energy Regulatory Commission, which is taking a "strict scrutiny" approach to preliminary permits issued for wave energy projects. *See* discussion and footnotes *infra* Part III; *see also* Flaxen Conway, Holly Campbell, Zack Covell, Daniel Hunter, Maria Stefanovich, John Stevenson & Yao Yin, *Ocean Space, Ocean Place: Human Dimensions of Wave Energy in Oregon*, 23 OCEANOGRAPHY 82 (June 2010) (likening wave energy development to a gold rush).

[25] *See* ELEC. POWER RESEARCH INST., *supra* note 11 (estimating the wave energy resource at 440 twh/yr in the region encompassing Washington, Oregon, and California). Note that this figure does not represent estimated extraction rates but simply the resource potential.

[26] *See, e.g.*, Mark Gunther, *A Blown Opportunity: An Investment in Wind Power is Smart--But Not the Way We're Doing It*, WIRED MAGAZINE, Sept. 2010, at 31-32 (examining West Texas wind development).

[27] The Department of Energy recognized that hydrokinetic energy "represent[s] a promising energy source located close to centers of electricity demand." *Department of Energy Awards $37 Million for Marine and Hydrokinetic Energy Technology Development*, U.S. DEP'T OF ENERGY (Sept. 9, 2010), energy.gov/9470.htm; *see also* Jon Wellington, James Pederson & David L. Morenoff, *Facilitating Hydrokinetic Energy Development Through Regulatory Innovation*, 29 ENERGY L. J. 397, 398 (2008) (noting the energy would be added near major cities).

[28] *See* discussion *infra* Part V.A (Oregon), C (California).

nation's offshore regions have become crowded, with user conflicts now common and growing.[29] As a specific concern for wave energy, rational siting considerations, such as avoiding established shipping lanes, harbor entrances,[30] and sensitive habitats, can only avoid conflict to a point. Large offshore arrays of energy conversion devices would certainly threaten the displacement of commercial and potentially recreational fishing.[31]

Zoning, a building block of rational land-use planning, is designed to identify incompatible land uses and shape development to prevent nuisance-like effects. "By specifying places in which particular purposes have precedence, zoning provides assurance that those interests can operate with minimal or no competition from incompatible uses within their zones."[32] In the past few decades, states and the federal government have shown an interest in infusing ocean management with zoning principles.

The oceans are faced with multiple stressors: overfishing, pollution, habitat destruction, ocean acidification, and climate change. Much of the discussion of ocean zoning (with use of marine spatial planning (MSP), or ecosystem-based marine spatial planning processes)[33] has centered on the problem of overfishing, with states coming to the conclusion that no-take marine reserves are necessary as one management tool to ease the pressure on over-utilized fisheries.[34]

Marine spatial planning in some places is driven by the competing needs to facilitate new ocean uses, resolve conflicts, and conserve the marine environment.[35] The confluence of environmental decline in the

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[29] *See* Steve LeBlanc, *NOAA Chief Says New Ocean Uses Creating Conflicts*, PHYSORG.COM (July 20, 2009), *available at* www.physorg.com/news167373736.html.

[30] *See* ELEC. POWER RESEARCH INST., OFFSHORE WAVE POWER IN THE US: ENVIRONMENTAL ISSUES 22 (2004).

[31] *Id*., at 21-22.

[32] Norse, *supra* note 13, at 434.

[33] *See* Deborah A. Sivas & Margaret R. Caldwell, *A New Vision for California Ocean Governance: Comprehensive Ecosystem-Based Marine Zoning*, 27 STAN. ENVTL. L. J. 209 (2008).

[34] Marine Protected Areas that prohibit extractive activities such as fishing can be seen as "zones" within a zoning system that would work as a passive form of ocean restoration. *See, e.g.*, Craig, *supra* note 13, at 681 (discussing passive restoration by marine protected areas). Professor Craig identifies one difference between land and sea restoration as follows: "restoration of marine ecosystems often can be accomplished simply by leaving them alone." *Id*. For an overview of the federal legal authority to zone marine protected areas, *see* AARON M. FLYNN, CONG. RESEARCH SERV., RL32486, MARINE PROTECTED AREAS: FEDERAL LEGAL AUTHORITY (Feb. 4, 2005).

[35] *See, e.g.*, Fanny Douvere & Charles Ehler, *Ecosystem-Based Marine Spatial Management: An Evolving Paradigm for the Management of Coastal and Marine Places*, OCEAN YEARBOOK 23 11 (Aldo Chircop, Scott Coffen-Smout & Moira L. McConnell eds., 2009).

oceans[36] and a flurry of proposed new uses have supported significant advancement in ocean zoning efforts in the United States.[37] The Pew Oceans Commission in 2003[38] and the U.S. Commission on Ocean Policy in 2004[39] both strongly endorsed the use of marine spatial planning as a tool to rebuild ocean ecosystems and facilitate rational future use of our shared ocean resources.

As more new uses for offshore areas are proposed, such as the siting of liquefied natural gas terminals or aquaculture facilities, the necessity of a comprehensive zoning plan has become evident.[40] On July 19, 2010, by Executive Order President Barak Obama directed the development of coastal and marine spatial plans (CMSP) to facilitate "sustainable multiple uses" and "improve conservation" of the oceans.[41] With the Executive Order the Final Recommendations of the Interagency Ocean Policy Task Force were also released, outlining a framework for CMSP that again reinforced the "multi-objective nature" of CMSP.[42] The Executive Order created the National Ocean Council, whose priority objectives include implementing CMSP.[43]

As articulated in the Final Recommendations, among the national goals of CMSP is to "increase certainty and predictability in planning for and implementing new investments for ocean, coastal and Great lakes

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[36] L.B. Crowder, G. Osherenko, O.R. Young, S. Airame, E.A. Norse, N. Baron, J.C. Day, F. Douvere, C.N. Ehler, B.S. Halpern, S.J. Langdon, K.L. McLeod, J.C. Ogden, R.E. Peach, A.A. Rosenberg & J.A. Wilson, *Resolving Mismatches in U.S. Ocean Governance*, 313 SCIENCE 617-18 (Aug. 4, 2006) ("That the oceans are in serious trouble is no longer news.").

[37] Section 388 of the Energy Policy Act of 2005 authorized the Minerals Management Service to engage in planning for new projects on the OCS. *See* 43 U.S.C.A. § 1337(p) (Westlaw 2011); MARK HOLT & CAROL GLOVER, CONG. RESEARCH SERV., RL 33302, ENERGY POLICY ACT OF 2005: SUMMARY AND ANALYSIS OF ENACTED PROVISIONS 33 (March 8, 2006) ("The provision requires the Secretary to undertake a coordinated OCS mapping initiative to assist in decisionmaking relating to the siting of facilities under this provision.").

[38] *See* PEW OCEANS COMM'N, AMERICA'S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE 111 (2003).

[39] *See* U.S. COMM'N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY (2004), *available at* www.oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf.

[40] *See Zoning for Oceans: Balancing Our Competing Needs in the Seas*, SCIENTIFIC AMERICAN, Dec. 8, 2009, *available at* www.scientificamerican.com/article.cfm?id=zoning-for-oceans.

[41] Exec. Order No. 13,547, 75 Fed. Reg. 43,023 (July 19, 2010).

[42] WHITE HOUSE COUNCIL ON ENVTL. QUALITY, FINAL RECOMMENDATIONS OF THE INTERAGENCY OCEAN POLICY TASK FORCE (July 19, 2010).

[43] The National Ocean Council is a dual principal and deputy level committee charged with developing strategic action plans for the priority objectives necessary to carry out the National Ocean Policy. *See* Exec. Order No. 13,547, 75 Fed. Reg. 43,023 (July 19, 2010).

uses."[44] Methods of offshore zoning are now taking place in state waters.[45] Therefore, there are as yet no "zones" specifically dedicated to hydrokinetic energy production,[46] and each potential geographical area is in a different stage of planning for fixed uses offshore. The information gathering, mapping of current uses, inventory of marine resources, and public input on potential designs for management used in a marine spatial planning process have yet to be completed.

This issue is a challenge not only for state territorial waters, but also for the outer continental shelf (OCS), where the Minerals Management Service (MMS), the predecessor of the Bureau of Ocean Energy Regulation, Management and Enforcement (BOERME), began planning for alternate uses of existing outer continental shelf facilities (e.g., oil drilling platforms or storage facilities), perhaps for renewable energy production.[47] By rulemaking it established a new system for offshore renewable energy development.[48] As part of their process the MMS prepared a Programmatic Environmental Impact Assessment that identified potential impacts of ocean renewable energy development.[49]

C. ENVIRONMENTAL IMPACTS

Hydrokinetic energy is not carbon-based and therefore creates no harmful air emissions. Some technologies may create no water

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[44] WHITE HOUSE COUNCIL ON ENVTL. QUALITY, *supra* note 42, at 48.

[45] *See* RENEWABLE ENERGY & DEMAND-SIDE MGMT. COMM., COMMITTEE REPORT, 31 ENERGY L.J. 287, 306 (2010) (noting that different states are engaging in ocean zoning, including Massachusetts, Rhode Island, and Virginia) [hereinafter RENEWABLE ENERGY]; *see also infra* Parts V.A.iv, B.iv, and C.iii.

[46] *See* RENEWABLE ENERGY, *supra* note 45, at 306-07 (noting that the plan in Massachusetts expressly identifies renewable energy areas); *see also* EXEC. OFFICE OF ENERGY & ENVTL. AFFAIRS, COMMONWEALTH OF MASS., MASSACHUSETTS OCEAN MANAGEMENT PLAN, VOLUME 1: MANAGEMENT AND ADMINISTRATION 2-1 (Dec. 2009), *available at* www.env.state.ma.us/eea/mop/final-v1/v1-text.pdf. Note that the plan contemplates wind development, but not large-scale wave development in the first five-year term of the plan. Also, wave and tidal energy are allowed in the multi-use areas.

[47] *See* Alternate Uses of Existing Facilities on the Outer Continental Shelf, 74 Fed. Reg. 19,638 (Apr. 29, 2009) (codified at 30 C.F.R. pts. 250, 285, 290). The oil and gas industry has for a long time sought alternatives to decommissioning outer continental shelf oil platforms at the end of their production. *See, e.g.*, Rachael E. Salcido, *Enduring Optimism: Examining the Rigs to Reefs Bargain*, 32 ECOLOGY L.Q. 863 (2005).

[48] For a discussion of the rules, *see* Peter J. Schaumberg & Angela F. Colamaria, *Siting Renewable Energy Projects on the Outer Continental Shelf: Spin, Baby, Spin!*, 14 ROGER WILLIAMS U. L. REV. 624 (2009).

[49] *See* MINERALS MGMT. SERV., U.S. DEP'T OF THE INTERIOR, FINAL PROGRAMMATIC EIS FOR ALTERNATIVE ENERGY DEVELOPMENT AND PRODUCTION AND ALTERNATE USE OF FACILITIES ON THE OCS (Oct. 2007) [hereinafter MINERALS MGMT. SERV. FINAL EIS].

discharges. At a time when the harmful effects of climate change have materialized even faster than previously anticipated, we can hardly afford to overlook a potential source of non-carbon energy. Nonetheless, uncertainties still abound regarding the impact of wave energy projects on the environment. EPRI, as well as others, has identified the potential for wave energy to be one of the least harmful energy generation sources we have yet discovered.[50] But this theory awaits testing and confirmation. In 2007, the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), and National Marine Fisheries Service (NMFS) produced "Ecological Effects of Wave Energy Development in the Pacific Northwest" following a one-and-a-half-day workshop at the Hatfield Marine Science Center in Oregon.[51] The report identifies many areas of environmental, fish, and wildlife concerns, with varying levels of certainty regarding impacts and mitigation possibilities.

Confounding the necessary research to test the green credentials of wave energy, good baseline information is rarely available for various ocean ecosystems.[52] Taking just one area of concern, there are ongoing surveys to improve stock assessments as the basis for fisheries management decisions. However, although almost all fisheries in the United States are now governed by some form of restrictions, there is still considerable uncertainty regarding the status of fishery stocks and multispecies interactions in addition to things like natural variability and climate impacts.[53]

Other countries interested in hydrokinetic energy established marine testing facilities to address these research gap challenges. The United States followed this approach with federal funding of ocean alternative energy research centers: the Northwest National Marine Renewable Energy Center (an Oregon State University and University of Washington collaboration), the Hawaii National Marine Renewable Energy Center, and the Southeast National Marine Renewable Energy

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[50] *See* ELEC. POWER RESEARCH INST., ASSESSMENT OF RENEWABLE ENERGY 9-41 (2006) ("[O]cean energy technology holds the promise of becoming one of the most environmentally-benign electricity generation technologies.").

[51] *See* NAT'L OCEANIC AND ATMOSPHERIC ADMIN., U.S. DEP'T OF COMMERCE, ECOLOGICAL EFFECTS OF WAVE ENERGY DEVELOPMENT IN THE PACIFIC NORTHWEST, NOAA TECHNICAL MEMORANDUM NMFS-F/SPO-92 (George W. Boehlert, Gregory R. McMurray & Cathryn E. Tortorici eds., Oct. 2007), *available at* ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/9426/Wave%20Energy%20NOAATM92.pdf?sequence=1.

[52] *See, e.g.*, *Humboldt WaveConnect Pilot Project*, PACIFIC GAS & ELECTRIC, www.pge.com/about/environment/pge/cleanenergy/waveconnect/projects.shtml (last visited Apr. 2, 2011).

[53] *See* NAT'L MARINE FISHERIES SERV., OUR LIVING OCEANS: REPORT ON THE STATUS OF U.S. LIVING MARINE RESOURCES 53 (1999).

