COMMENT

THE PROMISE OF WAVE ENERGY

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INTRODUCTION

In 1895, the *San Francisco Examiner* held a contest to solicit ideas for improving the city and enticing new residents.[1] The winning suggestion was to offer a substantial cash prize to anyone who could invent a way to utilize the power of ocean waves commercially.[2] More than a century later, harnessing the vast kinetic energy of the sea to light the homes of San Francisco has become a realistic possibility.[3] Some researchers believe that wave energy promises to be one of "the most environmentally benign electricity-generation technologies yet developed,"[4] but there is still much work to be done.[5]

Hurdles for wave energy developers include technological challenges and above-market output costs.[6] Policymakers will need to address potential user conflicts, particularly related to the fishing industry.[7] And uncertainty regarding environmental effects presents reason to be circumspect about introducing this new activity into the marine environment.[8] The prudent course here is a measured one that includes interagency coordination, advance planning, phased development, and ongoing monitoring of cumulative impacts.[9] This Comment raises concerns that the federal approach lacks adequate safeguards and planning mechanisms, which could negatively affect the development of wave energy in the United States. However, policymakers in coastal states have an opportunity to influence the pace

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[1] Christine Miller, *A Brief History of Wave and Tidal Energy Experiments in San Francisco and Santa Cruz* (2004), http://www.outsidelands.org/wave-tidal.php (citing *The Best Idea of All*, S.F. EXAMINER, May 5, 1895, at 22).

[2] *Id.*

[3] *See* Elizabeth Douglass & Victoria Kim, *PG&E to Get Watts from Waves*, L.A. TIMES, Dec. 19, 2007, at C3 (reporting that San Francisco-based utility PG&E has signed an agreement to begin purchasing wave-generated power in 2010).

[4] ELEC. POWER RESEARCH INST., PRIMER: POWER FROM OCEAN WAVES AND TIDES 1 (2007), *available at* http://www.aidea.org/aea/PDF%20files/OceanRiverEnergy/6-22-2007EPRI primer.pdf [hereinafter EPRI, PRIMER].

[5] *See, e.g.*, Winston Ross, *Ready to Catch Wave Energy's Power*, REGISTER-GUARD, Aug. 11, 2007 (describing a number of concerns and issues which need to be addressed).

[6] Annette von Jouanne & Ted Brekken, Overview of Wave Energy Activities at Oregon State University 1, http://eecs.oregonstate.edu/wesrf/images/Overview%20of%20Wave%20Energy %20Activities%20at%20OSU.pdf (last visited Apr. 7, 2008); Ross, *supra* note 5.

[7] *See* Ross, *supra* note 5.

[8] *See, e.g.*, Ecological Effects of Wave Energy Development in the Pacific Northwest 2-4 (2007), *available at* http://hmsc.oregonstate.edu/waveenergy/WEWSummary.pdf (summarizing information currently known about impacts, as compiled by workshop attendees).

[9] *See, e.g.*, Oregon Innovation Council, Fact Sheet: Oregon Wave Energy Initiative, http://www.oregoninc.org/events/inno/waveFacts.pdf (last visited Mar. 30, 2008) (describing Oregon's policy approach, which includes many of these elements).

and direction of wave energy development on behalf of the public and the environment.

Part I is an overview of wave energy and the reasons we should be pursuing its sustainable development. Part II provides background on the legal framework for offshore energy and coastal protection. Part III addresses jurisdictional and regulatory issues. It begins with an explanation of the statutory basis for regulatory authority over wave energy and the jurisdictional dispute between two federal agencies. It then explores in detail the regulatory scheme of the Federal Energy Regulatory Commission (FERC), which stands in contrast to the coordinated, well-planned approach required for sustainable wave energy development. Part IV then argues that although FERC's approach is sowing the seeds of future problems, coastal states can shape the sector during this critical phase of development if they are proactive.

I. WAVE ENERGY OVERVIEW

A. THE TECHNOLOGY

Environmental, economic, and security concerns have heightened recent interest in sustainable domestic energy sources, but offshore renewable energy is not a new concept.[10] Spurred by the energy crisis of the 1970s, the federal government invested more than two hundred million dollars in development of ocean thermal energy conversion technology, a means of tapping the solar energy stored in tropical ocean surface waters to produce electricity.[11] By the 1990s, the technology was still not commercially viable, and the effort stalled as oil prices dropped.[12]

More recently, options for offshore renewable energy generation have expanded to include offshore wind turbines, solar installations, and mechanical devices driven by waves, tides, or currents.[13] The potential is significant—wave and tidal energy combined could theoretically meet ten percent of U.S. electricity demand.[14]

Tidal technology uses windmill-like underwater turbines powered by the cyclical ebb and flow of the ocean waters, while ocean current

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[10] U.S. COMM'N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY 365 (2004).

[11] *Id.* at 367.

[12] *Id.* at 367-68.

[13] *Id.* at 365.

[14] EPRI PRIMER, *supra* note 4, at 3.

technology uses similar devices powered by deepwater ocean currents.[15] Wave energy conversion devices, in contrast, harness the concentrated form of solar energy contained in surface waves.[16]

Uneven warming of the Earth's surface creates pressure differences in the atmosphere, giving rise to powerful winds.[17] The wind blowing across the open ocean transfers energy to the water, and this energy eventually accumulates to form wave swells.[18] These surface waves may travel thousands of miles before reaching land.[19]

The wave energy sector is in its infancy, but a few types of technology are in the early stages of deployment.[20] The first commercial wave farm, currently being sited off the coast of Portugal, utilizes a design known as an attenuator.[21] Four cylindrical pontoons, each approximately one hundred feet long and twelve feet in diameter, float on the ocean's surface.[22] As a wave passes along the length of the device, the hinged joints between the pontoons flex, driving hydraulic pumps.[23] Another type of technology, the point absorber, employs a free-floating buoy housed in a fixed cylinder.[24] Wave motion causes the buoy to rise and fall relative to the cylinder, driving a hydraulic converter.[25] Both of these devices transmit electricity via undersea cable to an onshore substation connected to the electrical grid.[26]

Wave energy appeals to developers for several reasons. Not only is the energy source more consistently available than for wind and solar power, fewer devices are needed to produce a given amount of

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[15] *See* Minerals Mgmt. Serv., OCS Alternative Energy and Alternate Use Programmatic EIS Information Center, http://ocsenergy.anl.gov/guide/current/index.cfm (last visited Aug. 1, 2008); Heather Timmons, *Energy from the Restless Sea*, N.Y. TIMES, Aug. 3, 2006, *available at* www.nytimes.com/2006/08/03/business/worldbusiness/03tides.html#.

[16] Tom Heath, Realities of Wave Technology 1, www.wavegen.co.uk/pdf/art.1727.pdf (last visited Apr. 1, 2008).

[17] *Id.*

[18] *Id.*

[19] *Id.*

[20] MINERALS MGMT. SERV., ALTERNATIVE ENERGY PROGRAMMATIC EIS, at 3-10 (2007), *available at* http://ocsenergy.anl.gov/documents/fpeis/index.cfm [hereinafter MMS, ALT. ENERGY EIS].

[21] *Id.* at 3-12 to -13. For an interactive video demonstration of this technology, see Pelamis Wave Power, www.pelamiswave.com/galleryvideo.php (last visited Mar. 25, 2008).

[22] MMS, ALT. ENERGY EIS, *supra* note 20, at 3-12.

[23] *Id.* at 3-11.

[24] *Id.* For a movie demonstrating this technology, see Aqua Buoy - Movie – Finavera, www.finavera.com/en/wavetech/aquabuoymovie (last visited Mar. 30, 2008).

[25] MMS, ALT. ENERGY EIS, *supra* note 20, at 3-11.

[26] *Id.*

electricity.[27] The ability to predict wave strength days in advance using satellite images or indicator buoys is of crucial importance to electrical grid dispatchers.[28] Finally, unlike offshore wind turbines, wave energy devices have a low profile and are likely to be invisible from shore.[29]

Despite growing enthusiasm for wave energy, developers have technological and market barriers to overcome before this new sector begins to make any significant contribution to the electrical grid.[30] One challenge has been designing devices that will withstand the assault of powerful ocean storms, salt-water corrosion, and barnacle growth long enough to bring a return on investment.[31] Few developers have had the opportunity to prove the durability of their devices under real conditions, and investors have remained cautious.[32] Also, as in the early years of wind power, the price of this electricity is high, although this should improve with economies of scale.[33]

B. POTENTIAL ENVIRONMENTAL IMPACTS

While the impacts of wave energy facilities may tend to be less than for conventional technologies, facility siting warrants close scrutiny by coastal managers.[34] Scientists and developers have come together on several occasions to discuss potential impacts, mitigation, and areas

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[27] von Jouanne & Brekken, *supra* note 6, at 1. This is due to the fact that water is much denser than air. *Id.*; *see also* Minerals Mgmt. Serv., *supra* note 15.

[28] Dan Sadowsky, *Riding the Green Power Wave* (Sept. 27, 2006), www.sustainableoregon.net/features/wave_energy_20060927.cfm.

[29] Esther Whieldon, *FERC's Permitting Process for Tidal and Wave Power Projects Comes Under Fire*, INSIDE FERC, Dec. 11, 2006, at 1, 13.

[30] von Jouanne & Brekken, *supra* note 6, at 1.

[31] Questions About Wave Energy – BERR, www.berr.gov.uk/energy/sources/renewables/news-events/press-materials/background/wave/page24329.html (last visited Mar. 30, 2008).

[32] *See* Ocean Renewable Energy Coalition (OREC), Policy Paper on Preliminary Permits, Site Banking and Wave and Tidal Energy Development 3 (2006) ("Siting small experimental or demonstration units and proving that the technology works with minimal impacts will draw private capital more quickly than any other measure.").

[33] Sadowsky, *supra* note 28. The availability of conventional hydroelectric power in Oregon and Washington contributes to lower electricity costs, making it more difficult for wave energy to compete; however, electricity costs in California are relatively high. *See* JOHN C. WEISS ET AL., MINERALS MGMT. SERV., ASSESSING THE COSTS AND BENEFITS OF ELECTRICITY GENERATION USING ALTERNATIVE ENERGY RESOURCES ON THE OUTER CONTINENTAL SHELF 12 tbl.2-3 (2007), *available at* www.ocsenergy.anl.gov/documents/docs/final_synthesis_ report.pdf.

[34] Proceedings of the Hydrokinetic and Wave Energy Technologies Technical and Environmental Issues Workshop, at XIII-XIV (Susan Savitt Schwartz ed., 2006), *available at* http://hydropower.inl.gov/hydrokinetic_wave/pdfs/hydro_workshop_proceedings.pdf [hereinafter Wave Energy Technologies Workshop].

needing additional research.[35] The Minerals Management Service (MMS) has also released a programmatic Environmental Impact Statement (EIS) addressing wave energy development on the outer continental shelf.[36] There is consensus that project impacts will depend on many factors, including physical and ecological conditions that vary by location, but there are several areas of general concern.[37]

For example, installation of anchoring systems and submarine electrical cables on the ocean floor would alter habitat and disturb settled sediments.[38] While water quality impacts would be localized and short-term,[39] ecological function could take years to recover.[40] Although most devices have a low level of operational noise,[41] the cumulative noise of a large facility could affect the feeding and behavior of marine mammals in the vicinity.[42] If sea turtles or marine mammals strike or become entangled in device mooring lines, they could be injured or drown.[43] Finally, there is concern that large facilities could alter patterns of sediment transport, deposition, and erosion in the coastal zone.[44]

According to the programmatic EIS, proper siting and design of wave energy facilities could minimize these effects, as well as reduce impacts on navigation, shipping, and fishing.[45] In addition, devices could

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[35] *See, e.g., id.* at 29; Ecological Effects of Wave Energy Development in the Pacific Northwest: A Scientific Workshop, http://hmsc.oregonstate.edu/waveenergy (last visited May 30, 2008).

[36] The Energy Policy Act of 2005 authorized MMS to create an alternative energy program on the outer continental shelf, and the Programmatic EIS addressed offshore wind, ocean current, and wave energy development in federal waters through 2014. Projects will undergo individual environmental review pursuant to the National Environmental Policy Act (NEPA), and MMS will identify additional project-specific mitigation measures. MMS, ALT. ENERGY EIS, *supra* note 20, at ES-1; *see also id.* at 5-144 to -247 (identifying general mitigation steps).

[37] For a table summarizing potential impacts, refer to MMS, ALT. ENERGY EIS, *supra* note 20, at 7-3 to -12.

[38] *Id.* at 5-207.

[39] *Id.* at 5-156.

[40] *Id.* at 5-207. *But see* ELEC. POWER RESEARCH INST., OFFSHORE WAVE POWER IN THE U.S.: ENVIRONMENTAL ISSUES 11 (2004) (drawing on offshore pipeline research that indicates the affected areas are recolonized soon after the activity ceases).

[41] Eric Scigliano, *Wave Energy*, DISCOVER, Dec. 2, 2005.

[42] MMS, ALT. ENERGY EIS, *supra* note 20, at 5-172.

[43] *Id.* at 5-171.

[44] *Id.* at 5-148.

[45] *Id.* at ES-10. In general, the EIS identified few major impacts; however, potential impacts to marine mammals "could range from negligible to major, depending on the species . . . ." *Id.* at 5-270. The EIS classification system is as follows: "Negligible impacts are those that are not measurable, while minor impacts could be avoided with proper mitigation, or the affected resource would recover completely if the impacting agent were eliminated. Both moderate and major impacts are defined as unavoidable. For moderate impacts, the viability of the affected resource is not threatened although some impacts may be irreversible, or proper mitigation would allow complete

be equipped with exclusion devices and sonic pingers to further reduce the potential for harm to marine species.[46]

Scientists have additional recommendations. First, regulators need to stagger wave energy development to allow for adjustments in response to incoming information about project impacts.[47] Second, ongoing research is vital to the effort to minimize environmental harm, but multiple entities are currently gathering information independently.[48] Not only is this "shotgun" approach less efficient, it does not promote the best outcomes.[49] Regulators could create the necessary incentives or requirements for information sharing, which would benefit the sector as a whole.

C. WHY MOVE AHEAD: THE CURRENT CONTEXT

Americans have taken for granted our access to the ocean and its resources, but by sacrificing the health of marine ecosystems, we have threatened our own economic and social stability.[50] Within the past five years, the Pew Oceans Commission and the U.S. Commission on Ocean Policy both released comprehensive and startling reports on the state of ocean health.[51] Failure to properly manage human activities, the latter warned, "is compromising [the] ecological integrity [of ocean resources], diminishing our ability to fully realize their potential, costing us jobs and revenue, threatening human health, and putting our future at risk."[52]

U.S. coastal waters are plagued by algal blooms, toxic contamination, and other serious problems linked to agricultural and industrial runoff.[53] Decades of non-sustainable fishing practices have led to environmental harm and the precipitous decline or extinction of some

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recovery of a resource. Major impacts would threaten a resource's viability and result in incomplete recovery, even with proper mitigation." *Id.* at ES-4 to -5.

[46] *Id.* at ES-10.

[47] Wave Energy Technologies Workshop, *supra* note 34, at 66 (urging phased development).

[48] *Id.*

[49] *Id.* at XV-XVI (summarizing additional research needed to assess environmental impacts).

[50] PEW OCEANS COMM'N, AMERICA'S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE 8 (2003) [hereinafter PEW, CHARTING A COURSE]; *accord* U.S. COMM'N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY 24 (2004) [hereinafter USCOP, OCEAN BLUEPRINT] (noting that about half of the U.S. gross domestic product is generated within the coastal zone and the coastal watershed counties). "An ecosystem is composed of all of the organisms living in a certain place and their interactions with each other and with their environment." PEW, CHARTING A COURSE, at 8.

[51] *See generally* USCOP, OCEAN BLUEPRINT, *supra* note 50; PEW, CHARTING A COURSE, *supra* note 50.

[52] USCOP, OCEAN BLUEPRINT, *supra* note 50, at 1.

[53] *Id.* at 3.

species.[54] Mercury, spewed into the atmosphere by coal-fired power plants and other industrial activity, settles in the marine environment and makes its way into the food chain.[55] However, the single biggest threat to ocean health in the near future, scientists now warn, is climate change.[56]

Global climate change was once known as "a catastrophe in slow motion,"[57] but the pace appears to be increasing exponentially.[58] Forthcoming changes in sea-level and weather patterns will pose unprecedented threats to coastal ecosystems.[59] Clean electricity generation appears critical to any effort to slow the mounting consequences of industrialization.

Fossil fuel combustion is the primary cause of rising levels of atmospheric carbon dioxide, and the United States produces about 22% of these emissions.[60] The electricity sector currently accounts for 40% of the U.S. total,[61] but most states are striving to reduce their reliance on fossil fuels for electricity generation by adopting some version of a Renewable Portfolio Standard (RPS).[62] A few states are also seeking to achieve drastic cuts in overall greenhouse gas emissions through conservation, increased efficiency, and development of cleaner energy sources.[63] Coastal states, however, face additional challenges.

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[54] *Id.* at 1.

[55] PEW, CHARTING A COURSE, *supra* note 50, at 64.

[56] Consultative Group on Biological Diversity, Climate Change and Oceans 16 (2004), *available at* www.cgbd.org/visitors/aboutcgbd/workinggroups/.

[57] *See* R.T. Pierrehumbert, *Climate Change: A Catastrophe in Slow Motion*, 6 CHI. J. INTL. L. 573, 573 (2006); *see* INTERGOV'TL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS 5 *in* CLIMATE CHANGE 2007 (S. Solomon et al. eds., 2007) (stating that the ocean has absorbed 80% of the heat added to the climate system and that the average temperature of the oceans has increased to a depth of 3000 meters).

[58] *See, e.g.*, Robin E. Bell, *Unquiet Ice Speaks Volumes on Global Warming*, SCI. AM. MAGAZINE (Feb. 4, 2008) (explaining that as a result of atmospheric warming, the world's largest ice sheets are now sitting on water; this could lead them to slide into the sea, causing a catastrophic rise in sea level).

[59] Consultative Group on Biological Diversity, *supra* note 56, at 1. Fossil fuel combustion is harming the oceans in another significant way. The oceans have absorbed a large percentage of gross atmospheric carbon released since the Industrial Revolution; this has led to increased acidification, which is impacting the health of marine ecosystems and species. JOINT OCEAN COMM'N INITIATIVE, ADDRESSING OCEANS AND CLIMATE CHANGE IN FEDERAL LEGISLATION 2-3 (2007), *available at* www.jointoceancommission.org/resource-center/1-Reports/2007-07-01_Oceans_and_Climate_Change_Concept_Paper.pdf.