Center, which are expected to help answer some of the questions about environmental impacts of the newly developed technology. Major concerns continue to center around the question of direct impacts on fish and wildlife, such as noise impacts, entanglement, and the impact of electromagnetic fields on marine and migratory birds, fish, mammals, and cetaceans. Further concerns involve changes in the supporting habitat, habitat use, impacts to estuaries, and sedimentation. Various laws, as examined in the next Part, require close attention to these potential impacts and could ultimately prevent expansion of this energy source if currently unanticipated impacts are discovered through pilot projects and further research. Furthermore, visual impacts, as with other forms of offshore development, continue to be a controversial issue notwithstanding interest in transitioning to renewable, clean energy sources.[54]

There is an ongoing tension between encouraging alternative energy production and minimizing environmental impacts. Wave energy is promising because it is renewable and does not emit carbon emissions responsible for climate change. The BP oil spill disaster is a reminder that there is always a risk of catastrophic damage from offshore oil drilling. There are severe impacts from all stages of oil use, as well as possible catastrophic—though more remote—risks. However, the impacts of wave energy on the environment are not clear. Thus, there are some who argue we are moving much too quickly with untested wave technology,[55] and others who emphasize that time is of the essence.[56] At this stage, we are neither accepting hydrokinetic energy as a benign form of energy generation nor discounting its potential to displace reliance on environmentally destructive fossil fuels.[57]

Once legitimate sources of environmental concerns are examined

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[54] *See* Dorothy W. Bisbee, *NEPA Review of Offshore Wind Farms: Ensuring Emission Reduction Benefits Outweigh Visual Impacts*, 31 B.C. ENVTL. AFF. L. REV. 349 (2004) (encouraging recognition that we are making tradeoffs and that visual impacts should be closely examined in the NEPA EIS process).

[55] *See, e.g.*, Brief for Petitioner at 23, Fishermen Interested in Safe Hydrokinetics v. Federal Energy Regulation Commission, No. 09-72920 (9th Cir. Jan. 15, 2010) (arguing for the necessity of a comprehensive Pacific Region plan prior to issuance of a preliminary permit given the new technology and sensitive, overstressed and complex marine environment in which the development would occur).

[56] *See, e.g.*, Wellington et al., *supra* note 27, at 398, 419 (emphasizing the need to reduce greenhouse gas emissions as well as U.S. dependence on imported oil).

[57] For one approach to this conundrum, *see How Hydrokinetic Energy Works*, UNION OF CONCERNED SCIENTISTS, www.ucsusa.org/clean_energy/technology_and_impacts/energy_technologies/how-hydrokinetic-energy-works.html (last visited Feb. 28, 2011) (pointing out that the impacts of hydrokinetic energy production should be evaluated in the context of climate change).

and risks well-understood, it may still be that local communities oppose energy projects in the locations proposed.[58] Any project would add to the industrialization of the oceans,[59] which some oppose on philosophical grounds presumably no matter the ocean location.[60] Furthermore, it seems illogical to add more pressure to an overtaxed system without some assurance that restoration efforts are bringing ocean ecosystems back from the brink of collapse.

D. INDUSTRY AND STAKEHOLDER ACTIVITIES

Opposition to energy development may be based, at least in part, on concerns about environmental risks or distrust of project sponsors.[61] Primarily because wave energy is an untested technology, EPRI predicted that it would take "strong public support . . . to overcome the inertia that many federal, state, and local regulatory agencies will bring to the permitting process."[62]

Given the predicted inertia against permitting renewable energy projects, it is important to recognize the grassroots organizing that has occurred in support of wave energy development. The Oregon Wave Energy Trust (OWET) is a coalition of government, industry, academia, and coastal organizations supporting the development of a responsible and robust wave energy industry in the state. It is funded by the Oregon Innovation Council. OWET boasts four particular benefits of development in Oregon, including capacity, expertise, connection to the grid, and port access. The Pacific Ocean Energy Trust (POET) is a partner organization, promoting the same aims as OWET. POET's

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[58] *See, e.g.*, Kristy Michaud, Juliet Carlisle & Eric Smith, *Nimbyism vs. Environmentalism in Attitudes Toward Energy Development*, 17 ENVTL. POL. 20, 35 (Feb. 2008) (hypothesizing that environmental attitudes may be expressed in activist ways once a local project is proposed).

[59] *See* HANCE D. SMITH, THE INDUSTRIALISATION OF THE WORLD OCEAN, OCEAN AND COASTAL MANAGEMENT 44 (2001).

[60] For particular protest on this issue in Mendocino, *see* Green Wave Energy Solutions, LLC, 127 FERC ¶ 62,093 (May 2009); *Docket P-13053: Comments by Jade Pier & Judith Vidaver*, FERC ONLINE (Feb. 9, 2009), elibrary.ferc.gov/idmws/docket_search.asp (documenting multiple public comments voicing opposition to industrialization of the oceans).

[61] *See* CONWAY ET AL., *supra* note 24, at 87 (discussing survey responses to the most versus least trusted information sources on wave energy). The research project results are also the subject of a report to the Oregon Wave Energy Trust. *See also* FLAXEN CONWAY, MARIA STEFANOVICH, JOHN STEVENSON, YAO YIN, HOLLY CAMPBELL, ZACK COVELL & DANIEL HUNTER, SCIENCE AND KNOWLEDGE INFORMING POLICY AND PEOPLE: THE HUMAN DIMENSIONS OF WAVE ENERGY GENERATION IN OREGON (2009), *available at* www.oregonwave.org/wp-content/uploads/Human-Dimensions-of-Wave-Energy.pdf; MICHAUD ET AL., *supra* note 58, at 21-22 (discussing common features of nimbyism, including distrust of project proponents).

[62] ELEC. POWER RESEARCH INST., *supra* note 50, at 9-1.

mission is "to promote and support the responsible development of ocean renewable energy through research, education and outreach."[63] Furthermore, a coalition of nongovernmental organizations, utilities, government entities, and academic institutions led by the Environmental Defense Fund succinctly identified shared principles for promoting growth of the wave energy industry.[64] These groups seek to link and educate stakeholders and promote sustainable development of ocean energy resources.

The information demands and research agendas advocated by these groups help to counter the regulatory inertia on multiple levels. First, traditional users such as recreationalists and fishermen have an outlet for becoming informed and involved in policy advocacy. Second, research gaps that slow down the application process are identified, and sources other than the project applicant are targeted for production of necessary data. Furthermore, industry actors engaged in these efforts help to build trust among the public.

It is to be expected that local opposition will also be organized, in some instances led by local fishermen[65] or environmental advocates. Strong public support is also required for these projects because they might involve displacement of current users,[66] which significantly challenges the fairness of development.[67] Those current users may be better organized and prepared to engage in obstructing change to existing situations.[68] An example is fisheries management. The Pacific Fishery Management Council is closely following the development of wave energy projects, due to the uncertainty of environmental impact to

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[63] PACIFIC OCEAN ENERGY TRUST, pacificoceanenergytrust.org (last visited Apr. 8, 2011).

[64] *See* JACK K. STERNE, THOMAS C. JENSEN, JULIE KEIL & RICHARD ROOS-COLLINS, OCEAN RENEWABLE ENERGY: A SHARED VISION AND CALL FOR ACTION 2 (2008*), available at* www.edf.org/documents/8969_OceanRenewableEnergy_JointPrinciples_08.pdf; Jack K. Sterne, Thomas C. Jensen, Julie Keil, Richard Roos-Collins & David Wand, *The Seven Principles of Ocean Renewable Energy: A Shared Vision and Call for Action*, 14 ROGER WILLIAMS U. L. REV. 600 (2009).

[65] *See, e.g.*, *Fishermen Interested in Safe Hydrokinetics (the FISH Committee)*, OCEAN ENERGY COUNCIL (Feb. 15, 2008), www.oceanenergycouncil.com/index.php/Wave-Energy-News/-Fishermen-Interested-in-Safe-Hydrokinetics-the-FISH-Committee.html.

[66] *See* ELEC. POWER RESEARCH INST., *supra* note 30, at 21.

[67] Questioning fairness was also predicted by Professor Josh Eagle. *See* Josh Eagle, *Practical Effects of Delegation: Agencies and the Zoning of Public Lands and Seas*, 35 PEPP. L. REV. 835, 871 (May 2008). In the case of wave energy development, the fairness of displacement is raised by various constituents. *See* Susan Chambers, *Making Waves*, NATIONAL FISHERMAN, Sept. 2008, at 25 ("Longtime commercial fishermen say historical use of an area should take precedence over any gold rush among new technology companies staking their claims.").

[68] Professor Eagle also argued that some interests would have more influence over zoning agencies. Eagle, *supra* note 67, at 868.

marine life, such as the fisheries managed by the Council.[69] Moreover, there will likely be impacts on, if not displacement of, fishermen, a leading (if not overbearing) voice on the Councils.[70] Groups such as Fishermen Involved in Natural Energy have taken a proactive approach, engaging in marine spatial planning efforts and helping to identify potential wave energy testing sites that would provide the least impact to Oregon fishermen.[71]

In *Zoning the Sea*, Elliott Norse pointed out that user groups have inherent advantages over non-user groups in that they are well funded and their standing to challenge government decisions is clear.[72] He posited that "to build more sustainable systems of resource exploitation, user groups must see and accept that they have a stake in changing the status quo."[73] But this seems quite unlikely unless particular drivers come into play. Siting of wave energy projects is now competing with marine reserve designations, such that current uses may be getting squeezed both by non-user (conservation) interests as well as by new proposed users. Ocean zoning is a driver for evaluating changes to the status quo, but entrenched interests are still likely to slow down the process, impacting both conservation and new uses such as wave energy.[74]

III. LEGAL BACKGROUND: STATE AND FEDERAL SHARED JURISDICTION OFFSHORE

Beyond the complications of perfecting new energy-generation

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[69] The council provided substantive comments for the licensing of the Reedsport OPT Wave Park, questioning the reliance on environmental studies and citing potential for electromagnetic fields to cause behavioral and cellular changes in living marine resources. *See* Letter from D.O. McIsaac, Ph.D., Exec. Dir., Pacific Fishery Mgmt. Council, to Kimberly D. Rose, Sec'y of Fed. Energy Regulatory Comm'n (June 19, 2010 and Nov. 21, 2007), www.pcouncil.org/wp-content/uploads/Cmt_Reeds-port_OPT-FERC.pdf. The council also maintains a webpage with relevant information. *See generally* PACIFIC FISHERY MANAGEMENT COUNCIL, *supra* note 16.

[70] *See* Roger Fleming & John D. Crawford, *Habitat Protection Under the Magnuson-Stevens Act: Can it Really Contribute to Ecosystem Health in the Northwest Atlantic?*, 12 OCEAN & COASTAL L. J. 43, 47 (2006); JOSH EAGLE ET AL., Taking Stock of the Regional Fisheries Management Councils 11-16; 23-31 (Island Press 2003).

[71] *See* Bob Eder, *Navigating the Public Process: Engaging Stakeholders in Wave Energy Development, in* 23 OCEANOGRAPHY 106 (2010); Susan Chambers, *Fishermen Seek More Input on Wave Energy*, THE WORLD, Sept. 29, 2008, theworldlink.com/news/local/article_0e53e597-a48f-52b0-9be8-0efde2aa9912.html.

[72] *See* Norse, *supra* note 13, at 428; Craig, *supra* note 13, at 651 (emphasizing that the body of U.S. Ocean laws focus on use instead of conservation).

[73] Norse, *supra* note 13, at 428.

[74] *See, e.g.*, Eagle, *supra* note 67, at 869-71.

technologies and operating in a still largely unstudied environment, one of the regulatory challenges for offshore hydrokinetic projects is overcoming the complication of shared offshore jurisdiction.[75]

The initial disputes over title to land offshore were resolved by the Submerged Lands Act in 1953, whereby Congress granted coastal states title to land offshore.[76] The state seaward boundaries in the United States are typically three miles, although Texas and Florida on the Gulf Coast have nine-mile boundaries.[77] However, despite these state boundaries offshore the federal government reserved power to regulate commerce and navigation and to provide for power production throughout state waters.[78] Further complicating the offshore regime, certain federal laws, such as the Coastal Zone Management Act (CZMA) and the Clean Water Act (CWA), explicitly authorize state involvement in decisionmaking or delegate implementation and enforcement of the federal law to a state entity.[79]

Throughout U.S. history, the federal government and the states have clashed over the development of natural resources. Similar disputes emerged as resource extraction and generation moved offshore.[80] Though we have previously encountered these disputes in the context of offshore oil drilling, more recently the cooperative federalism regime offshore has been challenged by wind development, as seen in the case of the Cape Wind Project in Massachusetts,[81] and now the emergence of wave energy development in the Pacific Northwest. While development may occur farther offshore, on the OCS beyond state boundaries, more feasible is the use of near-shore state waters for the ease of construction, maintenance, grid connection, and transmission, and simply due to the existence of good natural conditions for using the technology available. The coastal environments managed by the states are invaluable. "It is here, where the shore meets the sea, and where people are most inclined to build, manufacture, and recreate, that the most susceptible and diverse

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[75] The U.S. Commission on Ocean Policy has prepared a concise primer on ocean jurisdictions. *See* U.S. COMM'N ON OCEAN POLICY, PRIMER ON OCEAN JURISDICTIONS: DRAWING LINES IN THE WATER 70-73 (2004), www.oceancommission.gov/documents/full_color_rpt/03a_primer.pdf.

[76] *See* 43 U.S.C.A. §§ 1301-1315 (Westlaw 2011).

[77] *See* 43 U.S.C.A. § 1301(b) (Westlaw 2011).

[78] *See* 43 U.S.C.A. § 1311(d) (Westlaw 2011).

[79] *See* Sylvia Quast & Michael A. Mantell, *Role of the States*, OCEAN AND COASTAL LAW AND POLICY 74-76 (2008) (discussing state implementation of CWA and CZMA).

[80] *See* Rachael E. Salcido, *Offshore Federalism and Ocean Industrialization*, 82 TUL. L. REV. 1355 (2008).

[81] *See* Patricia E. Salkin & Ashira Pelman Ostrow, *Cooperative Federalism and Wind: A New Framework for Achieving Sustainability*, 37 HOFSTRA L. REV. 1049, 1070 (2009).

aspects of marine life exist."[82]

The Federal Energy Regulatory Commission (FERC) has power to regulate hydroelectric projects located on navigable waters, on federal lands including reservations, or constructed after 1935 on commerce clause waters and affecting the interests of interstate commerce.[83] FERC has been regulating hydropower in the United States since 1920.[84] The Federal Power Act (FPA) governs hydroelectric projects. The FPA preempts state regulation, but FERC is required to consider state concerns through several provisions. Pursuant to section 10(a)(2)(A)(ii) of the FPA and 18 C.F.R. § 2.19, the Commission will consider the extent to which a proposed project is consistent with a state plan. When FERC considers issuing a license it must consider not only power production but also non-power resources and environmental impacts.[85] Specific provisions for fish and wildlife protection require coordination with fish and wildlife agencies both federal and state.[86]

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[82] NAT'L MARINE FISHERIES SERV., *supra* note 53, at 47.

[83] *See* 16 U.S.C.A. § 817(1) (Westlaw 2011).

[84] *See* 16 U.S.C.A. § 792 (Westlaw 2011).