[60] ENERGY INFO. ADMIN., GREENHOUSE GASES, CLIMATE, AND ENERGY (2008), available at http://www.eia.doe.gov/bookshelf/brochures/greenhouse/greenhouse.pdf (citing 2004 statistics).

[61] *Id.*

[62] *See* DSIRE: Rules, Regulations, & Policies for Renewable Energy, www.dsireusa.org/summarytables/reg1.cfm?&CurrentPageID=7&EE=1&RE=1 (last visited May 30, 2008) (identifying states with RPSs).

[63] *See, e.g.*, Cal. Air Res. Bd., Climate Change, http://www.arb.ca.gov/cc /cc.htm (last visited

Coastal watershed counties comprise less than a quarter of the land area in the United States, yet they are home to more than 52% of the population and are growing by an average of 3600 people per day.[64] By 2025, 75% of the population will be living near the coast, straining energy infrastructure and coastal health.[65] Coastal state energy policies will thus have an impact extending far beyond their borders.[66]

Reducing the U.S. share of global greenhouse gas emissions will require a panoply of renewable energy options,[67] but unlike conservation, energy expansion always has negative environmental impacts.[68] Stephen Tindale, executive director of Greenpeace UK, has observed that this transformation of the energy system "requires a lot of new stuff to be built and installed, some of it in places that are relatively untouched."[69] This creates "a major psychological and cultural challenge for the environmental and conservation movement,"[70] and the idea of moving offshore in search of electricity sources has not met with universal approval.[71] However, if wave energy fulfills its promise of being a relatively benign technology,[72] it could assist coastal states to close the

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May 30, 2008) (discussing the state's goal of reducing greenhouse gas emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050). Coal-fired power plants are the largest emitters of carbon dioxide, a gas that traps excess heat in the atmosphere and thus plays a key role in determining the Earth's climate. Pierrehumbert, *supra* note 57, at 575, 587.

[64] USCOP, OCEAN BLUEPRINT, *supra* note 50, at 14.

[65] U.S. OCEAN ACTION PLAN: THE BUSH ADMINISTRATION'S RESPONSE TO THE U.S. COMMISSION ON OCEAN POLICY 3 (2004).

[66] *See* David R. Hodas, *State Law Responses To Global Warming: Is It Constitutional to Think Globally and Act Locally?*, 21 PACE ENVTL. L. REV. 53, 57 (2003) ("Both mitigation and adaptation must be local. Local action will be central to possible success of any international legal regime or policy initiative."). Climate change is a global environmental justice issue; the world's poorest nations and people will be among the first affected by climate change and are the least able to deal with the consequences. *See* Rachel Oliver, *Rich, Poor and Climate Change*, CNN.COM, Feb. 17, 2008, http://edition.cnn.com/2008/BUSINESS/02/17/eco.class.

[67] *See* CHARLES F. KUTSCHER, EXECUTIVE SUMMARY 3, *in* AMERICAN SOLAR ENERGY SOCIETY, TACKLING CLIMATE CHANGE IN THE U.S. (Charles F. Kutscher ed., 2007), *available at* http://www.ases.org/climatechange/toc.htm ("Energy efficiency measures can allow U.S. carbon emissions to remain about level through 2030, whereas the renewable supply technologies can provide large reductions in carbon emissions below current values.").

[68] For a general description of how increased electricity demands would be met in the absence of offshore renewable energy and a discussion of the impacts of each of the conventional and alternative sources currently in use, see MMS, ALT. ENERGY EIS, *supra* note 20, at 7-16 to -30 (2007).

[69] Timmons, *supra* note 15.

[70] *Id.*

[71] *See, e.g.*, Donald C. Baur & Jena A. MacLean, *The "Degreening" of Wind Energy: Alternative Energy v. Ocean Governance*, 19-SUM NAT. RESOURCES & ENV'T 44, 46 (2004) (describing the conflict that arose over offshore wind energy).

[72] EPRI PRIMER, *supra* note 4, at 1 (noting that wave energy could be one of the most benign sources for electricity generation ever developed).

gap between current electricity production and future demand without relying on fuels that are far more dangerous to ocean health.[73]

This realization has already led some ocean conservationists and environmental groups to conclude that offshore renewable energy appears to be worth the risks.[74] Recognizing an opportunity to simultaneously make inroads on vital reforms to ocean governance, such as ecosystem-based planning and the establishment of marine protected areas, these groups have called for reassessment of the standing opposition to coastal energy development.[75]

While the environmental externalities of wave energy remain uncertain, this is not the case for fossil fuel combustion, whose heavy toll on the human community and ocean health are now clear.[76] This Comment thus proceeds from the premise that the potential to generate electricity from a clean, sustainable source like wave energy warrants thoughtful exploration.

II. THE LEGAL FRAMEWORK

Offshore energy development has been an enduring source of federal-state conflict for sixty years.[77] The "Seaweed Rebellion" began as a struggle by states to retain ownership of the oil beneath submerged coastal lands.[78] In recent decades, the push to exploit offshore mineral resources to meet U.S. energy demand has run up against state and local efforts to protect legislatively granted influence over activity affecting the coastal zone.[79] A brief overview of the current legal framework for offshore energy development and coastal zone preservation provides context for the discussion of jurisdiction over wave energy in Part III.

A. BACKGROUND STATUTES AND BOUNDARY LINES

The degree of federal or state control over offshore activity depends

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[73] Consultative Group on Biological Diversity, *supra* note 56, at 17.

[74] *Id.*

[75] *Id.* at 16.

[76] JOHN C. WEISS ET AL., MINERALS MGMT. SERV., ASSESSING THE COSTS AND BENEFITS OF ELECTRICITY GENERATION USING ALTERNATIVE ENERGY RESOURCES ON THE OUTER CONTINENTAL SHELF 29 (2007). The highest external costs of coal-fired power plants are the atmospheric emissions, "but the footprints of the mining and generation facilities are also significant." *Id.*

[77] EDWARD A. FITZGERALD, THE SEAWEED REBELLION: FEDERAL-STATE CONFLICTS OVER OFFSHORE ENERGY DEVELOPMENT 1-2 (2001).

[78] *Id.* at 2.

[79] *Id.*

on the nature of the activity and where it takes place, but legal authority and agency responsibilities often overlap or even conflict.[80] For purposes of international law, the United States claims a territorial sea extending twelve miles seaward from the coast; adjacent to this is the exclusive economic zone (EEZ), which extends to 200 miles from shore.[81] The outer continental shelf (OCS), as defined by federal law, consists of the submerged lands, subsoil, and seabed lying between the seaward extent of state coastal waters (generally three miles offshore) and the seaward extent of federal jurisdiction.[82]

Until the middle of the twentieth century, coastal states laid unofficial claim to the ocean and resources contiguous to their landward boundaries, out to three miles offshore.[83] The Supreme Court abrogated this understanding in 1947, stripping outraged states of offshore oil leasing revenue.[84] In 1953, Congress passed a two-part compromise.[85]

The Submerged Lands Act codified state jurisdiction over the three-mile coastal zone and its natural resources.[86] States have authority to manage, develop, and lease resources within state waters.[87] Companion legislation, the Outer Continental Shelf Lands Act (OCSLA), authorized the Department of the Interior to create a regulatory regime to address the "urgent need" to develop the oil and gas deposits beneath the OCS.[88]

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[80] PRIMER ON OCEAN JURISDICTIONS: DRAWING LINES IN THE WATER 70-71, in U.S. COMM'N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY (2004) [hereinafter OCEAN JURISDICTIONS]. For a visual representation of these boundaries, see *id.* at 71 fig. P.1. There has been no systematic effort to address inconsistencies in ocean-related statutes and regulations related to the legal definitions of these zones or the meaning of terms such as "coastal waters" and "navigable waters of the United States." *Id.* at 73.

[81] *See id.* at 70-72. "The federal government retains the power to regulate commerce, navigation, power generation, national defense, and international affairs throughout state waters." *Id.* at 71. As defined under international law, the continental shelf overlaps geographically with the EEZ (12-200 miles). *Id.* at 72.

[82] Outer Continental Shelf Lands Act, 43 U.S.C.A. §§ 1331-1356(a) (Westlaw 2008); *see also* Minerals Mgmt. Serv., The Outer Continental Shelf, http://ocsenergy.anl.gov/guide/ocs/index.cfm (last visited June 30, 2008). A continental shelf is "the gently sloping undersea plain between a continent and the deep ocean." *Id.*

[83] Sierra B. Weaver, Note, *Local Management of Natural Resources: Should Local Governments Be Able to Keep Oil Out?*, 26 HARV. ENVTL. L. REV. 231, 234 (2002).

[84] *Id.* at 234 (citing U.S. v. California, 332 U.S. 19 (1947)).

[85] *Id.*

[86] *Id.* (citing 43 U.S.C. §§ 1303-1315 (1994)). The state waters of Florida and Texas extend nine nautical miles in the Gulf of Mexico. OCEAN JURISDICTIONS, *supra* note 80, at 70. References to miles hereinafter indicate nautical miles, each of which has a distance of about 6076 feet. *Id.*

[87] OCEAN JURISDICTIONS, *supra* note 80, at 71. According to the public trust doctrine, coastal states are obligated to exercise this power for the benefit of the public, rather than in service of narrow interests. *Id.*

[88] *See* Outer Continental Shelf Lands Act § 8, 43 U.S.C.A. § 1337 (Westlaw 2008).