[85] *See* 16 U.S.C.A. § 797(e) (Westlaw 2011) ("In deciding whether to issue any license under this subchapter for any project, the Commission, in addition to the power and development purposes for which licenses are issued, shall give equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife (including related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality."). FERC is required to incorporate into licenses it issues the conditions that the secretary of the department who supervises a reservation deems necessary for the "adequate protection and utilization of such reservation." *Id*. The Energy Policy Act of 2005 provided parties to the licensing a trial-type hearing on any disputed issue of material fact, and the opportunity to propose alternative conditions and prescriptions to those imposed under either section 4(e) or 18. Energy Policy Act of 2005, § 241. Pub. L. No. 109-58, § 241, 119 Stat. 594, 674-77. Among other conditions, a license issued by FERC must be on the condition that the project be "best adapted to . . . adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat), and for other beneficial public uses, including irrigation, flood control, water supply, and recreational and other purposes referred to in section 797 (e)." 16 U.S.C.A. § 803(a)(1) (Westlaw 2011). FERC applies a broad "public interest" standard under section 10(a)(1). *See* Pub. Util. Dist. No. 1 of Pend Oreille Cnty., 112 FERC ¶ 61,055, 25 (July 11, 2005); Energie Group, LLC v. Fed. Energy Regulatory Comm'n, 511 F.3d 161, 164 (D.C. Cir. 2007).

[86] *See* 16 U.S.C.A. § 803(j) (Westlaw 2011). The implementation of these provisions has been controversial, with FERC continuing to pursue primacy over other agencies. *See, e.g.*, Kyle J. Mathews, Note, *Who Controls the Fate of the Fish? Interagency Fighting over Section 10(j) of the Federal Power Act*, 74 S. CAL. L. REV. 1165 (2001). Section 18 also requires that FERC impose on licensees "fishways" as prescribed by the Secretary of the Interior or Commerce. 16 U.S.C.A. § 811 (Westlaw 2011). *See also* Am. Rivers v. FERC, 201 F.3d 1186, 1206-10 (9th Cir. 1999) (FERC could not reject fishway prescription); Wis. Power & Light Co. v. FERC, 363 F.3d 453 (D.C. Cir. 2004) (purpose of statute is providing for safe fish passage and fish and wildlife benefits up and downstream). As previously mentioned, the Energy Policy Act of 2005 provides an opportunity to suggest alternative conditions and prescriptions from those prescribed under section 18. The impact of the amendments on protection of fish and wildlife resources is unclear. For a discussion of the use of these provisions in the past few years *see* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-10-770,

FERC first asserted jurisdiction over an ocean energy project in 2002.[87] FERC's assertion of jurisdiction over offshore hydrokinetic regulation in state waters raised many questions. First was concern over the potential to limit the role states would play in siting and permitting.[88] The assertion of jurisdiction also raised questions about implementation of state policy in the state's offshore environment. Each of the Pacific Northwest coastal states has reached an agreement with FERC regarding hydrokinetic development offshore to address these various concerns. The State of Oregon has a Memorandum of Understanding (MOU) with federal agencies regarding siting of projects.[89] The State of Washington has an MOU with federal agencies regarding siting of projects.[90] The State of California was the last to sign an MOU with federal agencies in 2010.[91] Given the MOUs with each of the Pacific Northwest states, an agreement to coordinate regulatory requirements was established.

State coordination with the federal government in regulating offshore activities is greatly facilitated by the Coastal Zone Management Act. Intending to encourage the rational state development of coastal areas, Congress provided two incentives for states to create Coastal Management Plans (CMPs). First is a financial incentive, as the federal government partially funds development of CMPs. CMPs, while not detailed zoning documents, must meet particular guidelines to obtain approval from the federal government, including guidelines that address

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HYDROPOWER RELICENSING, STAKEHOLDERS' VIEWS ON THE ENERGY POLICY ACT VARIED, BUT MORE CONSISTENT INFORMATION NEEDED (August 2010).

[87] The order involved AquaEnergy Group and its proposal to use floating buoys and wave energy converters to create electricity from ocean waves in Makah Bay (initially the project was proposed for 1.9 miles from shore, and later changed to a location approximately three miles from shore). Energy would be transmitted by subsea cable. Unique to the project was the location in a federal marine sanctuary, which FERC determined to be within the definition of federal land. More pertinent was the finding that the project was *in fact* a hydroelectric project, which AquaEnergy contended it was not. *See* AquaEnergy Group, Ltd., 101 FERC ¶ 62,009 (Oct. 3, 2002), *on reh'g*, 102 FERC ¶ 61,242 (Feb. 28, 2003). For an in-depth discussion of the decision and its implications, *see* Carol Elefant, *FERC's Aqua Energy Decision: Testing the Ocean Waters* (on file with author).

[88] The state and federal tension over hydropower regulation has been an issue for many years. *See generally* George William Sherk, *Approaching a Gordian Knot: The Ongoing State/Federal Conflict Over Hydropower*, 31 LAND & WATER L. REV. 349 (1996) (examining the conflict and proposed solutions).

[89] *See* FED. ENERGY REGULATORY COMM'N, MEMORANDUM OF UNDERSTANDING BETWEEN THE FED. ENERGY REGULATORY COMM'N AND THE STATE OF OR. (Mar. 26, 2008), *available at* www.ferc.gov/legal/maj-ord-reg/mou/mou-or-final.pdf [hereinafter FERC OR. MOU].

[90] *See* FED. ENERGY REGULATORY COMM'N, MEMORANDUM OF UNDERSTANDING BETWEEN THE FED. ENERGY REGULATORY COMM'N AND THE STATE OF WA. (June 4, 2009), *available at* www.ferc.gov/legal/maj-ord-reg/mou/mou-wa.pdf [hereinafter FERC WA. MOU].

[91] *See* FED. ENERGY REGULATORY COMM'N, MEMORANDUM OF UNDERSTANDING BETWEEN THE FED. ENERGY REGULATORY COMM'N AND THE STATE OF CA. (May 18, 2010), *available at* www.ferc.gov/legal/maj-ord-reg/mou/mou-ca.pdf [hereinafter FERC CAL. MOU].

concerns specific to the federal government and thus specifically justifying financial support. Thereafter, states with approved CMPs have a role in determining whether projects proposed for federal offshore areas may move forward. A consistency determination is required of federal or federally approved private projects that affect any land or water use, or natural resource of the coastal zone. Two provisions are implicated: federal activities and federal licenses or permits.[92] While state rejection of a project as inconsistent may be overcome through an appeal process, this incentive has been powerful in theory to coordinate state and federal planning offshore.

It might also be contended that the National Environmental Policy Act (NEPA), and its state equivalents, facilitate coordination and planning among state and federal agencies. While NEPA has no substantive outcome mandates, the requirement of producing environmental planning documentation is an opportunity for stakeholder involvement and scrutiny of the impact on the environment of a given project as well as the feasibility of other alternatives that might have less impact on the environment. In California and Washington, the MOUs coordinating state and federal activities can facilitate satisfaction of the equivalent state laws by preparation of a single environmental planning document containing the required information and analysis of both state and federal laws to avoid duplication.

Environmental concerns cannot be too heavily emphasized. The Endangered Species Act, Marine Mammal Protection Act, and Migratory Bird Treaty Act also come into play in siting decisions, as multiple species protected under these acts are implicated. Furthermore, under the Magnuson-Stevens Fishery Conservation and Management Act, those areas identified by a fishery management council as "necessary to fish for spawning, breeding, feeding or growth to maturity" are protected by the Essential Fish Habitat provisions; if any such areas may be impacted by a project, this necessitates a consultation with the National Marine Fisheries Service.[93] Finally, regarding the dual nature of wildlife management between state and federal agencies, the provisions of the Fish and Wildlife Coordination Act would trigger consultation typically incorporated into the FERC licensing process.[94]

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[92] *See* 16 U.S.C.A § 1456(c)(1), (3)(A) (Westlaw 2011). Another provision requires that plans for exploration or development or production on areas leased under OCSLA meet the certification of consistency with CMP. 16 U.S.C. § 1456(c)(3)(B) (Westlaw 2011).

[93] 16 U.S.C.A. § 1802(10) (Westlaw 2011).

[94] *See* 16 U.S.C.A. §§ 661-666c (Westlaw 2011); Michael Blumm, *A Trilogy of Tribes v. FERC: Reforming the Federal Role in Hydropower Licensing*, 10 HARV. ENVTL. L. REV. 1, 41-44 (discussing court interpretation of Coordination Act consultation role as active and beyond merely

The Federal Clean Water Act requires that a federal agency first obtain a 401 certification or waiver from a state or tribe prior to issuing a federal permit or license to an activity that may result in a discharge to navigable waters of the United States.[95] To obtain certification the discharge must meet applicable water quality standards set by the state. This provides a powerful tool for states to use in combating water pollution. However, some hydrokinetic technologies will not trigger 401 provisions because they will not make discharges in their operation, though this issue has yet to be legally tested. The first issued hydrokinetic project license created a state-federal conflict over the timing of 401 certification for hydrokinetic projects.[96]

The Army Corps of Engineers may also be a necessary permitting agency under two separate federal provisions concerned not only with pollution but also with navigation. A Clean Water Act permit under section 404 for dredge-and-fill activities may be necessary,[97] and a permit pursuant to section 10 of the Rivers and Harbors Act authorizing obstruction to navigation could be required for some aspects of a project.[98] Another agency, the U.S. Coast Guard, is responsible for regulating shipping lanes, with its duties to aid maritime navigation and marine safety.[99] FERC requires that an applicant develop a navigation safety plan (including an exclusion zone) and otherwise provide for navigational safety as the Coast Guard directs. The "West Coast Offshore Vessel Traffic Risk Management Project" ultimately concluded that vessels of 300 gross tons or larger should voluntarily avoid coming within twenty-five nautical miles of shore in the area between Cook Inlet

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providing notice to fishery agencies and tribes in Confederated Tribes & Bands of the Yakima Indian Nation v. FERC, 746 F.2d 466 (9th Cir. 1984)).

[95] *See* Clean Water Act § 401(a)(1), 33 U.S.C.A. § 1341(a)(1) (Westlaw 2011). If a state refuses or fails to act on an application for certification under section 401 within a "reasonable period of time (not to exceed one year)," the certification requirement is waived. *Id*. States have various approaches to addressing the time limitations and practical constraints of evaluating certification determinations given the information available to support a certification decision.

[96] *See infra* Part V.B.iii (issuance of conditional license prior to state 401 certification).

[97] *See* 33 U.S.C.A. § 1344(a) (Westlaw 2011). Although the Army Corps of Engineers has the primary permitting authority under this section, the Environmental Protection Agency still has a significant role in the overall program through its oversight authority and binding regulations. States, although authorized by the statute to obtain delegation of permitting authority, have generally not done so. For an overview of the Clean Water Act 404 program, *see* ROBIN KUNDIS CRAIG, ENVIRONMENTAL LAW IN CONTEXT 817-42 (2d ed., Thompson West 2008); Kim Diana Connolly, *Regulation of Coastal Wetlands and Other Waters of the United States*, OCEAN AND COASTAL LAW AND POLICY 87-146 (D. Bauer, T. Eichenberg & M. Sutton, eds., 2008).

[98] *See generally* 33 U.S.C.A. § 401 (Westlaw 2011). For a brief discussion of the section 10 permitting process, *see* Connolly, *supra* note 97.

[99] *See* 14 U.S.C.A. § 2 (Westlaw 2011).

and San Diego, unless a different traffic management measure exists.[100] The National Historic Preservation Act, section 106, requires consultation with a State or Tribal Historic Preservation Officer if a project might have an impact on historic properties.[101]

It is not only the federal government and states that have to coordinate their regulatory efforts. Hydrokinetic project regulation faced protracted delay while two federal agencies, FERC and the MMS/BOERME, disputed regulatory jurisdiction for hydrokinetic projects.[102] The dispute led to considerable uncertainty. While federal officials negotiated a resolution to the dispute, project applicants were advised to seek all potentially applicable federal authorizations. The conflict has for the time been settled through mutual agreement embodied by an MOU between FERC and MMS/BOERME.[103]

In conclusion, the multiplicity of federal laws offshore, implemented by different agencies, adds a layer of complexity to creating an effective regulatory process for offshore hydrokinetic projects.[104] And though the challenge of sustainably managing ocean resources given the multiplicity of various sector-by-sector laws has been

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[100] *See* WEST COAST OFFSHORE VESSEL TRAFFIC RISK MGMT. PROJECT, FINAL PROJECT REPORT AND RECOMMENDATIONS 4 (July 2002), *available at* library.state.or.us/repository/2010/201007070951103/index.pdf (tankers with crude oil or persistent petroleum products recommended to stay a minimum of fifty nautical miles from shore between Cook Inlet and San Diego unless other management measures existed prescribing otherwise).

[101] *See* 16 U.S.C.A. § 470f (Westlaw 2011); 36 C.F.R. § 800.2(c)(4) (Westlaw 2011). Consultation initiated under this section has been necessary for wave projects, such as in the Makah Bay project in Washington and in the PG&E WaveConnect project in California.

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

[103] *See* FED. ENERGY REGULATORY COMM'N, MEMORANDUM OF UNDERSTANDING BETWEEN THE U.S. DEP'T OF THE INTERIOR AND THE FED. ENERGY REGULATORY COMM'N (Apr. 9, 2009), www.ferc.gov/legal/maj-ord-reg/mou/mou-doi.pdf. Initially, the agency jurisdiction dispute was over regulation of hydrokinetic power generally, when section 388 of the Energy Policy Act of 2005 expanded MMS jurisdiction of alternative energy to projects on the outer continental shelf. FERC made an initial contention of jurisdiction in an order in 2003 for a project within twelve nautical miles of the shore. *See* AquaEnergy Group, Ltd., 101 FERC ¶ 62,009 (Oct. 3, 2002), *reh'g granted*, 102 FERC ¶ 61,242 (Feb. 28, 2003). FERC thereafter claimed jurisdiction over projects beyond twelve nautical miles in 2008. *See* Pac. Gas & Elec. Co., 125 FERC ¶ 61,045 (Oct. 16, 2008). For a full discussion of the issues, *see* Peter F. Chapman, *Offshore Renewable Energy Regulation: FERC and MMS Jurisdictional Dispute Over Hydrokinetic Regulation Resolved?*, 61 ADMIN. L. REV. 423 (2009).

[104] This is a well-recognized problem for all offshore energy development, with many sources available to get an overview of the field. *See, e.g.*, STEPHANIE SHOWALTER & TERRA BOWLING, NAT'L SEA GRANT LAW CTR., OFFSHORE RENEWABLE ENERGY: REGULATORY PRIMER (July 2009), *available at* nsglc.olemiss.edu/offshore.pdf; PAC. VENTURES, *supra* note 15.

quite thoroughly publicized,[105] we are merely inching forward with reforms. It must also be emphasized that everything that happens offshore has impacts onshore, implicating the important role of coastal states. For instance, whether a project will actually be physically located beyond state jurisdiction, the grid connection will happen in the state, cables will need to cross to shore, and new onshore facilities may be required to support offshore equipment. Some countries have already established grid "hubs," and the potential for this to occur in the Pacific Northwest is another reason to defend the input of coastal states on offshore development.

IV. FERC PROCEDURES RELATING TO OFFSHORE HYDROKINETIC PROJECTS

The FERC permit and licensing processes provide an overall structure for regulatory approvals needed to undertake a wave energy project.

When a project is located within state territory offshore, the project must seek a lease, easement, or right-of-way from the relevant state agency. If a project is proposed for the OCS beyond state territory, a lease, easement or right-of-way is required from MMS/BOERME before FERC can issue a license.[106] While OCS projects are beyond the scope of this Article, it should be noted that merely moving the project beyond state territory does not eliminate state involvement, because other federal statutes provide states with input to the licensing process, as touched on briefly in the prior Part.

Among the concerns with FERC taking the lead in approving ocean energy projects in state waters was that the proposed hydropower licensing procedures were ill suited to the particulars of the emerging wave energy business.[107] Since FERC dam licenses typically authorized fifty-year terms and necessitated long time frames to process, the mismatch with the need for flexibility and expeditious processing of test

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[105] *See, e.g.*, Robin Kundis Craig, *Regulation of U.S. Marine Resources: An Overview of the Current Complexity*, 19 NAT. RESOURCES & ENV'T 3 (2004) (examining fragmentation of ocean laws and emphasizing movement toward coordinated and protective regulation). "No regulatory entity is charged with oversight of the ocean as a whole, and even when agencies regulate more than one marine resource, they often do so pursuant to multiple statutory schemes." *Id*.

[106] *See* MINERALS MGMT. SERV., U.S. DEP'T OF THE INTERIOR, RENEWABLE ENERGY AND ALTERNATIVE USES OF EXISTING FACILITIES ON THE OUTER CONTINENTAL SHELF: FINAL RULE 5 (Apr. 29, 2009). This may require a competitive process, adding some delay (taking either one to two years or more).

[107] *See* Laura Koch, Comment, *The Promise of Wave Energy*, 2 GOLDEN GATE U. ENVTL. L.J. 162, 182-90 (2008) (discussing shortcomings in FERC approach to licensing).

projects was evident. Another key concern was the facilitation of public input in the process of siting and approval of projects. FERC has now reached an MOU with the Department of Interior regarding their respective jurisdictions, and FERC has begun developing procedures specific to hydrokinetic projects.

A. PRELIMINARY PERMIT

To achieve priority over a particular location, an applicant seeks a preliminary permit from FERC.[108] Although a preliminary permit is not strictly required,[109] it does enable the holder to acquire necessary information required in a license application.[110] This establishes a "first in time" approach to development at a particular location, but the permittee is required to submit reports on the status of studies to maintain such priority, and FERC has the right to cancel the permit.[111] In the past, FERC issued preliminary permits liberally, due to the fact that they granted no property rights and did not authorize land disturbance.[112] FERC paid little attention to the boundaries sought by applicants and infrequently exercised the right to cancel permits. However, given concerns regarding the new technology proposed in hydrokinetic projects, FERC encountered a variety of opinions on whether its past practices with preliminary permits would be appropriate. One concern was the possibility that applicants would obtain preliminary permits for the purpose of obstructing legitimate project applicants from pursuing testing and energy development. Boundary issues are different in the offshore context, with conditions changing frequently as compared to river environments with greater certainty. Faced with a flurry of permit applications in 2006, FERC sought input from the public on the appropriate balance to strike, using a variety of proposed options. Contemporaneous with the first issued preliminary permit under an interim "strict scrutiny" approach, FERC issued a Notice of Inquiry (NOI) and Interim Statement of Policy seeking comment on the approach

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[108] FERC is authorized under section 4(f) of the FPA to issue preliminary permits. *See* 16 U.S.C.A. § 797(f) (Westlaw 2011).

[109] *See* JAMES H. MCGREW, FEDERAL ENERGY REGULATORY COMMISSION 219 (2d ed. 2009) (acknowledging that "[t]he preliminary permit process is entirely optional").

[110] *See* 16 U.S.C.A. § 797(f) (Westlaw 2011).

[111] *See* 16 U.S.C.A. § 798 (Westlaw 2011). Section 5 of the FPA explains that the purpose of the preliminary permit is to maintain priority for no more than three years, and that the Commission shall establish the conditions under which the permittee may maintain that priority.

[112] *See* Town of Summersville, W. Va. v. FERC, 780 F.2d 1034, 1035 (D.C. Cir. 1986) (explaining preliminary permit purposes).

to reviewing and issuing preliminary permits for hydrokinetic development.[113] Comments supported application of a "strict scrutiny" approach to hydrokinetic preliminary permits to avoid possible "site banking." FERC issued its first preliminary permit applying its "strict scrutiny" approach on February 16, 2007, to Reedsport Ocean Power Technologies (OPT) Wave Park. As further discussed below, the applicant is now moving forward under the licensing processes after several years devoted to investigation, outreach, and negotiation over design of the project.

Significantly, in the NOI, FERC confirmed that stakeholder outreach and generating public support for the project greatly facilitated the licensing process. FERC suggested in its NOI that "stricter scrutiny could entail requirements such as reports on public outreach and agency consultation, development of study plans, and deadlines for filing a notice of intent to file a license application and preliminary application document."[114] The downsides of such an approach include more staff time devoted to the permit program, and possibly making it more difficult for applicants to obtain multiple permits even if applicants are well intentioned.[115]

B. VERDANT ORDERS

In 2005, FERC issued a decision in *Verdant Power LLC* (referred to as the *Verdant* orders) and ruled that a license under Part I of the FPA is not necessary in certain circumstances when experimental deployment for testing new hydropower technology is sought.[116] That policy has not been rescinded, despite the development of another policy for experimental projects as discussed in the next Section. This could add confusion for applicants already dealing with multiple legal hurdles.

C. PILOT PROJECTS

FERC staff proposed a procedure for experimental projects in August 2007. Thereafter, FERC staff published a white paper, entitled "Licensing Hydrokinetic Pilot Projects," specifically to "support the advancement and orderly development of innovative hydrokinetic

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[113] *See* FED. ENERGY REGULATORY COMM'N, PRELIMINARY PERMITS FOR WAVE, CURRENT, AND INSTREAM NEW TECHNOLOGY HYDROPOWER PROJECTS, NOTICE OF INQUIRY AND INTERIM STATEMENT OF POLICY (Feb. 15, 2007) [hereinafter FERC PRELIMINARY PERMITS].

[114] *Id*. at § B, ¶ 14.

[115] *Id*. at § C, ¶ 16.

[116] *See* Verdant Power LLC, 111 FERC ¶ 61,024 (2005), *on reh'g* 112 FERC ¶ 61,143 (2005).

technologies."[117] Eligible pilot projects are those that are proposed to be:

> (1) Small;
> (2) Short term;
> (3) Not located in sensitive areas based on the Commission's review of the record;
> (4) Removable and able to be shut down on short notice;
> (5) Removed, with the site restored, before the end of the license term (unless a new license is granted); and
> (6) Initiated by a draft application in a form sufficient to support environmental analysis.[118]

The express purpose of this pilot project procedure is to facilitate a review and authorization in as short as six months' time. The interest in expediting projects is consistent with the MOUs reached with Oregon, California, and Washington; however, six months is a very short window of time to undertake coordinated review. The pilot project licensing procedures were not created by way of a new rule, but by identifying FERC's Integrated Licensing Process (ILP, Part 5 of 18 C.F.R.) in conjunction with case-by-case waivers granted pursuant to 18 C.F.R. § 5.29(f)(2) as a procedure for expediting review of those projects meeting the "pilot project" guidelines. The license term will be no more than five years.

The limited circumstances supporting testing technology without a FERC license pursuant to the *Verdant* orders may seem similar: experimental technology that was being deployed to generate information for the preparation of a license application, and no power would be transmitted into, or displace power from, the national grid. However, unlike the situation for experimental projects testing without a FERC license, a project pilot license can lead ultimately to a license, is overseen by the Commission, would allow transmission of electricity to the grid if licensed, and could be obtained by those intending to pursue a license or not following testing of the technology.[119]

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[117] FED. ENERGY REGULATORY COMM'N, LICENSING HYDROKINETIC PILOT PROJECTS WHITE PAPER (Apr. 14, 2008), *available at* www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/pdf/white_paper.pdf [hereinafter FERC LICENSING PILOT PROJECTS WHITE PAPER].

[118] *Id*. The conditions have been boiled down to essentially four rather than six in subsequent FERC publications, those being a project that is "(1) small (5 megawatts or less); (2) easily removed or shut down quickly; (3) located in a non-sensitive area; and (4) has the primary purpose of testing new technologies or locating suitable generation sites." FED. ENERGY REGULATORY COMM'N, CONDITIONED LICENSES FAQ (2007), *available at* www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/pdf/faq.pdf.

[119] *See* FERC LICENSING PILOT PROJECTS WHITE PAPER, *supra* note 117, at 3.

D. CONDITIONED LICENSES

On November 30, 2007, FERC issued a "Policy Statement on Conditioned Licenses for Hydrokinetic Projects."[120] When FERC has completed the process for processing an application, but the applicant is awaiting further necessary authorizations from other agencies, FERC may issue a conditioned license in appropriate circumstances, decided on a case-by-case basis.[121] A conditioned license does not authorize any on-site construction until the other necessary authorizations have been obtained.[122] To clarify the policy and respond to comments made by other federal agencies, state agencies and tribal authorities on the policy statement, FERC issued further guidance by way of responses to FAQs.[123] The *Finavera Renewables Ocean Energy Ltd.* license, involving the Makah Bay Project, provides further clarification regarding conditioned licenses.[124]

V. STATE-SPECIFIC LICENSING REGIMES

There are different pictures of wave energy development emerging in the three Pacific Northwest coastal states examined. Each, as discussed, has an MOU with FERC to coordinate licensing of hydrokinetic projects. Each state has announced goals to increase the use of renewable energy in the state. All states have been engaged in some way in planning for coastal and offshore development on a broader scale. Further, each state has an array of ocean, natural resources, and fisheries agencies that are involved to issue leases for projects in the state, make CWA 401 certifications regarding water quality, engage in environmental impact assessment, review potential impacts to fish and wildlife, and certify that the proposed activities are consistent with the enforceable policies of approved CMPs pursuant to CZMA section 307.[125] The following sections identify major requirements in each state and how states have or have not facilitated the process of wave energy development.

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[120] *See* Policy Statement on Conditioned Licenses for Hydrokinetic Projects, 72 Fed. Reg. 68,877-03, (Dec. 6, 2007).

[121] *See id.*

[122] *See id.*

[123] *See* FERC LICENSING PILOT PROJECTS WHITE PAPER, *supra* note 117.

[124] *See* Finavera Renewables Ocean Energy, Ltd., 122 FERC ¶ 61,248 (Mar. 20, 2008).

[125] *See* 16 U.S.C.A. §§ 1456(c)(1)-(3) (Westlaw 2011).

A. OREGON

Oregon has played a trailblazing role in supporting the emerging wave energy business.[126] The State aspires to be the leader in wave energy and has made significant strides to achieve this goal.[127] The Governor of Oregon has committed to leadership on this front, and that commitment is acknowledged in the MOU between FERC and the State.[128]

Oregon's Renewable Portfolio Standard (RPS) requires a percentage of renewable energy sources within all utilities and electricity service suppliers.[129] Specifically, Oregon's renewable energy portfolio identifies the potential for ocean energy (wave, tidal, and ocean thermal energy) to comply with the RPS.[130] Furthermore, House Bill 3633, adopted in 2010, announced a state goal that by 2025, 8% of Oregon's retail electricity should come from small-scale renewable energy projects of twenty megawatts or less.[131]

As asserted in the MOU between FERC and the State of Oregon (by and through its various agencies),[132] Oregon has a role in the authorization of wave energy projects, both through provisions of federal law (Coastal Zone Management Act,[133] Clean Water Act,[134] National Historic Preservation Act,[135] and the Federal Power Act[136])[137] and

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[126] *See, e.g.*, Holly V. Campbell, *Emerging from the Deep: Pacific Coast Wave Energy*, 24 J. ENVTL. L. & LITIG. 7, 10-18 (2009) (highlighting leadership and innovations in Oregon).

[127] *See* Tracy Loew, *Oregon Is First U.S. Site for a Wave-Power Farm*, USA TODAY, Feb. 17, 2010, www.usatoday.com/money/industries/energy/environment/2010-02-16-wave-energy_N.htm; *Ocean Wave Energy Development*, OR. DEP'T OF ENERGY, www.oregon.gov/ENERGY/RENEW/Hydro/Ocean_Wave.shtml (last visited Apr. 8, 2011) ("The opportunity exists for Oregon to establish itself as the leader in wave energy and become the national center for wave energy research and commercial demonstration."); Melody Finnemore, *Fluid Body of Law*, 70 OREGON STATE BAR BULLETIN 19, 20 (May 2010) (noting that Oregon can legitimately claim leadership role in wave energy).

[128] *See* FERC OR. MOU, *supra* note 89, at ¶ C ("Oregon has stated its intent to be a leader in promoting the development of wave energy projects.").

[129] The renewable energy portfolio is found at OR. REV. STAT. ANN. § 469A.025 (Westlaw 2011).

[130] *See* OR. REV. STAT. ANN. § 469A.025(1) (Westlaw 2011).

[131] *See* OR. REV. STAT. ANN. § 469A.210 (Westlaw 2011), *as amended by* H.B. 3633, 75th Leg., 1st Spec. Sess. (Or. 2010).

[132] The agencies identified in the MOU include the Departments of Fish & Wildlife, Land Conservation & Development, Environmental Quality, State lands, Water Resources, Parks & Recreation, and Energy. *See* FERC OR. MOU, *supra* note 89.

[133] *See* 16 U.S.C.A. § 1451 (Westlaw 2011).

[134] *See* 33 U.S.C.A. §§ 1251-1387 (Westlaw 2011).

[135] *See* 16. U.S.C.A. § 470 (Westlaw 2011).