The offshore mineral leasing program is run by the agency's regulatory arm, the Minerals Management Service (MMS).[89] MMS currently leases forty-three million acres of the OCS to private companies and collects royalties on the minerals extracted.[90] The program accounts for about 27% of domestic oil and 15% of domestic natural gas production.[91] However, in 1969, less than two years after the first federal lease under the OCSLA, an explosion at an offshore site released millions of gallons of crude oil into the ecologically sensitive area off the Santa Barbara coast and ignited the modern environmental movement.[92]

The Coastal Zone Management Act (CZMA)[93] was one of several significant pieces of environmentally focused legislation to emerge from this era and remains the cornerstone of federal efforts to protect coastal health.[94] A unique example of federal-state cooperation—or "cooperative federalism"—the CZMA reflects the belief that proper allocation of background authority and comprehensive state-level planning will promote effective coastal management.[95]

To participate, a state must develop a coastal management plan (CMP) complying with minimum federal guidelines, such as the inclusion of policies and enforcement mechanisms to address nonpoint source pollution.[96] Although the CZMA offers technical assistance and some funding, its consistency provisions have been the primary inducement for state participation.[97] With an approved CMP, "the state acquires legal authority under the CZMA to insist that all federal activities or federally permitted projects within [or potentially affecting] the state's coastal zone are consistent with the state's plan."[98]

A non-federal entity applying for a federal license or permit for an

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[89] Minerals Mgmt. Serv., Offshore Minerals Management Homepage, www.mms.gov/offshore (last visited Apr. 4, 2008).

[90] *Id.*

[91] *Id.*

[92] Weaver, *supra* note 83, at 234; John K. Van de Kamp & John A. Saurenman, *Outer Continental Shelf Oil and Gas Leasing: What Role for the States?*, 14 HARV. ENVTL. L. REV. 73, 73 n.2 (1990).

[93] 16 U.S.C.A. §§ 1451-1466 (Westlaw 2008).

[94] Sam Kalen, *The Coastal Zone Management Act of Today: Does Sustainability Have a Chance?*, 15 SE. ENVTL. L.J. 191, 196 (2006) (citing TIMOTHY BEATLEY ET AL., AN INTRODUCTION TO COASTAL ZONE MANAGEMENT 102 (2d ed. 2002)).

[95] Rusty Russell, *Neither Out Far Nor In Deep: The Prospects for Utility-Scale Wind Power in the Coastal Zone*, 31 B.C. ENVTL. AFF. L. REV. 221, 234-35 (2001).

[96] Robin Kundis Craig, *Regulation of U.S. Marine Resources: An Overview of the Current Complexity*, 19-SUM NAT. RES. & ENV'T 3, 6 (2004).

[97] *Id.*

[98] *Id.*

activity in or affecting state waters must provide the designated state agency with a certification that the project is consistent with the enforceable policies of the CMP.[99] The state has an opportunity to make its own consistency determination and must notify the federal permitting agency at the earliest possible time whether it concurs or objects.[100] No federal license or permit may issue until the federal agency either receives the state's concurrence or the Commerce Secretary overrides the state's objection.[101]

Congress intended coastal states to exert significant influence over activities affecting the coastal zone, and consistency determinations offer a tool for protecting the coastal area from overdevelopment and other sources of environmental harm.[102] However, the statutory framework has not promoted a federal-state partnership or regulatory regime adequate to the challenge of balancing offshore energy development and environmental protection.[103]

B. OFFSHORE ENERGY DEVELOPMENT AND COASTAL PROTECTION

In the 1970s, facing concerns about foreign oil embargoes and price instability, the executive branch began to override coastal state decisionmaking authority under the CZMA.[104] As a result, coastal states have been forced to bear a disproportionate share of the burdens of offshore mineral development.[105] To many, executive policies have exemplified a willingness to jeopardize "human safety, environmental protection, and the socioeconomic well-being of coastal communities . . . in favor of maximizing oil and gas production."[106]

As the scope and pace of activity fueled concerns about the environmental and socioeconomic effects of offshore drilling, coastal

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[99] Kalen, *supra* note 94, at 203 (citing 16 U.S.C. § 1456(c)(3)(A) (2000)).

[100] *Id.*

[101] *Id.* If the state fails to act within six months, concurrence is presumed. An applicant wishing to proceed over a state objection may appeal to the Secretary of Commerce, but an override is available only in limited circumstances. *Id.*

[102] *But see* Russell, *supra* note 95, at 249 ("The simple truth is that most states go along with most federal licensing decisions almost all of the time.").

[103] *Id.* at 275.

[104] 1998 YEAR OF THE OCEAN, OCEAN ENERGY AND MINERALS: RESOURCES FOR THE FUTURE D-18 (1998), *available at* http://www.yoto98.noaa.gov/yoto/meeting/energy_316.html.

[105] FITZGERALD, *supra* note 77, at 1-2. These burdens include the risk of environmental and economic harm associated with oil spills, physical disruption of the seafloor habitat, air pollution, discharges to the water, noise impacts on marine mammals and fisheries, and socioeconomic impacts on coastal communities. 1998 YEAR OF THE OCEAN, *supra* note 104, at D-8.

[106] *Id.*

area governments and individuals demanded a stronger voice.[107] In 1978, Congress amended the OCSLA "to provide for environmental consideration and more substantive [stakeholder] involvement . . . in OCS decision making," but many affected parties continued to believe that MMS was not giving adequate weight to their concerns and recommendations.[108] The OCS leasing program was therefore the subject of a bitter debate, culminating in congressional moratoria and administrative deferrals.[109] Local governments used other routes of influence as well, such as local initiatives to block onshore support facilities.[110]

An OCS Policy Committee concluded in 1993 that the legal framework had failed to provide a predictable process, a comprehensive approach for managing resources, or an equitable share of the benefits and costs of development—resulting in "protracted controversy and conflict."[111] The following decade saw little improvement, leading the Pew Oceans Commission to call U.S. ocean policy "a hodgepodge of individual laws that has grown by accretion over the years, often in response to crisis."[112]

Six departments and dozens of agencies administer a scheme of more than 140 federal laws pertaining to the oceans and coasts, which "collectively fail to provide an overall governance framework to maintain the health of marine ecosystems."[113] Marine ecosystem management is disjointed as a result of the artificial federal-state division of jurisdiction of the submerged lands offshore.[114]

There has been increasing recognition of the need to integrate energy policy with natural resources policy. The U.S. Commission on Ocean Policy called for creation of a "coherent and predictable federal management process for offshore renewable resources that weighs the benefits to the nation's energy future against the potential adverse effects on other ocean users, marine life, and the ocean's natural processes . . . ."[115] However, the United States still lacks the type of

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[107] *Id.* at D-28.

[108] *Id.*

[109] *Id.*

[110] Van de Kamp & Saurenman, *supra* note 92, at 78.

[111] FITZGERALD, *supra* note 77, at 274-75.

[112] PEW, CHARTING A COURSE, *supra* note 50, at 26; *accord* USCOP, OCEAN BLUEPRINT, *supra* note 50, at 5 (recommending a new framework "[t]o improve decision making, promote effective coordination, and move toward an ecosystem-based management approach.").

[113] PEW, CHARTING A COURSE, *supra* note 50, at 27.

[114] *Id.* at 26.

[115] USCOP, OCEAN BLUEPRINT, *supra* note 50, at 368.

comprehensive offshore management regime that would assist federal and state regulators to consider ocean renewable energy within a larger planning context.[116]

III. JURISDICTIONAL AND REGULATORY ISSUES

Wave energy technology faces many hurdles on the path to commercial viability.[117] Developers generally need a proven prototype to attract outside investors,[118] but getting pilot projects in the water requires an enormous initial infusion of capital.[119] If issues related to device durability, market factors, user conflicts, and unknown impacts on the siting environment are not enough to make wave energy developers uneasy, there is also ambiguity about the primary regulatory agency for the industry.[120] In fact, regulatory uncertainty is wave energy's most significant non-technical obstacle.[121]

Since 2005, two federal agencies have claimed to be the lead agency for wave energy projects on the OCS.[122] MMS and the Federal Energy Regulatory Commission (FERC or Commission) have spent the past three years establishing separate regulatory schemes for determining licensing terms and conditions, evaluating applications, and overseeing operations.[123] The jurisdictional dispute between them has created

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[116] For example, it is not always clear which laws apply to offshore projects, "nor is there any indication that overall coordination is a goal, thus leaving implementation to mixed federal authorities." *Id.* at 367; *cf.* Deborah A. Sivas & Margaret R. Caldwell, *A New Vision for California Ocean Governance: Comprehensive Ecosystem-Based Marine Zoning*, 27 STAN. ENVTL. L.J. 209, 230 (2008) (noting that "truly integrated, comprehensive planning and coordinated management of [California's] ocean resources remains elusive."); *see also* Sam Kalen, *Replacing a National Energy Policy with a National Resource Policy*, 19-WTR NAT. RES. & ENV'T 9, 14 (2005) (describing "the historic failure to coordinate and integrate adequately environmental, public land, and natural resource goals and considerations into the development of energy policy").

[117] *See, e.g., Speed Bumps on the Road to Commercialization*, IN BUSINESS 16 (May-June 2005) (discussing the challenges).