[136] *See* 16 U.S.C.A. § 791a (Westlaw 2011).

applicable provisions of state law. Oregon has moved swiftly to adopt laws and regulations specific to facilitating ocean renewable energy in the state.

In 2008, the Governor of Oregon issued Executive Order No. 08-07, "Directing State Agencies to Protect Coastal Communities in Siting Marine Reserves and Wave Energy Projects."[138] In that order, the Governor acknowledged the need for local input to develop recommendations for siting marine reserves, wave energy projects, and any other new ocean uses.[139]

Acting on the Governor's orders, in 2009 the Department of Land Conservation and Development adopted Part Five of the Oregon Territorial Sea Plan. Part Five describes the process for renewable energy facilities development.[140] The plan created a joint agency review team (JART) with the Department of State Lands appointed to facilitate coordination among agencies with regulatory authority for a given location and project. The Land Conservation and Development Commission will amend the Territorial Sea Plan, pursuant to Oregon Revised Statutes section 196.471, to designate areas where renewable energy facilities may be developed.[141] It is anticipated that this will occur in 2011, as discussed further in connection with Oregon's marine spatial planning efforts.

More recently, House Bill 3633 authorized the Department of Land Conservation and Development to conduct a "study on how best to develop commercially viable marine renewable energy resources" and create a funding mechanism for further research on marine hydrokinetic energy.[142]

i. Proprietary Authorization—Occupancy of the Space

The Department of State Lands developed rules for authorizing wave projects. It must coordinate its review of a lease or other authorization with state agencies.[143] The Department adopted "Rules

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[137] For a discussion of the applicable federal statutes, see *supra* Part III (LEGAL BACKGROUND: STATE AND FEDERAL SHARED JURISDICTION OFFSHORE).

[138] Or. Governor Exec. Order No. 08-07 (Mar. 26, 2008).

[139] *See id*.

[140] *See* OR. COASTAL MGMT. PROGRAM, TERRITORIAL SEA PLAN: PART FIVE (2009), *available at* www.oregon.gov/LCD/OCMP/docs/Ocean/otsp_5.pdf.

[141] *See id*. at § B.1.a.

[142] H.B. 3633, 75th Leg., 1st Spec. Sess. (Or. 2010). Section 2 requires the study, and section 3 created the Marine Renewable Energy Resources Study Fund.

[143] *See* OR. COASTAL MGMT. PROGRAM, *supra* note 140, at 2 (State Agency Review Process requires that the approvals be made with the consultation of "the Departments of Fish and Wildlife,

Governing the Placement of Ocean Energy Conversion Devices On, In or Over State-Owned-Land within the Territorial Sea."[144] Pursuant to the rules, proprietary authorizations for all stages of an ocean energy monitoring or energy facility (from construction, installation, and monitoring to removal) may be issued.[145] The rules apply to research and demonstration projects as well as proposed commercial operations.[146] According to applicable provisions, "any person wanting to install, construct, operate, maintain or remove ocean energy monitoring equipment or an ocean energy facility" for either research or demonstration projects or commercial operation must apply for a temporary use authorization or ocean energy facility lease.[147] The issuing of an authorization, be it a temporary use authorization or ocean energy facility lease, provides only the proprietary authorization from the State of Oregon to occupy the space, and other regulatory approvals must still be met.[148] In particular, the authorization is conditional upon FERC licensing and other local, state, and federal entities providing necessary approvals.[149]

ii. Regulatory Authorizations

The JART convened by the Department of State Lands is responsible for reviewing a required Resource Inventory and Effects Evaluation.[150] The purpose of this requirement is to ensure that the policies for protecting ocean resources, coastal communities, and users are met. A written evaluation of reasonably foreseeable adverse effects, based on scientific evidence, is required. The evaluation must include an evaluation of 1) biological and ecological effects, 2) current uses, 3) natural and other hazards, and 4) cumulative effects.[151] The applicant is also required to develop an Operation Plan that will be used to meet the

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Parks and Recreation, Environmental Quality, Land Conservation and Development, Water Resources, Geology and Mineral Industries, Energy, coastal local governments, and tribal governments as appropriate.").

[144] *See* OR. ADMIN. R. 141-140-0010 (Westlaw 2011).

[145] *See* OR. ADMIN. R. 141-140-0010(2) (Westlaw 2011).

[146] *See* OR. ADMIN. R. 141-140-0010(1)(a) (Westlaw 2011).

[147] OR. ADMIN. R. 141-140-0050(1), (1)(b) (Westlaw 2011).

[148] *See* OR. ADMIN. R. 141-140-0010(5) (Westlaw 2011).

[149] *See* OR. ADMIN. R. 141-140-0010(6) (Westlaw 2011).

[150] *See* OR. COASTAL MGMT. PROGRAM, *supra* note 140, at § B.4 (This requires participation by multiple state agencies, such as "the Departments of Fish and Wildlife, Parks and Recreation, Environmental Quality, Land Conservation and Development, Water Resources, Geology and Mineral Industries, Energy, coastal local governments, and tribal governments as appropriate.").

[151] *See id.*

regulatory conditions set forth by authorizing agencies.[152] Among the required components of the Operation Plan are a monitoring plan and an adaptive management plan.[153] Overall, the components of the plan are meant to ensure that the facility will meet regulatory conditions "related to water and air quality, adverse environmental effects, maintenance and safety, operational failure and incident reporting. The operation plan shall be designed to prevent or mitigate harm or damage to the marine and coastal environment . . . ."[154]

The Oregon Water Resources Department is the agency responsible for issuing a state hydroelectric license.[155] An applicant should apply for a FERC permit at the same time that it applies for a state permit. A wave energy project may be exempt (with exception for Oregon Revised Code sections 543.050(3), 543.055 and 543.060) in certain circumstances (parallel to the FERC *Verdant* Orders).[156] The Oregon Department of Environmental Quality administers the CWA program, which would make the determination on 401 water-quality certification. The Oregon Department of Land Conservation & Development administers the CZMA program, including making a consistency determination between issued authorizations and the enforceable policies of the state's CMP.

iii. Example of Project in Oregon

The wave energy project that has made it furthest in the regulatory process is located in Oregon. The Reedsport OPT Wave Park project is pending FERC license approval. The applicant submitted a Settlement Agreement to FERC after more than thirty-eight months of consultation with various parties toward developing the "protection, mitigation and enhancement (PM&E) measures" that would become part of the company's license.[157]

A Settlement Agreement process facilitates bringing agencies and the applicant together to a consensus on the necessary construction, operating, and monitoring requirements.[158] FERC supports using a

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[152] *See id*. at § C.

[153] *See id*., at § C.3.c, d. Other components include a contingency plan, an inspection plan, a decommissioning plan, and a financial assurance plan.

[154] *Id*. at § C.

[155] *See* OR. REV. STAT. ANN. § 537.283 (Westlaw 2011).

[156] *See* OR. REV. STAT. ANN. § 543.014 (Westlaw 2011) (providing an applicable exemption for wave energy if the project is located within Oregon Territorial sea, the nominal electric generation capacity does not exceed five megawatts, and a license under the FPA is not required).

[157] Reedsport OPT Wave Park, LLC; Notice of Settlement Agreement and Soliciting Comments, 75 Fed. Reg. 51,266, 51,267 (Aug. 19, 2010).

[158] *See* Lynne Gillette, Jeff Silvyn & Rebecca Guiao, *Using Collaboration to Address*

settlement process to shed light on issues that arise in licensing a project.[159] The Reedsport OPT Wave Park project was first identified as an Oregon Solutions project in May 2007.[160] OPT approached the Governor's office to inquire about ways to collaborate with various stakeholders and government agencies that would be impacted by OPT's proposal. Oregon Solutions was an organization with its home at Portland State University, College of Urban and Public Affairs. The collaborative process was designed to engage multiple stakeholders in the permitting of the potential wave energy facility in Reedsport. Oregon Solutions meetings were convened in Reedsport throughout 2007-2009. Multiple subgroups were organized to deal with specific issues.[161] This set the stage for the later Settlement Agreement that became part of OPT's license application.[162]

iv. Marine Spatial Planning in Oregon

Oregon has a coastal management plan approved by the federal government pursuant to CZMA. This initial step toward coastal and ocean use planning has been augmented by state efforts to identify priorities for the entire Territorial Sea and develop marine reserves.

As previously discussed, the Oregon Territorial Sea Plan, Part Five, was adopted in 2009 to address ocean energy development. The policies and implementation requirements are not merely advisory, but compulsory.[163] Furthermore, efforts are under way, through a marine spatial planning process, to identify particular locations appropriate for ocean energy development. The process of researching and mapping

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Renewable Energy Siting Challenges, 56 FED. LAW. 50, 52 (2009).

[159] *See* FED. ENERGY REGULATORY COMM'N, POLICY STATEMENT ON HYDROPOWER LICENSING SETTLEMENTS (Sept. 21, 2006) (emphasizing that FERC looks favorably on settlements but cannot necessarily accept all settlements, or provisions therein, due to its responsibility to execute FPA provisions).

[160] *See* OR. SOLUTIONS, DECLARATION OF COOPERATION: REEDSPORT WAVE ENERGY PROJECT (May 15, 2007). The agreement included the engagement of over thirty different organizations.

[161] Subgroups included the FERC process group, CWA 404 permit group, a Crabbing and Fishing group, and groups focused on water quality, aquatic species, and recreation/public safety/aesthetics. *Id.*

[162] *See* Dennis Newman, *The Deal That May Seal the Deal for Reedsport*, NATURAL OREGON.COM (Feb. 2, 2010), www.naturaloregon.org/2010/02/02/the-deal-that-may-seal-wave-power-for-reedsport/.

[163] OR. COASTAL MGMT. PROGRAM, *supra* note 140, at § A.1 ("Decisions of state and federal agencies with respect to approvals of permits, licenses, leases or other authorizations to construct, operate, maintain, or decommission any renewable energy facility to produce, transport or support the generation of renewable energy within Oregon's territorial waters and ocean shore must comply with the requirements mandated in the Oregon Territorial Sea Plan.").

current uses and analyzing the ocean resources of the Oregon Territorial Sea is under way. Thereafter, the collected data, maps, and proposed alternatives will be discussed at public meetings and workshops led by state agencies. Stakeholders have been active in facilitating the process, particularly in identifying current uses for recreation and fishing.[164]

Also, at the Governor's request, the Ocean Policy Advisory Council (OPAC) began studying and preparing recommendations for designations of marine reserves in Oregon's Territorial Sea.[165] OPAC identified twenty sites centered around ecologically important marine areas. In 2009, the legislature established two pilot reserves, at Otter Rock and Redfish Rocks, and issued directions for the establishment of four others (at Cape Falcon, Cascade Head, Cape Perpetua, and Cape Arago-Seven Devils), to be led by a community stakeholder process.[166] After a year of difficult negotiations, proposals in three locations are moving forward. This process has called into question whether some wave projects will be "zoned out," with the new focus on reserves leaving too little room in the Territorial Sea for renewable energy projects.[167]

EPRI identified potential locations for wave energy sites in Oregon in a report published in 2004.[168] The report identified shipping lanes as one of the competing uses of sea space.[169] Navigation and tow lanes will be mapped as part of the MSP process currently underway.

Although the FERC and Oregon MOU acknowledged that Oregon intended to comprehensively plan for the Territorial Sea and identify sites within that plan for ocean energy development, FERC surprised the project applicant and the State when it issued a permit to Ocean Power Technologies for a project off Newport.[170] FERC did not await the

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[164] For example, stakeholders Surfrider Foundation and Fishermen Involved in Natural Energy have been active participants in the planning process. Oregon Territorial Sea Plan membership list, *available at* www.oregon.gov/LCD/OCMP/docs/TSPAC2010.pdf.

[165] *See* Or. Governor Exec. Order No. 08-07 (Mar. 26, 2008) (Directing Agencies to Protect Coastal Communities in Siting Marine Reserves and Wave Energy Projects).

[166] *See* H.B. 3013, 75th Leg., Reg. Sess. (Or. 2009). The regional community groups are divided as follows: Cape Falcon north of Manzanita, Cascade Head north of Lincoln City, Cape Perpetua south of Yachats and Cape Arago-Seven Devils south of Coos Bay.

[167] *See, e.g., Leave Room for Wave Energy*, OREGONLIVE.COM (Nov. 27, 2010), www.oregonlive.com/opinion/index.ssf/2010/11/leave_room_for_wave_energy.html (arguing that other activities in reserves should be considered).

[168] *See* ELEC. POWER RESEARCH INST., SURVEY AND CHARACTERIZATION OF POTENTIAL OFFSHORE WAVE ENERGY SITES IN OREGON (May 17, 2004).

[169] *Id*. at 22.

[170] *See* Susan Chambers, *Surprising Oregon Wave Energy FERC Permit Issued*, THE WORLD (Feb.3, 2009), mendocoastcurrent.wordpress.com/2009/02/04/surprising-oregon-wave-energy-ferc-permit-issued/.

submission of a revised plan prior to issuing the preliminary permit. This caused a backlash against Ocean Power Technologies, which was in discussions with community members over two other sites in Oregon waters. It was posited that the permit was meant to challenge MMS jurisdictional authority in the then-unresolved dispute. This is another example of the ongoing federalism conflict, in which the federal government acts contrary to state interests, and it called into question FERC's faithfulness to the MOU between it and the State.

B. WASHINGTON

Like Oregon, Washington has excellent potential for offshore wave energy production.[171] It has also committed to increasing renewable energy. Ballot Initiative 937 was approved on November 7, 2006.[172] Washington voters required that by 2020 utilities serving 25,000 people or more produce 15% of their energy by way of renewable sources.[173] Washington has a robust ocean economy, and the Governor's Office of Regulatory Assistance has helped project applicants to facilitate pilot projects for research purposes. Furthermore, the State has initiated a marine spatial planning program to facilitate ocean renewable energy in state waters.[174]

i. Proprietary Authorizations

Up to this point the discussion has been focused on regulating the activity of energy generation. As a distinct matter, a project proponent must acquire the right to occupy the space offshore where the wave energy production equipment will be located. To do so, a potential licensee must obtain a right to use the submerged lands of the State of Washington from the Department of Natural Resources (WDNR).[175]

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[171] *See* ELEC. POWER RESEARCH INST., SURVEY AND CHARACTERIZATION OF POTENTIAL OFFSHORE WAVE ENERGY SITES IN WASHINGTON 10 (May 17, 2004).

[172] *See* WASH. REV. CODE ANN. § 19.285.010 et seq. (Westlaw 2011), *enacted by* Initiative Measure No. 937.