[118] *See id.*

[119] Finlay Anderson et al., A Programmatic Approach to Wave Energy Planning: Opportunities for the Oregon Wave Energy Trust 1 (2007), *available at* www.csc.noaa.gov/cz/2007/Coastal_Zone_07_Proceedings/PDFs/Tuesday_Abstracts/3369.Anderson.pdf (noting that utility companies tend to avoid unproven technologies because research and development costs are generally not recoverable from rate payers).

[120] NIC LANE, CONG. RESEARCH SERV., WAVE, TIDAL, AND IN-STREAM ENERGY PROJECTS: WHICH FEDERAL AGENCY HAS THE LEAD?, at CRS-2 (2008).

[121] Anderson et al., *supra* note 119, at 1.

[122] Renewables Offshore, MMS-FERC Jurisdictional Smackdown! (Feb. 18, 2007), http://carolynelefant1.typepad.com/renewablesoffshore/2007/02/mmsferc_jurisdi.html [hereinafter Jurisdictional Smackdown].

[123] *Id.*

uncertainty and distorted decisionmaking regarding wave energy siting.[124] In FERC's case, the inappropriateness of the regulatory scheme to the technology may have a negative impact on the future of wave energy in state waters as well.

A. STATUTORY AUTHORITY OVER WAVE ENERGY

1. MMS After EPAct

Prior to 2005, it was not clear whether any agency had authority to authorize renewable energy development in federal waters.[125] With the Energy Policy Act of 2005 (EPAct), Congress attempted to move toward a comprehensive management scheme similar to the offshore mineral model.[126] Section 388 of EPAct amended the OCSLA to give the Secretary of the Interior jurisdiction over the development of wind, wave, ocean current, and other alternative energy sources in federal waters.[127]

EPAct authorized MMS, on behalf of the Interior Department, to develop and issue regulations to implement its new authority,[128] to act as lead agency in the permitting process, and to monitor and regulate facilities used for renewable energy production.[129] In accordance with the National Environmental Policy Act,[130] MMS completed a programmatic EIS, which provides a framework for initial mitigation requirements,[131] and began formal rulemaking for the regulatory regime.[132]

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[124] LANE, *supra* note 120, at CRS-6.

[125] Thomas C. Jensen, Offshore Renewable Energy Development After the Energy Policy Act of 2005, at 12 (2007), *available at* www.oceanrenewable.com/wp-content/uploads/2007/03/aba-ocs-paper-final.pdf.

[126] *See id.*

[127] MINERALS MGMT. SERV., ALTERNATIVE ENERGY PROGRAMMATIC EIS, at ES-1 (2007) (citing 43 U.S.C.A. § 1337 (Westlaw 2008)).

[128] MINERALS MGMT. SERV., ALTERNATIVE ENERGY PROGRAMMATIC EIS, at ES-1 (2007).

[129] Jensen, *supra* note 125, at 10.

[130] 42 U.S.C.A. §§ 4321-4347 (Westlaw 2008).

[131] MMS, ALT. ENERGY EIS, *supra* note 20, at 1-1, -15 ("The [National Environmental Policy Act] process of developing an EIS is intended to help public officials make decisions based on a thorough discussion of environmental consequences and take actions that protect, restore, and enhance the environment.")

[132] LANE, *supra* note 120, at CRS-22. In April 2008, MMS designated five priority areas on the OCS for alternative energy research, including two areas for wave energy research off northern California, and proposed limited, temporary leases for the purpose of data collection and technology testing. Press Release, Minerals Mgmt. Serv., MMS Takes Major Step Forward on Offshore Alternative Energy (April 14, 2008), *available at* www.mms.gov/ooc/press/2008/press0417.htm. MMS also released the regulatory scheme for public review shortly before publication of this Comment. *See* Press Release, Minerals Mgmt. Serv., MMS Proposes Offshore Alternative Energy

One of the criticisms state policymakers have historically leveled against MMS's offshore regulatory program is the lack of opportunity for state input into the initial decision of whether to develop a particular tract of ocean.[133] It is therefore encouraging that the programmatic EIS acknowledges that numerous factors beyond mere availability of the energy resource merit consideration in determining where these projects should be sited.[134] MMS indicates that it will seek the assistance of coastal states and potential applicants in gathering information on market factors, competing uses, and local considerations.[135] The agency may then use this information to create technology-specific zoning or "no-development zones."[136]

MMS has committed to the use of adaptive management strategies, including monitoring activities to ensure that adverse impacts are minimized, mitigated, or avoided where possible.[137] MMS also adopted a policy of consulting with appropriate state and local government entities as early in the planning process as possible, encouraging potential lessees to do the same.[138] These management practices could signal a welcome departure from the heavy-handed approach to lease sales under the offshore mineral program and would create an opening for states to help shape the future of wave energy development on the OCS.

2. FERC'S HYDROPOWER SCHEME UNDER THE FPA

The Federal Energy Regulatory Commission, in addition to regulating the transmission and sale of electricity in interstate commerce, is also the federal licensing agency responsible for approving the construction and operation of hydropower projects in the navigable waters of the United States.[139] The Federal Power Act (FPA)[140] generally

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and Alternate Use Regulations (July 8, 2008), *available at* www.mms.gov/ooc/press/2008/press 0708.htm.

[133] Van de Kamp & Saurenman, *supra* note 92, at 105 ("Nowhere in Interior's regulations dealing with its review of exploration plans and development and production plans does Interior ask whether the tract involved should have been leased in the first place.").

[134] MMS, ALT. ENERGY EIS, *supra* note 20, at 2-7.

[135] *Id.*

[136] *Id.*

[137] MINERALS MGMT. SERV., RECORD OF DECISION, ESTABLISHMENT OF AN OCS ALTERNATIVE ENERGY AND ALTERNATIVE USE PROGRAM 11 (2007). Adaptive management emphasizes "sequential decision making in the face of uncertainty and the opportunity for improved management as learning about system processes accumulates over time." DEP'T OF INTERIOR, ADAPTIVE MANAGEMENT TECHNICAL GUIDE 4, www.doi.gov/initiatives/AdaptiveManagement/ TechGuide/ Chapter1.pdf (last visited Mar. 16, 2008).

[138] MINERALS MGMT. SERV., RECORD OF DECISION, *supra* note 137, at 9.

[139] What FERC Does, http://www.ferc.gov/about/ferc-does.asp (last visited May 30, 2008).

preempts state and local laws concerning hydroelectric power.[141] FERC regulations promulgated under the Act establish a cumbersome and expensive licensing process that reflects the size, relative permanence, and potential impacts of a traditional hydroelectric dam.[142] Applicants spend millions of dollars to prepare their applications, and a full-blown license can take years to issue;[143] however, a license holder then has exclusive rights to the site for an initial term of up to fifty years.[144]

A preliminary permit, by contrast, does not authorize project construction, has a maximum duration of three years, and is relatively easy to obtain.[145] The permit is designed to encourage hydroelectric development by granting the holder priority in the licensure process.[146] FERC can award no other party development rights to the same site for the duration of the permit, leaving the permittee free to study project feasibility and prepare a license application.[147] The Commission has historically granted preliminary permits liberally, "without requiring an extensive showing by the applicant."[148]

In 2002, FERC determined that wave, tidal, and ocean current devices—which the Commission refers to collectively as hydrokinetic technologies—would require a FERC license under the FPA.[149] Even more intriguing to "FERC-watchers" was that the agency applied a novel interpretation of the phrase "navigable waters of the United States" and began claiming that its jurisdiction extended to the limits of the territorial

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For a more complete description of FERC's regulatory role, see *id.* The agency's five commissioners are appointed by the President to serve five-year terms. To avoid any undue political influence or pressure, no more than three commissioners may belong to the same political party. There is no review of FERC decisions by the President or Congress. Commission Members, http://www.ferc.gov/about/com-mem.asp (last visited May 30, 2008).

[140] 16 U.S.C.A. § 817(1) (Westlaw 2008).

[141] Cherise M. Oram & Michael P. O'Connell, FERC Licensing Process for In-Stream Hydrokinetic Projects (2008), http://www.stoel.com/showarticle.aspx?Show=3050.

[142] *See* Hydroelectric Power: How It Works, http://ga.water.usgs.gov/edu/hyhowworks.html (last visited June 30, 2008).

[143] Anderson et al., *supra* note 119, at 2.

[144] 16 U.S.C.A. § 799 (Westlaw 2008).

[145] FED. ENERGY REG. COMM'N, LICENSING HYDROKINETIC PILOT PROJECTS 9 (2008), *available at* http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/pdf/white_paper.pdf (addressing frequently asked questions).

[146] *Id.*

[147] *Id.*

[148] Fed. Energy Reg. Comm'n, Preliminary Permits for Wave, Current, and Instream New Technology Hydropower Projects 4 (Docket No. RM07-8-000, Feb. 15, 2007) (Notice of Inquiry and Interim Statement of Policy) (citing 16 U.S.C. § 814 (2000)).

[149] *AquaEnergy Group, Ltd.*, 101 F.E.R.C. ¶ 62,009 (Oct. 3, 2002) (on reh'g 102 F.E.R.C. ¶ 61,242 (Feb. 28, 2003)).

sea—nine miles beyond state waters.[150]

FERC has generally remained impervious to claims that its licensing scheme is a dubious fit for the nascent marine renewables industry.[151] Although the agency eventually unveiled a five-year pilot project license to promote industry growth,[152] a full-blown FERC license still requires the developer of a small wave energy project to follow essentially the same process as an applicant intending to build a massive hydroelectric dam.[153]

3. THE JURISDICTIONAL DISPUTE

Initially, FERC's assertion of regulatory authority over the new hydroelectric technologies went largely unnoticed; lawmakers thus granted MMS authority over wave and tidal projects in federal waters without realizing that this would create a nine-mile zone of overlapping jurisdiction.[154] A dispute soon erupted, as MMS and FERC both claimed to be the lead agency for these projects on the OCS.[155]

FERC informed MMS it had already considered and rejected arguments that its own jurisdiction was limited to state waters.[156] FERC suggested, however, that MMS might have some role in the licensing

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[150] Jurisdictional Smackdown, *supra* note 122. "Although the FPA does not define the scope of 'navigable waters of the United States,' the term, as used in other statutes, typically refers to waters within three miles of shore." Carolyn Elefant, *Ocean Energy Development in the 1990s*, 14 ENERGY L.J. 335, 347 (1993).

[151] *See, e.g., Speed Bumps on the Road to Commercialization*, IN BUSINESS 16 (May-June 2005) (quoting a representative of the Electric Power Research Institute, who noted that "[t]he capital and time required to comply with regulations makes it almost impossible for a fledgling company to put a unit into the water.").

[152] *See* FED. ENERGY REG. COMM'N, THE PROPOSED LICENSING PROCESS FOR HYDROKINETIC PILOT PROJECTS: A FRAMEWORK FOR DISCUSSION 2 (2007). The Commission had initially determined that a developer would need a full-blown license to connect even one test device to the grid. *See Verdant Power*, 112 F.E.R.C. ¶ 61,143, para. 7 (July 27, 2005) (order on clarification and dismissing request for rehearing) ("[W]e are not prepared to hold that a project that would affect interstate commerce is not required to be licensed.") (citation omitted).

[153] The developer of any hydroelectric project has three licensing processes to choose from: integrated, traditional, and alternative. For additional information on the requirements under each process, see FERC: Hydropower - General Information - Licensing, www.ferc.gov/industries/hydropower/gen-info/licensing.asp (last visited May 30, 2008).

[154] Jurisdictional Smackdown, *supra* note 122.

[155] *Id.* MMS jurisdiction is from the three-mile coastal zone to the full extent of the OCS, while FERC claims jurisdiction only within the twelve-mile territorial sea. *Id.*

[156] *Jurisdictional Tussle over Ocean Power Projects Brewing Between FERC, MMS*, INSIDE FERC, Dec. 18, 2006, at 1, 13. FERC claimed that the savings clause in the legislation indicated that Congress intended to resolve regulatory jurisdiction for technologies not otherwise addressed by U.S. law, which would logically not include hydrokinetic technologies under FERC jurisdiction. *Id.*

process for projects sited beyond state waters.[157] When FERC accepted a preliminary permit application for a wave energy project that would jut onto the OCS, MMS in turn protested that the Commission lacked statutory authority to issue the permit.[158] MMS also raised substantive concerns about the unsuitability of FERC's process, noting for example that "preliminary permits tie up large areas of potential development based on the first applicant rather then the best applicant," and that a license period of thirty to fifty years is inappropriate for prototype projects.[159]

The ongoing "inter-agency squabbling" led to regulatory uncertainty, which slowed MMS's implementation of the alternative energy program and deterred wave energy investment.[160] Congress held hearings on the jurisdiction problem in 2007[161] but failed to provide resolution.[162] MMS and FERC also appear to have abandoned their efforts to negotiate a Memorandum of Understanding (MOU) delineating each agency's jurisdiction.[163] For now, a project located partially in state waters and partially on the OCS could be required to comply with two complex and potentially contradictory federal schemes, and this threatens

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[157] *Id.* at 1.

[158] NIC LANE, CONG. RESEARCH SERV., ISSUES AFFECTING TIDAL, WAVE, AND IN-STREAM GENERATION PROJECTS, at CRS-22 (2008).

[159] *Id.*

[160] Peter J. Schaumberg & William N. Sinclair, *Status Check: Assessing Interior's Implementation of the Energy Policy Act of 2005*, 7 SUSTAINABLE DEV. L. & POL'Y 31, 35 (2007). One developer told Senate committee members: "We will stay away from the OCS so long as the regulatory authority is unclear, contradictory or unduly burdensome, . . . [which] means that valuable sites under federal jurisdiction will not be developed." Ángel González, *Wave-Energy Firms Want Clearer Rules*, SEATTLE TIMES, June 10, 2007 *available at* http://www.finavera.com/files/2007-06-10%20Seattle%20Times.pdf.

[161] *Alternate Energy-Related Uses on the Outer Continental Shelf: Opportunities, Issues, and Implementation of Section 388 of the Energy Policy Act of 2005 Before the S. Comm. on Energy and Natural Resources*, 110th Cong. (2007). See, for example, the opening statement of Sen. Bingaman, *id.* at 1-2 ("One goal in enacting Section 388 was to simplify the authorization process for alternative energy projects. FERC's hydroelectric licensing process has a history of being complex. I'm not certain that applying the hydroelectric licensing process fits that well in this context.").

[162] In 2007, the Senate passed H.R. 6, clarifying that FERC "does not have authority to approve or license wave or current energy projects on the outer continental shelf . . . ." *See* House and Senate Energy Bill Comparison Chart, www.asertti.org/news/documents/071010-Comparison_Chart.pdf (comparing H.R. 6 to H.R. 3221) (last visited Mar. 30, 2008). However, this provision was not a part of the final version of the Energy Independence and Security Act of 2007 (Pub. L. No. 110-140, Dec. 19, 2007, 121 Stat. 1492).

[163] Cherise M. Oram & Michael P. O'Connell, Stoel Rives LLP, Siting Ocean and Tidal Energy Projects (2008), *available at* http://www.stoel.com/showarticle.aspx?Show=2978. MMS's EIS identified wave energy projects for which developers had submitted a preliminary permit application to "another agency," pointedly avoiding even mentioning FERC by name. *See* MMS, ALT. ENERGY EIS, *supra* note 20, at 7-31.

to distort decisionmaking about wave energy facility siting.[164]

B. WAVE ENERGY BE "DAMMED": ONGOING PROBLEMS WITH FERC'S REGIME

After asserting licensing authority over hydrokinetic devices sited within the territorial sea, one commissioner acknowledged, "It's a new area and we have a lot to learn . . . ."[165] In some respects, members of the Commission did appear willing to be educated; they adopted suggestions for tightening up preliminary permit requirements and later created a pilot project license to address the need for proving the seaworthiness of prototypes.[166] Nevertheless, FERC's interest in defending its territory appears to have played a large part in its decisionmaking, and the result is a scheme that fails to promote the public interest in the orderly development of this emerging sector.

1. THE EDUCATION OF FERC

The passage of EPAct brought additional attention to offshore renewable energy in general, but a series of promising feasibility studies published by the nonprofit Electric Power Research Institute really helped to jumpstart industry activity.[167] Some would-be developers recognized an opportunity to turn FERC's preliminary permit process to their advantage, and a gold rush of sorts was soon under way.[168] As FERC issued permits for tidal energy projects in Washington's Puget Sound, San Francisco Bay, and the East River of New York, stakeholders

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[164] Schaumberg & Sinclair, *supra* note 160, at 35 (noting that obtaining approvals from both agencies would be extremely burdensome). Even if FERC's jurisdiction were limited to state waters, incongruence between the schemes could encourage developers to make siting decisions based on the one they deem more favorable. LANE, *supra* note 120, at CRS-5. At least one preliminary permit applicant already revised the boundaries of its project to be totally within state waters following a protest filed by MMS. *Id.* at CRS-6.

[165] Esther Whieldon, *FERC's Permitting Process for Tidal and Wave Power Projects Comes Under Fire*, INSIDE FERC, Dec. 11, 2006, at 1, 12.

[166] LANE, *supra* note 120, at CRS-5.

[167] *See, e.g.*, Teresa Hansen, *Catching a Wave*, POWER ENG'G, Sept. 5, 2005 (discussing the studies and industry interest).

[168] *See* E&ETV, OnPoint, Renewable Energy: Tidal Power Experts Discuss Technological Advancements, Roadblocks to Implementation (Mar. 22, 2007), www.eenews.net/tv/transcript/586, *cited in* Michael B. Walsh, Comment, *A Rising Tide in Renewable Energy: The Future of Tidal In-Stream Energy Conversion (TISEC)*, 19 VILL. ENVTL. L.J. 193, 218 n.261 (2008). As one industry expert put it, "I think there [were] some people who said, 'Well, we better take advantage of the FERC process,' which was developed for mature technologies, 'and kind of stake out our claim.'" *Id.*

worried that the agency's first-in-time approach would encourage speculation and "site-banking"—the reservation of potential sites without the intent to develop a project.[169] There were also questions about what criteria, if any, FERC would apply in assessing the geographic scope of proposed wave energy projects.[170]

When the Commission hosted a technical conference on hydrokinetic energy in late 2006, attendees further complained that FERC's licensing scheme was costly, was needlessly time-consuming, and allowed redundancies of expensive studies.[171] Panelists urged FERC to streamline and shorten the process while also increasing accountability—first, by requiring preliminary permit applicants to demonstrate that they have the financing to carry out proposed feasibility studies; and second, by requiring permittees to submit detailed activity plans and progress reports.[172]

In February 2007, the agency acknowledged that it traditionally had not subjected hydropower preliminary permit applications to extensive review, nor often exercised its discretion to cancel permits before the end of the three-year period for lack of progress.[173] With over forty applications for wave and tidal energy projects pending, the Commission offered an opportunity for public comment on whether it should change the preliminary permit process for hydrokinetic technology projects.[174] FERC offered three possibilities for consideration: continue as it had, cease issuing preliminary permits for the new technologies, or begin scrutinizing applications more strictly—adopting the third as its interim approach.[175]

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[169] *See* Ocean Renewable Energy Coal..(OREC), Policy Paper on Preliminary Permits, Site Banking and Wave and Tidal Energy Development 9, 10 (2006), *available at* http://carolynelefant1.typepad.com/renewablesoffshore/files/permitpaper.pdf.