[173] *See* WASH. REV. CODE ANN. § 19.285.040(2)(a)(iii) (Westlaw 2011) ("Each qualifying utility shall use eligible renewable resources or acquire equivalent renewable energy credits, or a combination of both, to meet the following annual targets: . . . (iii) At least fifteen percent of its load by January 1, 2020, and each year thereafter. . . .").

[174] *See* WASH. REV. CODE ANN. § 43.372.005 (Westlaw 2011).

[175] *See* WASH. ADMIN. CODE § 332-30-122 (Westlaw 2011). The state has a consolidated permitting process facilitated by the Governor's Office of Regulatory Assistance, which allows applicants to use one form to apply for different permits. The Joint Aquatic Resources Permit Application can be used to apply for a U.S. Army Corps Section 10 and 404 permit, U.S. Coast Guard Private Aid to Navigation permit, 401 Water Quality Certification from the Department of

ii. Regulatory Authorizations

The Energy Facility Site Evaluation Council (EFSEC) is authorized to license energy projects.[176] The Council has representatives from five state agencies[177] and is chaired by a gubernatorial appointee.[178] The EFSEC is specifically authorized as the agency to "present state concerns and interests" in regard to energy facilities that may be sited by other states or the federal government and that "may affect the environment, health, or safety of the citizens" of Washington.[179]

The Washington Department of Ecology has broad regulatory authority over environmental matters in the state.[180] The Department of Ecology is the agency that implements the CWA[181] and Coastal Zone Management Act provisions.[182] The agency is responsible for administering the state Ocean Resources Management Act[183] for the coast and Shoreline Management Act throughout all state marine waters.[184]

The Washington State Environmental Policy Act (SEPA) is the state's equivalent to NEPA, requiring environmental impact analysis of proposed major actions significantly affecting the quality of the environment.[185] When applying for a FERC license, an applicant can potentially satisfy SEPA review through the federal NEPA process, so long as the applicant has included any state-specific analysis not otherwise required by NEPA.[186] Other state and local authorizations

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Ecology, and Use Authorization from the Department of Natural Resources. *See* WA. ENVTL. PERMITTING INFO., WA. STATE GOVERNOR'S OFFICE OF REGULATORY ASSISTANCE, www.epermitting.wa.gov/site/alias__resourcecenter/welcome/9978/welcome.aspx (last visited Apr. 16, 2011).

[176] *See* WASH. REV. CODE ANN. §§ 80.50.040(1)-(12) (Westlaw 2011).

[177] *See* WASH. REV. CODE ANN. § 80.50.030(3)(a) (Westlaw 2011). These include the Departments of Ecology, Fish and Wildlife, Commerce, Natural Resources, and the Utilities and Transportation Commission.

[178] *See* WASH. REV. CODE ANN. § 80.50.030(2)(a) (Westlaw 2011).

[179] WASH. REV. CODE ANN. § 80.50.040(11) (Westlaw 2011). The council is also the designated state authority for siting transmission facilities pursuant to the Energy Policy Act of 2005. *See* WASH. REV. CODE ANN. § 80.50.045 (2010).

[180] *See* WASH. REV. CODE ANN. § 43.21A (Westlaw 2011).

[181] See WASH. REV. CODE ANN. § 43.21A.040 (Westlaw 2011).

[182] *See* WASH. REV. CODE ANN. § 90.48.035 (Westlaw 2011).

[183] *See* WASH. REV. CODE ANN. § 43.143.005 (Westlaw 2011).

[184] *See* WASH. ADMIN. CODE § 173-18-010 (Westlaw 2011); *see also* WASH. REV. CODE ANN. § 90.58.300 (Westlaw 2011).

[185] *See* WASH. REV. CODE ANN. § 43.21C.030 (Westlaw 2011).

[186] *See* WASH. REV. CODE ANN. § 43.21C.150 (Westlaw 2011) (WASH. REV. CODE ANN. § 43.21C.030 inapplicable when statement previously prepared pursuant to National Environmental Policy Act); WASH. REV. CODE ANN. § 43.21C.034 (Westlaw 2011) (use of existing documents).

cannot be issued unless SEPA review is first completed.[187]

iii. Example of Project in the State

On December 21, 2007, FERC issued a conditioned license to Finavera Renewables Ocean Energy, Ltd. (Finavera) for a 1.0-megawatt pilot project in Makah Bay, offshore Watch Point in Clallam County, Washington.[188] Although the project proponent identified it as "pilot" project, it was not processed under the Hydrokinetic Pilot Project process developed by FERC staff. When the license was issued, FERC acknowledged that although the Pilot Project process was not used, the license "has many of the characteristics discussed in Commission staff's proposal."[189]

The project uniquely illustrates the licensing process and the challenge of multiple land managers in the offshore environment. The project proposed would occupy one acre on the Makah Indian Reservation and approximately 28.3 acres of the Olympic Coast National Marine Sanctuary, which is administered by the NOAA. Additionally, some of the project would occupy state-owned aquatic lands under the administration of the WDNR.[190] The order details the involvement of multiple state and federal agencies.

In issuing its first hydrokinetic license (a conditional license) in the State of Washington,[191] FERC set off the first of many public clashes with coastal states.[192] The Department of Ecology requested reconsideration of the approval, because it had not completed a CZMA consistency determination or CWA 401 certification. Once the State gave those pending approvals, FERC reissued the permit.[193]

See also FERC WA. MOU, *supra* note 90, at ¶ 5, where the parties agree to coordinate environmental review to satisfy NEPA as well as the requirements of SEPA and other Washington state legal requirements such as those in the Ocean Resources Management Act and Shoreline Management Act.

[187] *See* WASH. REV. CODE ANN. § 43.21C.030 (Westlaw 2011).

[188] *See* Finavera Renewables Ocean Energy, Ltd., 121 FERC ¶ 61,288 (Dec. 21, 2007). The original application received by FERC was from AquaEnergy, Ltd., which changed its name to Finavera.

[189] *Id*. at n.3.

[190] *See id*. at 2, ¶ 2.

[191] *See id*.

[192] *See First Wave Energy Project Provokes Federal-State Clash*, ENVIRONMENT NEWS SERVICE (Jan. 21, 2008), www.ens-newswire.com/ens/jan2008/2008-01-21-092.html; Sherman, *supra* note 102, at 1193-95 (discussing lack of coordination between FERC and other federal agencies as well as Washington State).

[193] *See* Finavera Renewables Ocean Energy Ltd., 122 FERC ¶ 61,248 (Mar. 20, 2008).

iv. Marine Spatial Planning in the State

Washington is on the cusp of implementing marine spatial planning. In March 2010 the state legislature adopted a new law on marine spatial planning.[194] The law required that the state plan at least address renewable ocean energy, requiring that the MSP developed include a framework for coordinating review for proposed projects. It also mandated a report on Marine Spatial Planning, which was recently published by the State Ocean Caucus.[195] The State Ocean Caucus made twenty-one recommendations in the report, designed to advance MSP in the state. The first recommendation specifically relates to renewable ocean energy. It states:

> A marine spatial plan for Washington should focus on renewable ocean energy but could also address a range of other issues, including but not limited to aquaculture, marine transportation, oil and gas development, protection of sensitive habitats, scientific research, sediment management, telecommunications, new fisheries, military activities, and recreation and tourism.[196]

Thus, while the focus on the issue of renewable ocean energy "would be practical way to start building marine spatial plan," the state interagency team preparing the report suggested the inclusion of a coverage for "emerging new uses, expanding existing uses, or resolving conflicts among existing uses."[197]

The law required that the report/assessment should summarize how the goals and recommendations are or are not consistent with those of other states managing the West Coast large marine ecosystem and those of the national government – both the national ocean policy and framework for MSP.[198]

C. CALIFORNIA

California has the most potential for wave energy along the North Coast, although wave predictability is greater in the southern part of the

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[194] *See* S.B. 6350, 61st Leg., Reg. Sess. (Wash. 2010).

[195] *See* STATE OF WA. DEP'T OF ECOLOGY, MARINE SPATIAL PLANNING IN WASHINGTON: FINAL REPORT AND RECOMMENDATIONS OF THE STATE OCEAN CAUCUS TO THE WASHINGTON STATE LEGISLATURE (Jan. 2011).

[196] *Id*. at 4.

[197] *Id*. at 51.

[198] *See* S.B. 6350 § 4(2)(c), 61st Leg., Reg. Sess. (Wash. 2010).

state.[199] California entered into an MOU with FERC in 2010.[200] More preliminary permits, for the purpose of investigating the potential for energy generation, have been issued for projects in California than in any other state,[201] although less regulatory movement has taken place on a state level to facilitate wave energy development compared to Oregon or Washington.

California has an interest in increasing its use of renewable energy, for health, environmental, safety, and economic reasons.[202] California established a RPS in 2002,[203] accelerated its goals in 2006, and reformulated them again in 2011.[204] As emphasized in the MOU between California and FERC, California has adopted a goal of achieving 33% of its electricity from renewable sources by 2020.[205]

The State is also aggressively pursuing a response to climate change, with the adoption and implementation of Assembly Bill 32, The Global Warming Solutions Act of 2006.[206] The achievement of 33% of renewable energy by 2020 is a key strategy to implement AB 32.[207] With the addition of non-carbon sources of energy, such as wave energy, the State would better be able to achieve reduction in greenhouse gas emissions.[208]

Moreover, the offshore environment is critical to California's economy. There are a diversity of economic activities, from commercial

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[199] *See* H.T. Harvey & Assocs., *Developing Wave Energy in Coastal California: Potential Socio-Economic and Environmental Effects*, PIER FINAL PROJECT REPORT 8 (Nov. 2008), *available at* www.energy.ca.gov/2008publications/CEC-500-2008-083/CEC-500-2008-083.PDF.

[200] *See generally* FERC CAL. MOU, *supra* note 91.

[201] *See Preliminary Permits Issued*, FED. ENERGY REGULATORY COMM'N (last updated Dec. 1, 2010), www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/issued-hydrokinetic-permits-map.pdf.

[202] *See* CAL. PUB. UTIL. CODE §§ 399.11(a)-(b) (Westlaw 2011).

[203] Senate Bill 1078 established a goal of 20% renewable energy resources by 2017. The bill provided that each retail seller of electricity/electrical corporation had to increase its procurement of renewable energy resources from eligible sources at least 1% each year. *See* CAL. PUB. UTIL. CODE §§ 378, 390.1, 399.11-399.25 (2002) (amended 2004, 2006, 2011).

[204] *See* S.B. 107, Reg. Sess. (Cal. 2006) (codifying amendments accelerating the timeline for obtaining 20% of California's electricity from renewable sources from 2017 to 2010, seven years earlier); *see also* S.B. 2, 1st Ex. Sess. (Cal. 2011) (extending timeline for obtaining 20% of California's electricity from renewable sources to 2013 and adding 33% goal for 2020).

[205] *See* Cal. Governor Exec. Order No. S-14-08 (Nov. 17, 2008), *renewing* Cal. Governor Exec. Order No. S-21-09 (Sept. 15, 2009).

[206] *See* CAL. HEALTH & SAFETY CODE § 38500 (Westlaw 2011).

[207] *See* CAL. PUB. UTIL. COMM'N, 33% RENEWABLES PORTFOLIO STANDARD IMPLEMENTATION ANALYSIS PRELIMINARY RESULTS, EXECUTIVE SUMMARY 1 (June 2009).

[208] Then-Governor Schwarzenegger recognized the "mutual and compatible" goals of increasing the use of renewable electricity and reducing greenhouse gases when he issued Executive Order S-21-09. *See* Cal. Governor Exec. Order No. S-21-09 (Sept. 15, 2009).

fisheries, tourism, recreation, and educational institutions dependent on the ocean environment. The State has dedicated major resources to conservation of its unique marine resources and history.[209]

That said, potential environmental impacts and local community resistance have impacted wave energy development in California. The California Energy Commission, Public Interest Energy Research Program, and Ocean Protection Council commissioned a study investigating socio-economic and environmental effects of wave energy development in California.[210] The study noted multiple research gaps, primarily related to the uncertain environmental impacts of wave energy conversion devices. The State has not taken actions, like Oregon and Washington, to address wave energy development in specific law or regulations.

i. Proprietary Authorizations

The California State Lands Commission has jurisdiction over ungranted tidelands and submerged lands.[211] The Commission issues leases, easements, and rights of way. A state tidelands lease would be required for a project, which would also initiate the environmental impact assessment required by the California Environmental Quality Act (CEQA).

ii. Regulatory Authorizations

The Natural Resources Agency, Environmental Protection Agency, and Public Utilities Commission entered into an MOU with FERC and agreed to coordinate with other applicable California agencies to ensure MOU purposes are met. "California Agencies" encompass the State Lands Commission, as discussed previously, and others as discussed below. There are many different agencies that will be involved in a permitting and regulating a hydrokinetic project in California.

Because the projects will be development in the coastal zone of California, project proponents will need to work with expert agencies engaged in coastal use, development, and planning. The California Coastal Commission (CCC) issues coastal development and land-use permits for any development in the coastal zone, which is defined to

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[209] *See* Sivas & Caldwell, *supra* note 33, at 213-16.

[210] *See generally* H.T. Harvey & Assocs., *supra* note 199.

[211] *See* CAL. PUB. RES. CODE § 6301 (Westlaw 2011) ("The commission shall exclusively administer and control all such lands, and may lease or otherwise dispose of such lands, as provided by law, upon such terms and for such consideration, if any, as are determined by it.").

include everything seaward to the state's limit of jurisdiction.[212] The San Francisco Bay Conservation and Development Commission (BCDC) undertakes parallel review and authorizations for the San Francisco Bay region. These agencies also undertake the consistency determinations required under the CZMA; thus, either the CCC or the BCDC, depending on the location of the project, must concur that the project will be consistent with the enforceable policies of California's CMP.[213]

Multiple other agencies will be involved to address impacts to species and water quality. The California Department of Fish and Game will be involved to consult on California endangered species.[214] The Clean Water Act water-quality certification required under section 401 will be undertaken by either the California State Water Resources Control Board or a Regional Water Quality Control Board. More broadly with respect to the unique challenge of protecting the marine environment, the California Ocean Protection Council is engaged with wave energy development and has created a working group – the California Marine Renewable Energy Working Group – to address information gaps and help coordinate the permitting process across state and federal agencies.