[170] Interview with Stephen Morrison, Deputy City Attorney, S.F. City Attorney's Office, in S.F., Cal. (Nov. 2, 2007); *see also* Anderson et al., *supra* note 119, at 2 (noting the difficulty of "identifying an appropriate footprint for potential projects that provide developers with the flexibility to optimally site their projects while not impairing the ability of other developers to locate projects nearby").

[171] Esther Whieldon, *FERC's Permitting Process for Tidal and Wave Power Projects Comes Under Fire*, INSIDE FERC, Dec. 11, 2006, at 1. Corporate counsel for one developer stated that allowing entities to lock up prime sites with no real requirement for action could be the "death knell" for some in the industry, and that the situation was near crisis level. *Id.* at 13.

[172] *Id.* at 1, 13.

[173] Fed. Energy Reg. Comm'n, Preliminary Permits for Wave, Current, and Instream New Technology Hydropower Projects 8 (Docket No. RM07-8-000, Feb. 15, 2007) (Notice of Inquiry and Interim Statement of Policy).

[174] *Id.* at 6.

[175] *Id.* at 9, 10-11. The interim approach was one of three potential approaches FERC offered for public comment. In theory, it would include limiting project boundaries, requiring applicants to

Although the commissioners appeared by this time to be fully sold on "the amazing potential of this domestic renewable power source,"[176] the unsuitability of the hydropower license scheme remained a problem. The Commission declined to address this directly; instead, Chairman Kelliher announced in July 2007 that FERC had created a five-year pilot project license that could be processed in as little as six months.[177] This intermediate license would allow developers to gather data on environmental impacts while testing device performance and grid connectivity.[178] The Chairman asserted that the agency could begin issuing pilot project licenses without any change in existing regulations.[179]

While FERC touted the pilot project license as a major step toward reducing regulatory barriers,[180] there was a problem. Under the CZMA, a federal agency may not grant a license or permit for activity in or affecting state waters "until the state or its designated agency has concurred with the applicant's [consistency] certification."[181] However, state agencies had balked at the suggestion that they shorten their own timelines so that FERC could issue pilot project licenses within six months.[182]

The Commission soon revealed its workaround: FERC might elect to issue a license upon completing its own review, even if other authorizations remained outstanding.[183] The license in such a case would contain conditions precluding construction until the licensee had obtained all necessary authorizations.[184] The National Oceanic and

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provide details about the proposed technology, and carefully scrutinizing semi-annual progress reports. *Id.* at 9. However, FERC has not necessarily applied these requirements consistently. Interview with Stephen Morrison, Deputy City Attorney, S.F. City Attorney's Office, in S.F., Cal. (June 3, 2008).

[176] Fed. Energy Reg. Comm'n, Statement of Chairman Joseph T. Kelliher, Hydrokinetic-Energy Pilot Project Licensing Process 1 (Docket No. AD07-14-000, July 19, 2007), *available at* http://www.ferc.gov/news/statements-speeches/kelliher/2007/07-19-07-kelliher-hydro.asp.

[177] *Id.* The license was designed for temporary installations of under five megawatts that could be quickly removed in the event of evidence of environmental harm. *Id.* at 2.

[178] *Id.* at 1.

[179] *Id.*

[180] *Id.*

[181] U.S.C.A. § 1456(c)(3)(A) (Westlaw 2008).

[182] *FERC Issues First Hydrokinetic License to Wave Energy Project in Washington*, INSIDE FERC, Dec. 24, 2007, at 20.

[183] Fed. Energy Reg. Comm'n, Policy Statement on Conditioned Licenses for Hydrokinetic Projects 5, 121 F.E.R.C. ¶ 61,221, Docket No. PL08-1-000, Nov. 30, 2007. FERC uses a similar procedural model in issuing pipeline certificates and authorizations to construct liquefied natural gas facilities under the Natural Gas Act. *Id.* at 6-7.

[184] *Id.* at 5.

Atmospheric Administration (NOAA) asserted that issuing licenses in incremental stages is inconsistent with FERC's statutory obligations.[185] However, FERC closed the comment period on the conditioned license policy after two weeks,[186] summarily disposed of all requests for rehearing, and informed parties that they could challenge licenses on a case-by-case basis.[187]

Days later, the Commission proudly proclaimed that it had issued "the first hydrokinetic license."[188] In fact, the developer of the one-megawatt wave project off the coast of Washington state was awaiting both a consistency determination under the CZMA and a Section 401 certification under the Clean Water Act (CWA).[189] Not surprisingly, FERC's press release downplayed the conditional nature of the license,[190] and the media followed suit.[191]

The Washington Department of Ecology asked FERC to rescind the license, stating that the Commission "does not have the authority—by statute or Congressional intent—to set aside existing environmental laws designed to protect our state's water quality and shorelines."[192] However, once Washington granted the authorizations a few months later, FERC issued the developer a revised license and declared the issue moot.[193]

Washington has petitioned the Court of Appeals for the District of

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[185] Letter from Samuel D. Rauch III, Deputy Assistant Admin'r. NOAA, to Kimberly Bose, Secretary, FERC (FERC Docket No. PL08-1-000, Dec. 14, 2007) (commenting on FERC's Policy Statement on Conditioned Licenses for Hydrokinetic Projects). NOAA administers the federal Coastal Zone Management Program. *See* NOAA Office of Ocean and Coastal Res. Mgmt., http://coastalmanagement.noaa.gov/programs/coast_div.html (last visited Mar. 30, 2008).

[186] *See* Fed. Energy Reg. Comm'n, Policy Statement, *supra* note 183.

[187] Renewables Offshore, Regulatory Updates (Jan. 30, 2008), http://www.carolynelefant1.typepad.com/renewablesoffshore/2008/01/regulatory-upda.html. The Commission found that the policy statement neither fixed rights nor created firm legal obligations and was therefore not final for purposes of rehearing under the Federal Power Act. *Id.*

[188] *See* Press Release, Fed. Energy Reg. Comm'n, FERC Issues First License For Hydrokinetic Energy Project (Docket No. P-12751-000, Dec. 20, 2007), *available at* www.ferc.gov/news/news-releases/2007/2007-4/12-20-07-H-1.pdf.

[189] Renewables Offshore, First Wave Energy License in the U.S. Subject to Rehearing (Jan. 30, 2008), www.carolynelefant1.typepad.com/renewablesoffshore/2008/01/regulatory-upda.html.

[190] *See* Press Release, *supra* note 188.

[191] *See, e.g.*, Ralph Thomas, *Wave-Energy Firm Granted a License for Makah Bay Project*, SEATTLE TIMES, Dec. 21, 2007, *available at* http://seattletimes.nwsource.com/html/localnews/2004085547_waveenergy21m.html (noting in the fifth paragraph that Finavera must have the necessary permits before beginning construction).

[192] *First Wave Energy Project Provokes Federal-State Clash*, ENVTL. NEWS SERV., Jan. 21, 2008, http://www.ens-newswire.com/ens/jan2008/2008-01-21-092.asp.

[193] Media Fact Sheet, Fed. Energy Reg. Comm'n, FERC Allows Wave Power Project to Move Forward (Docket No. P-12751-000, Mar. 20, 2008), www.ferc.gov/news/media-alerts/2008/2008-1/03-20-08-H-2-factsheet.pdf.

Columbia Circuit to declare FERC's policy inconsistent with federal law,[194] but even if FERC prevails, developers have little to gain by participating. As one legal analyst points out, the necessary state authorizations could take years, and because state agencies have discretion in issuing them, a conditional license provides the same certainty as no license at all.[195]

2. "PREMATURE" PERMITS

Although the FPA directs FERC to give equal consideration to environmental and energy concerns in its license process, as the U.S. Commission on Ocean Policy noted, "[FERC] is not an agency with a broad ocean management mission."[196] Nowhere are the limitations in the Commission's perspective more clear than in the area of preliminary permits.

Ocean energy is a complex and evolving sector, and scientists have stressed the urgent need for comprehensive planning.[197] One scientist noted: "It is critical that we consider the *cumulative* impacts of all the activities using the resource. We have to consider what is already out there affecting the environment. . . . [N]o one wants [these] technologies to be the straw that breaks the camel's back."[198] FERC, on the other hand, has chosen to use a process geared to reward speed rather than merit.[199]

Despite stricter scrutiny of applications, the Commission's preliminary permit continues to ignore the realities of the wave energy sector.[200] Regardless of the technology or developer best suited to a

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[194] News Release, Wash. Dep't of Ecology, Ecology Challenges FERC for Bypassing Environmental Reviews of Energy Projects (May 15, 2008), www.ecy.wa.gov/news/2008news/2008-130.html.

[195] Renewables Offshore, Conditional Licenses: How Helpful Are They? (Apr. 5, 2008), www.carolynelefant1.typepad.com/renewablesoffshore/2008/04/conditional-lic.html.