The CEQA requires an environmental assessment to determine possible impacts to the environment, an analysis of alternatives, and proposals for mitigating significant impacts.[215] A joint Environmental Impact Statement-Environmental Impact Report could be prepared for a project to satisfy both federal and state laws. However, CEQA specifically requires mitigation measures, and such state-specific requirements must be included if joint planning documents are sought to be used to satisfy CEQA as they are not otherwise required by federal law. As there will be multiple potential permits required by California agencies, a project proponent might wish to seek CEQA review of the state lands lease at the same time as the other permits.

iii. Marine Spatial Planning in California

When it passed the Marine Life Protection Act (MLPA) in 1999,[216] California took the national lead in the effort to apply ocean zoning

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[212] *See* CAL. PUB. RES. CODE § 30000 et seq. (Westlaw 2011). A local government agency may be delegated this authority.

[213] *See* 16 U.S.C.A. §§ 1456(c)(1)-(3) (Westlaw 2011).

[214] *See* CAL. FISH & GAME CODE § 2050 (Westlaw 2011).

[215] *See* CAL. PUB. RES. CODE § 21000 (Westlaw 2011).

[216] *See* CAL. FISH & GAME CODE §§ 2850-2863 (Westlaw 2011).

toward restoration goals.[217] Finding that the marine protected areas adopted in the state previously had not provided for a coherent system to conserve marine ecosystems, the MLPA proposed to connect multiple marine protected areas in a network of integrated management.[218] The legislation provided expressly for public input on the design and implementation of the marine life protection program.[219] A blue-ribbon task force was appointed by the Governor to implement the stalled efforts. The Marine Life Protection Act Blue Ribbon Task Force has helped to implement the MLPA vision, which stalled initially due to user conflicts and lack of funding.[220] To facilitate implementation, California has been divided into five different regions: North Coast (California/Oregon border to Alder Creek near Point Arena), North Central (Alder Creek near Point Arena to Pigeon Point), Central (Pigeon Point to Point Conception), San Francisco (waters within San Francisco Bay), and South Coast (Point Conception to the California/Mexico border).

The first network of marine protected areas was adopted by the California Fish and Game Commission for the Central Coast region after significant public input, facilitated in large part through the establishment of a regional stakeholder group made up of publicly nominated individuals.[221] Incorporating public input into planning processes is a difficult, time-consuming task. Developing a stakeholder group was a response to the need to address multiple diverse opinions without losing the ability to make decisions.[222] At the time of writing, three area plans, for the Central, North Central, and South Coasts, have been adopted by the California Fish and Game Commission.[223]

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[217] Massachusetts has now claimed leadership on this issue, announcing with its adoption of a final Massachusetts Ocean Management Plan that "the Commonwealth [is] at the forefront of the national movement towards comprehensive ocean planning and management." Transmittal letter from Ian A. Bowles, Sec'y, Exec. Office of Energy & Envtl. Affairs (Dec. 31, 2009); EXEC. OFFICE OF ENERGY & ENVTL. AFFAIRS, *supra* note 46, at inside cover page.

[218] *See* CAL. FISH & GAME CODE § 2853(b)(6) (Westlaw 2011).

[219] *See* CAL. FISH & GAME CODE §§ 2855(b)(4), (c) (Westlaw 2011).

[220] *See* Ed Zieralski, *Meetings on SoCal Closures MLPA Seeks*, SAN DIEGO UNION-TRIBUNE, July 8, 2008, at D3 (pointing out how although the act was passed in 1999, implementation stumbled due to lack of funding and organization); Ed Zieralski, *Funding Woes May Interrupt Marine Act: Is Cost of MLPA Too Rich for State?*, SAN DIEGO UNION-TRIBUNE, May 15, 2009, at C8.

[221] *See* Katherine M. Malloy, Note, *California's Marine Life Protection Act: A Review of the Marine Protected Areas Proposal Process for the North Central Coast Region*, 17 SOUTHEASTERN ENVTL. L.J. 201, 216 (2008).

[222] *See id*., at 223-24 (describing how the group conducted public meetings, took public comment and became a "buffer" between the public and the Department of Fish and Game, and how decision making was facilitated).

[223] The Central Coast and North Central Coast plans are in effect and enforced. Regulations

As much as current users are concerned about potential displacement by the siting of wave energy projects, FERC's issuance of permits for wave energy development could threaten MLPA designations designed for conservation purposes. While wave energy projects are believed to be minimally harmful to the environment, their impacts are still unknown.[224] Within state waters, two of the five MLPA areas remain to be planned, and all are intended to be managed together as an integrated whole. Coordination between the federal government and states is important to avoid counterproductive actions, whether projects are sited within state waters, in federal waters, or straddling the jurisdictional boundary. States have much less control over the siting of projects beyond the three-mile state boundary offshore. The CZMA consistency provisions give states the opportunity to reject particular activities as inconsistent with the enforceable policies of a Coastal Management Plan.[225] Yet even the CZMA consistency determinations can be appealed or in narrow circumstances overridden if the Secretary of Commerce finds the activity is consistent with the objectives of the CZMA.[226] California has prioritized a planning approach to address user conflicts and conservation and restoration goals. This is emphasized by the engagement of the Ocean Protection Council in litigation demanding a Pacific Region plan for marine energy development.[227]

iv. Examples of Projects in California

As previously mentioned, more preliminary permits have been issued in California than Oregon or Washington, although those states have projects at more advanced stages of commercial development.[228]

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for the third area, the South Coast, will be effective in mid-2011, after the appropriate government filings are complete. *See* Press Release, Cal. Dep't of Fish & Game, California Fish and Game Commission Gives Final Approval for South Coast Marine Protected Areas (Dec. 15, 2010), *available at* www.dfg.ca.gov/news/news10/2010121501-Commission-Approves-SCMPA.html. Planning for the North Coast is underway. Regulations for the Marine Protected Areas are located in § 632 of the California Code of Regulations. *See* CAL. CODE REGS. tit. 14, § 632 (Westlaw 2011).

[224] *See* MINERALS MGMT. SERV. WHITE PAPER, *supra* note 23, at 8 (noting that possible impacts will be site-specific and the physical and ecological factors driving potential impacts more "precisely defined" when test facilities are deployed).

[225] *See* 16 U.S.C.A. § 1456(c)(1), (3)(A) (Westlaw 2011). California's enforceable policies are found in Chapter 3 of the Coastal Act, and in particular for the maintenance of marine resources "special protection is given to areas and species of special biological or economic significance." CAL. PUB. RES. CODE § 30230 (Westlaw 2011).

[226] *See* 16 U.S.C.A. §§ 1456(c)(3)(A)-(B), (d) (Westlaw 2011).

[227] *See infra* Part V.C.iv.

[228] As of April 4, 2011, FERC identified seventy-nine hydrokinetic projects pre-filing for a license, with two of those as wave projects in Oregon, and one project in post-filing for license of 5-

Permit holders have included local governments, public utilities, and private companies. Although there has been great interest in a variety of sites, few projects have progressed in the research and stakeholder outreach stages.

The Sonoma County Water Agency received preliminary permits on July 9, 2009, to investigate the potential for wave energy development at three different locations along the North Coast.[229] Two public meetings were held in September of 2009. The most recent progress report to FERC, required by the preliminary permits, acknowledged that activities are stalled until further funding is acquired to move the projects forward.[230] Sonoma County's approach has been characterized as one way for local governments to have more say in siting decisions than might otherwise be afforded if they are not themselves project proponents.[231]

The Pacific Gas and Electric Company (PG&E) has had plans for multiple projects, including the Humboldt Wave Connect project and the Central Coast Wave Connect project. FERC issued a preliminary permit to PG&E in 2008.[232] The Mendocino project was abandoned, after strong public opposition, with PG&E citing harbor characteristics as untenable for the project. As discussed below, another Mendocino project faced similar strong opposition from the local community.

In contrast, the Humboldt Wave Connect project moved further along in the process toward a pilot project license. PG&E retained a consulting group to facilitate a collaborative approach to its license application. The Humboldt project involved creation of a Humboldt Working Group populated by a range of stakeholders, including fishing,

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MW exemption in Oregon – that being the Reedsport OPT Wave Park. FERC has issued nine preliminary permits for wave projects. As of April 6, 2011, FERC had issued five preliminary permits for wave hydrokinetic projects in California. *See Hydrokinetic Projects*, FED. ENERGY REGULATORY COMM'N, www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp (last visited Apr. 8, 2011).

[229] *See* SONOMA CNTY. WATER AGENCY, PRESS RELEASE: PRELIMINARY PERMITS APPROVED FOR FEASIBILITY STUDY OF SONOMA COAST HYDROKINETIC ENERGY PROJECT (July 16, 2009), *available at* drivecms.com/uploads/scwa.ca.gov/7-16-09-Prelim-Wave-Permits.pdf.

[230] The progress reports submitted for the Del Mar Landing (January 26, 2011) and Fort Ross South (January 7, 2011) permits indicated suspension of activities until further funding was acquired. FERC has since sent a letter to the Sonoma County Water Agency on March 21, 2011 indicating possible cancellation of the preliminary permits due to the inability of the applicant to meet the "strict scrutiny" standard for diligently implementing the permit requirements. *See Hydrokinetic Projects*, FED. ENERGY REGULATORY COMM'N, www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp (last visited Apr. 8, 2011).

[231] *See* Sivas & Caldwell, *supra* note 31, at 225 (citing to Sonoma County press release).

[232] A competing application from Fairhaven OPT Ocean Power, LLC, was rejected based on PG&E filing its application first. *See* Pac. Gas & Elec. Co., 122 FERC ¶ 62,229 (Mar. 13, 2008).

environmental, and local agency representatives, as well as other representatives of the public.[233] Public meetings were conducted, satisfying the scoping requirements under the California Environmental Quality Act. Central to the creation of baseline studies and drafting of monitoring plans was engagement and technical assistance of working group members, such as the State Land Commission, State Department of Fish and Game, and the National Marine Fisheries Service. Citing the cost of government permitting and project infrastructure, PG&E announced in November 2010 that it would suspend the project.[234] The company noted that the foremost challenge was overcoming the hurdle of unproven technology.[235] PG&E previously sought to purchase power from a proposed Finavera wave park but the Public Utilities Commission blocked that deal citing excessive costs to consumers.[236]

Finally, Green Wave Energy Solutions, LLC, was issued a preliminary permit for development of a wave park in Mendocino.[237] The project was the subject of a lawsuit challenging FERC's decision to issue preliminary permits prior to adopting a comprehensive plan for wave development in the Pacific Ocean. Fishermen Interested in Safe Hydrokinetics, together with the County of Mendocino, the City of Fort Bragg, the Recreational Fishing Alliance, the Pacific Coast Federation of Fishermen's Associations, the Institute for Fisheries, the Ocean Protection Council, and Elizabeth R. Mitchell, filed suit against FERC for issuing a preliminary permit to Green Wave Energy Solutions, arguing that FERC acted unlawfully by issuing the preliminary permit without first developing a comprehensive plan for the Pacific Region.[238] Petitioners relied on the requirement in FPA section 10(a) that FERC consider a project's compatibility with a comprehensive plan and on case

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[233] *See* PAC. GAS & ELEC. CO., HUMBOLDT WORKING GROUP MEMBER LIST, available at www.pge.com/includes/docs/pdfs/shared/environment/pge/waveconnect/HWGMembersList.pdf.

[234] *See* Letter from Annette Faraglia, Attorney, PG&E, to Kimberly D. Bose, Secretary, FERC (Nov. 30, 2010), *available at* www.pge.com/about/environment/pge/cleanenergy/waveconnect/projects.shtml; David R. Baker, *PG&E Suspends Wave-Energy Project Off Coast*, SFGATE.COM (Nov. 2, 2010), articles.sfgate.com/2010-11-02/business/24809315_1_finavera-wave-power-wave-park.

[235] *See* Faraglia, *supra* note 234 (stating reasons "including environmental uncertainties—the new and evolving regulatory process, the current state of the wave energy technology, and numerous financial hurdles created excessive challenges for the Project"); Baker, *supra* note 233.

[236] *See* Cal. Pub. Utils. Comm'n, *PG&E Requests Approval of a Renewable Resource Procurement Contract with Finavera Renewables, Inc*., Energy Div. Res. E-4196 (Oct. 16, 2008), *available at* docs.cpuc.ca.gov/Published/Final_resolution/92550.htm.

[237] *See* Green Wave Energy Solutions, LLC, 127 FERC ¶ 62,093 (2009), *reh'g denied*, 128 FERC ¶ 61,034 (2009).

[238] *See* Brief for Petitioner at 23, Fishermen Interested in Safe Hydrokinetics v. Federal Energy Regulation Commission, No. 09-72920 (9th Cir. Jan. 15, 2010).

law, *National Wildlife Federation v. FERC*, which held that in some circumstances FERC may delay development of a comprehensive plan until the later stage of licensing if it explains its reason for the delay.[239] Petitioners then argued that FERC did not adequately explain why it delayed consideration. FERC took the position that the consideration can be deferred to the licensing stage.[240] FERC cancelled the preliminary permit due to inadequate progress as indicated by late required report filings by Green Wave Energy Solutions.[241] Nonetheless, its policy of issuing preliminary permits without consideration of a broader Pacific Ocean plan continues. The Ninth Circuit dismissed the case as moot, because the permit was cancelled, and determined that this was not a situation where the issue is capable of repetition yet evades review.[242] The engagement of these stakeholders, particularly those involved in managing California's marine resources, demonstrates how many in California prioritize long-term planning and protection of the marine environment although it may conflict with the competing priority of increasing renewable energy.

VI. PRELIMINARY CONCLUSIONS FROM ANALYSIS OF STATE REGIMES

Three related themes emerge from the review of state efforts to address the development of wave energy. First, the FERC-State MOUs have served an important role in initiating development. Second, an emphasis on adaptive management has been central to sustaining the momentum of a project. Finally, a collaborative process that includes stakeholders is critical to success of a project.

A. IMPORTANCE OF THE MOUS

There has been significant import placed on the achievement of MOUs between FERC and various states.[243] An analysis of the state

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[239] *See* 16 U.S.C.A. § 803(a)(1) (Westlaw 2011); Nat'l Wildlife Fed'n v. Fed. Energy Regulatory Comm'n, 801 F.2d 1505, 1509 (9th Cir. 1986).

[240] *See* Brief for Respondent at 16-17, Fishermen Interested in Safe Hydrokinetics v. Fed. Energy Regulatory Comm'n, No. 09-72920 (9th Cir. 2011). FERC also relies on the fact that section 10(a)(1) refers specifically to licenses. *Id*. at 19-20.

[241] *See* Green Wave Energy Solutions, LLC, 132 FERC ¶ 61,254 (Sept. 23, 2010), *reh'g denied*, 133 FERC ¶ 61,086 (Oct. 26, 2010).

[242] *See* Order at 2, Fishermen Interested in Safe Hydrokinetics v. Federal Energy Regulation Commission, no 09-72920 (9th Cir. Jan 28, 2011).

[243] *See, e.g.*, RENEWABLE ENERGY, *supra* note 45, at 302-04 (2010) (noting that the MOUs "further the development of the regulatory process for hydrokinetic projects"); Sherman, *supra* note 102, at 1196.

regimes reveals the rationale, as the agreements provide important milestones. The MOUs support development by reinforcing the parties' interests in renewable energy development generally, the shared goal of encouraging pilot and demonstration projects for wave and hydrokinetic energy development, and a desire to clarify, streamline, and coordinate the regulatory approval process applicable in state waters.

The MOUs generally express the parties' determination to increase renewable energy. The Oregon[244] and Washington[245] MOUs specify the need for timely approval to "promote clean, renewable sources of energy," whereas the California MOU specifically cites to the State's goal of increasing its renewable energy to 33% by 2020.[246]

Washington and Oregon specify in the MOUs that the parties want to make it possible for short-term or experimental projects to occur.[247] Potentially less supportive of experimentation, but generally in accord, the California MOU recognizes that developers and utilities in California have expressed interest in testing and thus the parties will encourage pilot projects.[248]

Foremost, the MOUs have been central to clarifying the regulatory process and facilitating government reviews and approvals. The Oregon MOU declares that its purpose is to:

> [C]oordinate the procedures and schedules for review of wave energy projects . . . and to ensure that there is a coordinated review of proposed wave energy projects that is responsive to environmental, economic, and cultural concerns while providing a timely, stable, and predictable means for developers of such projects to seek necessary approvals.[249]

Using nearly identical language, the Washington MOU states:

> The purpose of this MOU is to coordinate the procedures and schedules for review of hydrokinetic energy projects . . . and to ensure that there is a coordinated review of proposed hydrokinetic energy projects that is responsive to environmental, economic, and cultural concerns while providing a timely, stable, and predictable means for

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[244] *See* FERC OR. MOU, *supra* note 89, at ¶ C.

[245] *See* FERC WA. MOU, *supra* note 90, at ¶ C.

[246] FERC CAL. MOU, *supra* note 91, at § I (Information & Background).

[247] *See* FERC OR. MOU, *supra* note 89, at ¶ C; FERC WA. MOU, *supra* note 90, at ¶ D.

[248] *See* FERC CAL. MOU, *supra* note 91, at § IV.5.

[249] FERC OR. MOU, *supra* note 89, at ¶ D.

developers of such projects to seek necessary approvals.[250]

California's MOU states:

> This Agreement seeks to develop a procedure for coordinated and efficient review of proposed hydrokinetic projects that is responsive to environmental, economic, and cultural concerns, while providing a timely and predictable means for developers of such projects to seek necessary state and federal approvals."[251]

The MOUs cite specifically to the various federal laws that require state engagement to authorize wave energy projects, including CZMA, CWA, and the National Historic Preservation Act. Agencies have communicated with FERC regarding contacts with project applicants to mark progress on preliminary permit timelines. While this may have occurred in any event, the MOUs specifically provide that each party will notify the other when they have information regarding a project proposal.

Each MOU acknowledges the role of the states in planning for their coastal zones and the provisions of the FPA—section 10(a)(2)(A)(ii) and 18 C.F.R. § 2.19—that drive FERC's attention to state planning. Specifically, the California MOU acknowledges that the State intends to develop siting recommendations,[252] and Oregon intends to develop a comprehensive plan for the siting of wave energy projects.[253] The MOU with Washington acknowledged that Washington "may opt to prepare a comprehensive plan addressing siting of hydrokinetic energy projects"[254] and may establish a workgroup to examine environmental and permitting issues.[255]

Although FERC may not be required to make preliminary permit decisions with reference to a comprehensive plan, the Pacific Northwest states appear eager to have comprehensive planning for Pacific Ocean wave energy development.[256] It is likely that Oregon will be the first of the states to submit a comprehensive plan for purposes of FPA section 10(a).

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[250] FERC WA. MOU, *supra* note 90, at ¶ 4.

[251] FERC CAL. MOU, *supra* note 91, at § III.

[252] *See* FERC CAL. MOU, *supra* note 91, at § IV.3.

[253] *See* FERC OR. MOU, *supra* note 89, at 5.

[254] FERC WA. MOU, *supra* note 90, at 6.

[255] *See id*. at 4.

[256] *See infra* notes 261 and 262, and accompanying text (discussing West Coast Governors' Agreement on Ocean Health).

B. EMPHASIS ON ADAPTIVE MANAGEMENT

The reliance on adaptive management has also emerged as a critical piece of the development of wave energy. This is by necessity rather than choice. Environmental effects from the new technologies are still uncertain.[257] Financial support for research and demonstration projects by marine research centers will improve the available information for making environmental assessment decisions. While placing significant faith in the theory that wave energy will have a minimal impact on the environment, the regulatory emphasis on monitoring, decommissioning, and removal capacity and commitment is noteworthy.

Adaptive management has been an emphasis from the outset of federal interest and support for hydrokinetic energy development. In section 633(b) of the Energy Independence and Security Act of 2007, Congress specifically required assessment of the potential for environmental impacts from hydrokinetic development and the use of adaptive management in response.[258] The Department of Energy submitted its report to Congress in December 2009.[259] The MMS Environmental Impact Assessment of renewable energy development is also an early research document identifying potential concerns.[260] The approach embraced thus far by regulators is to rely on rational siting (avoidance of sensitive areas and marine reserves) and to use adaptive management to respond to the uncertainty surrounding potential environmental effects.

C. CENTRALITY OF COLLABORATION

The wide range of issues that must be addressed by wave energy projects, the level of public support necessary to be achieved, as well as the expertise of different regulatory agencies that must be engaged,

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[257] For a review of studies on environmental impacts including, among other things, electromagnetic fields, acoustics, lighting and cumulative effects, *see* GREGORY MCMURRAY, OCEAN & COASTAL MGMT. PROGRAM, WAVE ENERGY ECOLOGICAL EFFECTS WORKSHOP: ECOLOGICAL ASSESSMENT BRIEFING PAPER (Oct. 11-12, 2007); H.T. Harvey & Assocs., *supra* note 199. Note also that some of what is known about the impacts on the environment is proprietary information. *See* Chad Marriott & Cherise Oram, *Coastal and Marine Spatial Planning for Offshore Renewable Energy Development on the West Coast*, *in* ENVIRONMENT & LAND USE LAW 7, 9 (2010).

[258] *See* Energy Independence and Security Act 2007, Pub. Law No. 110-140 § 633(b), 121 Stat. 1492 (Dec. 19, 2007).

[259] *See* U.S. DEP'T OF ENERGY, REPORT TO CONGRESS ON THE POTENTIAL ENVIRONMENTAL EFFECTS OF MARINE AND HYDROKINETIC ENERGY TECHNOLOGIES (Dec. 2009).

[260] *See* MINERALS MGMT. SERV. FINAL EIS, *supra* note 49 (examining variety of impacts such as acoustic, visual and specific to fisheries, marine mammals and birds).

counsels toward a collaborative approach.[261] The inclusion by FERC of engagement in stakeholder outreach and agency consultation timelines in preliminary permits confirms FERC's strong interest in having applicants facilitate broad state and local input. In fact, collaborative processes have been useful in moving projects forward in both the wave energy development process as well as marine spatial planning processes.

Two collaborative efforts are highlighted in this examination of different state regulatory regimes. The Humboldt Working Group was unable to help PG&E overcome challenges posed by the environmental uncertainties of new technology, despite prolonged stakeholder engagement in identifying necessary environmental studies for adequate impact analysis and potential design of a management and monitoring plan sufficient to meet the project objectives and legal requirements implemented by multiple regulatory agencies. The process may have, however, emphasized to the regulatory bodies that ground-level engagement in a multi-stakeholder process is more efficient and productive than a project proponent engaging each regulatory body on a separate basis. Getting stakeholders into a room does not guarantee consensus, but it may better illuminate areas of agreement, dispute, and uncertainty in a less protracted manner than typical permitting processes.

Second, the settlement proposed in the Reedsport OPT Wave Park licensing application may well become a model for future projects. Stakeholder engagement began early and was facilitated through Oregon Solutions. Again, participants did not necessarily reach agreement on all issues, but consensus decisions were able to be submitted ultimately by OPT for FERC consideration. If it is approved, the project will be an important source of information on wave energy effects and impacts.

VII. REGIONAL EFFORTS AND COMPARATIVE INSIGHTS

In addition to their individual state efforts, the Pacific Northwest states have also recognized the potential for value-added benefits of a tri-party collaboration toward common goals. California, Oregon, and Washington have a West Coast Governors' Agreement on Ocean Health. The agreement identifies various actions, and in particular Action 4.2 provides:

> Washington, Oregon, and California will ensure that offshore energy

[261] Collaboration has been used in relicensing proceedings with positive outcomes. *See* Andrew Sawyer, *Hydropower Relicensing in the Post-Dam Building Era*, 11 NAT. RESOURCES & ENV'T 12, 70 (1996).

development is environmentally sustainable through the following actions:

- Oppose all new offshore oil and gas leasing, development, and production;
- Evaluate the benefits and impacts of renewable ocean energy development; and
- Develop a more consistent, effective, and efficient state and federal regulatory approach to renewable ocean energy development.[262]

In May 2010, a final work plan on renewable ocean energy issues was released by the Renewable Ocean Energy action coordination team.[263] One high priority task was creating a coastal siting report that would be at the scale of the California Current Large Marine Ecosystem, stretching across California, Oregon, and Washington.[264] This type of broad regional, ecosystem-based planning project is akin to the plan sought by litigants in the lawsuit filed against FERC over the Green Wave preliminary permit in Mendocino, California.

Oregon is eager to move forward as a leader in this field, including significant state investment, academic institutions devoted to ocean energy research, and demand on the part of the community to be actively engaged in siting decisions.[265] Oregon has also acted quickly to adopt (and amend) laws to facilitate ocean energy production. The leadership in establishing a multi-stakeholder collaborative process made it possible for a settlement agreement to accompany the Reedsport OPT Wave Park license application. Although Oregon's marine spatial planning efforts were not robust until recently, the State now specifically engaged in marine reserve planning and identification of locations appropriate for renewable ocean energy facilities in the Territorial Sea.

Washington also did not engage in significant ocean zoning efforts until confronted with the issue of siting ocean renewable energy in state waters. However, the State is engaged in a process that is likely to have a

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[262] WEST COAST GOVERNORS' AGREEMENT ON OCEAN HEALTH 64 (2008), *available at* westcoastoceans.gov/Docs/WCGA_ActionPlan_low-resolution.pdf.

[263] *See* WEST COAST GOVERNORS' AGREEMENT ON OCEAN HEALTH, RENEWABLE OCEAN ENERGY ACTION COORDINATION TEAM: FINAL WORK PLAN (May 2010), *available at* www.westcoastoceans.gov/Docs/Renewable_Ocean_Energy_Final_Work_Plan.pdf.

[264] *See id*. at 8 ("The coastal siting report is ranked high among the regional framework components of the Renewable Ocean Energy Work Plan. It is intended to be conducted at the scale of the California Current Large Mine Ecosystem . . . .").

[265] *See* PAC. ENERGY VENTURES, WAVE ENERGY DEVELOPMENT IN OREGON: ISSUES & LIMITATIONS, PREFERRED PRACTICES & POLICY CONSIDERATIONS 3 (2009) (noting that stakeholders want to be involved as early as possible in the siting stage).

broader focus beyond ocean renewable energy.

Along the California coast there have been proposals abandoned due to the long timeframe for siting projects, uncertainty in the regulatory framework, and resistance from communities.[266] Furthermore, the first lawsuit challenging FERC's preliminary permit policy was initiated as a protest to proposals in Mendocino. Although the permitting hurdles in the states are not too dissimilar (including both federal and state components) California's experience contrasts with that of Oregon and Washington. California projects have specifically been abandoned for sites in other states. Local communities in California have already been contending with MLPA designation process, and wave energy projects are another threat to the growing restrictions on commercial and recreational fishing and its economic benefits to coastal communities.

VIII. CONCLUSION

There are different regulatory approaches for offshore hydrokinetic energy projects in California, Oregon, and Washington. Each state has a legal framework for accommodating hydrokinetic energy development within state waters, shaped significantly by federal law. Policymakers must balance many factors: conflict resolution between established and potential future ocean users, uncertainties regarding the impact of this energy generation technology on the marine environment, concerns for coastal communities, and the imperative to wean us from dependence on carbon-based energy sources. Despite recent events emphasizing the need for increasing renewable energy capacity, siting these new energy projects is a long and difficult undertaking.

Some geographic locations with the greatest potential to deploy wave energy technology are relatively pristine environments where recreation or preservation is very highly valued by the local community. Examination of actual licensing experiences indicates that resistance from multiple sectors of the society will be a major obstacle to overcome. Moreover, the convergence of marine spatial planning at the same time as interest in renewable ocean energy development provides more of a challenge than an opportunity. Stakeholders desire significant input into siting decisions for this reason, and marine spatial planning processes may make it even more difficult for wave energy projects to find their place. A comprehensive Pacific Ocean wave energy plan may

[266] FERC database of proposed and defunct projects in California, Oregon and Washington. *See* Moss Groper, *Wave Energy Hits the Rocks in San Onofre*, SAN DIEGO READER (Sept. 22, 2010), www.sandiegoreader.com/news/2010/sep/22/city-light-2/.

better facilitate cumulative impact analysis as well as illuminating marine spatial planning tradeoffs, but it would also add delay and potentially invite obstruction of this newly emerging energy industry.

It will take substantial change to move the current state of ocean regulation away from a model of extraction to one focused on long-term sustainability. How much renewable ocean energy production will play a role in that shift is uncertain. It remains unclear whether hydrokinetic energy will make a substantial contribution to the overall energy mix in the United States.[267] The coastal states evaluated in this Article exhibit enthusiasm for moving toward a model of sustainability, with renewable ocean energy a hopeful contender for stardom in the coming clean energy transformation. Reasonably hampering this enthusiasm is a clear preference for a precautionary approach to new technology with untested impacts on our marine resources.

[267] The current federal administration positions make this dubious, with indications that the technology is not far enough along to rely upon it to provide a significant component in a clean energy transition.