[196] USCOP, OCEAN BLUEPRINT, *supra* note 50, at 367.

[197] *See, e.g.*, Wave Energy Technologies Workshop, *supra* note 34, at XIV (noting that cumulative ecological stresses should be taken into account); Ecological Effects of Wave Energy Development in the Pacific Northwest, http://hmsc.oregonstate.edu/waveenergy/webpres.html (see links to presentations given at 2007 workshop) (last visited May 30, 2008).

[198] Wave Energy Technologies Workshop, *supra* note 34, at 52 (reprinting a presentation compiled by John Ogden, Fl. Inst. of Oceanography).

[199] Barbara Schneider, *FERC's First in Time Rule: An Impediment to Hydropower Development*, 5 ENERGY L.J. 97, 100 (1984), *cited in* Ocean Renewable Energy Coalition (OREC) Policy Paper on Preliminary Permits, Site Banking and Energy Development 10 (2007), *available at* http://oceanrenewable.typepad.com/orecpermitprocess2final.pdf.

[200] For example, in an attempt to deter site-banking by unprepared applicants, FERC began to ask wave energy permit applicants to provide details on the technology they intend to utilize in their proposed projects. In truth, it would be futile to hold applicants to what they put forward because by the time the permit expires, the field is likely to have evolved significantly. *See, e.g., The Coming*

particular site, the first entity to file a preliminary permit application is also the one likely to prevail in FERC's licensing process.[201] Although the permit is designed to lead directly to a hydropower license, when state governments, private parties, or other federal agencies raise concerns in the preliminary permit dockets about project impacts, FERC's canned response is that a permit grants no property rights because it only allows the holder to investigate the feasibility of a project.[202] On this basis, FERC routinely dismisses these concerns as misplaced or untimely.[203]

FERC's reflexive reliance upon filing dates rather than the relative quality of competing applications has drawn criticism in the past,[204] but this approach is even less appropriate for new technologies whose impacts are not fully known. Disregarding any need for overall planning and coordination, the Commission has already issued nine preliminary permits for wave energy projects in state waters, and several applications are pending.[205]

As Oregon's Lincoln County has pointed out in comments filed with FERC, wave energy facility siting differs from siting hydropower dams in several ways, including the necessary planning partners.[206] Wave energy requires "close consultation with local resources that can help facilitate siting in areas that maximize efficiencies and minimize damage."[207] Such planning should logically occur before FERC grants a preliminary permit intended to lead directly to a license with a fifty-year term.[208]

Wave, THE ECONOMIST, June 5, 2008, *available at* http://www.economist.com/science/tq/displaystory.cfm?story_id=11482565 ("Whether one wave-energy device will dominate, or different devices will suit different conditions, remains to be seen.").

[201] Renewables Offshore, FERC Issues Notice of Proposed Rulemaking on Preliminary Permits (Feb. 18, 2007), www.carolynelefant1.typepad.com/renewablesoffshore/2007/02/ferc_issues_not.html#mor.

[202] *See Finavera Renewables Ocean Energy Ltd.* at 2, 122 F.E.R.C. ¶ 62,155 (Project No. 12753-000, Feb. 14, 2008) (order issuing preliminary permit).

[203] *See, e.g., id.* at 3 ("The majority of the comments filed in response to the notice express concerns associated with construction of the project, not with activities carried out under a permit.").

[204] Schneider, *supra* note 199, at 100.

[205] As of June 27, 2008, eight of these permits were active. FERC has issued four permits in California and five in Oregon. *See* FERC: Issued and Valid Hydrokinetic Projects Preliminary Permits, http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/permits-issued.asp (last visited July 2, 2008). However, in June 2008, the Commission issued its first wave energy permit cancellation, for the developer's failure to file a required progress report. *See id.* (select "2007" tab, then scroll down to Project Number P-12752, "Coos County Wave Projec [sic].")

[206] Comments of Lincoln County, Oregon (re: Policy Statement on Conditioned Licenses for Hydrokinetic Projects) (FERC Docket PL08-1-000, Nov. 1, 2007).

[207] *Id.* (emphasis removed).

[208] *Id.*

A state wishing to exclude development from a particular area might eventually block a project for which a developer holds a preliminary permit;[209] however, in the intervening years, the permittee will have expended substantial resources on studies and other activities required to prepare a license application.[210] Furthermore, if a state wants to encourage development of a particular area, FERC's issuance of a preliminary permit precludes the state's opportunity to determine among competing developers and technologies which would be best suited for the area.

Given the technological and environmental uncertainties facing the sector, FERC has acted prematurely in encouraging wave energy developers to stake claims to large swaths of ocean.[211] By moving ahead in the absence of integrated planning, FERC has made it more difficult to ensure that facilities are later sited to make the most efficient use of the resource with the least impact.[212]

3. STOPPING SHORT TO GET AHEAD?

Notwithstanding its self-proclaimed flexibility,[213] FERC has stopped short of what is needed: a scheme tailored to the sector *and* the siting environment. Despite implicitly acknowledging that the "new hydrokinetic technologies" differed in significant ways from the hydropower projects for which its rules and regulations were written, the

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[209] *See infra* discussion at Part IV.B.4.

[210] Carolyn Elefant & Sean O'Neill, Ocean Renewable Energy Coal., *Ocean Energy Report for 2005*, at 3 (2006), *available at* www.renewableenergyworld.com/rea/news/infocus/story?id=41396 (noting the project costs associated with data collection).

[211] Lincoln County notes: "This lack of advance planning in the FERC permit and license processes has led Lincoln County to preemptively file a preliminary permit application for the entire Lincoln County coast . . ." Comments of Lincoln County, Oregon, *supra* note 206, at 5 n.12.

[212] *Compare, for example,* Anderson et al., *supra* note 119, at 2 (describing the need for comprehensive planning), *with* William Yardley, *Efforts to Harvest Ocean's Energy Open New Debate Front*, N.Y. TIMES (Dec. 8, 2007) (quoting FERC's Commissioner Moeller, who, after stating that hydrokinetic projects would not be placed in ecologically sensitive areas, admitted, "We haven't defined sensitive area, but the point is we'll be cognizant of that. . . . Let's get this stuff in the water and find out what it has to offer."). As demonstrated by the operational test facility model, technology testing and advance planning can proceed simultaneously. For example, the European Marine Energy Centre (EMEC) in Scotland has open-water test berths where wave energy developers can site prototypes under real conditions. EMEC holds the required licenses, allowing developers to do grid-connected testing with minimal "red tape." EMEC: European Marine Energy Centre, http://www.emec.org.uk/index.asp (last visited May 30, 2008).

[213] *See* Fed. Energy Reg. Comm'n, Statement of Chairman Joseph T. Kelliher, Hydrokinetic-Energy Pilot Project Licensing Process 1, July 19, 2007, *available at* http://www.ferc.gov/news/statements-speeches/kelliher/2007/07-19-07-kelliher-hydro.asp (claiming that FERC has "demonstrated flexibility" in adapting the regulatory scheme).

Commission sidestepped the conclusion that it should create a regulatory scheme appropriately matched to the sector.[214] Instead, the agency chose a path of piecemeal adjustments and stop-gap measures. The backdrop for these choices is the jurisdictional dispute with MMS and FERC's desire to protect its new regulatory province.[215]

Congress had attempted to clarify and streamline regulatory authority for alternative energy development on the OCS by making MMS the lead agency; however, it soon became clear that FERC had preemptively, if unintentionally, frustrated this effort.[216] Once MMS began to demand that FERC back away from its jurisdictional claim on the OCS, FERC appears to have become far more interested in the potential of wave energy. If the Commission had conceded that it lacked an appropriate regulatory scheme, that might have strengthened the case for MMS and others who opposed FERC's attempts to establish a regulatory presence on the OCS.[217] Instead, FERC granted dozens of preliminary permits and managed to issue the first U.S. wave energy license while MMS was occupied with a complex and time-consuming formal rulemaking process,. It may be some time before we learn the results of FERC's intransigence on the prospects for creating a successful, sustainable wave energy sector.

IV. CONSIDERATIONS FOR STATE POLICYMAKERS

Coastal states bear a disproportionate share of the risks and burdens associated with the federal offshore mineral leasing program,[218] but ocean renewable energy challenges state policymakers to look anew at offshore development.[219] Wave energy has the potential to provide a sustainable source of electricity to coastal population centers to help offset growing demand, which could carry both localized and global benefits.[220]

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[214] *See, e.g.,* Protest of U.S. Minerals Mgmt. Serv. at 2 (FERC Project No. P-12753, Feb. 26, 2007) (regarding application for preliminary permit by AquaEnergy Group, Ltd.) (raising serious environmental and ocean management concerns with the Commission's regulatory scheme).

[215] *See* Jurisdictional Smackdown, *supra* note 122.

[216] *See supra* text accompanying notes 149-50.

[217] *See* Jurisdictional Smackdown, *supra* note 122.

[218] FITZGERALD, *supra* note 77, at 1-2.

[219] For an analogous discussion regarding offshore wind power, see Russell, *supra* note 95, at 252 ("Wind power sits on a ridge between environmental protection and economic development. Offshore, it constantly risks being perceived as the new century's version of big oil—a corporate behemoth seeking to expropriate the Outer Continental Shelf. . . . [W]ind power proponents will have to reject the simplistic analogy to oil and gas exploration and avoid being characterized by the narrative that has emerged from it.")

[220] The benefits of renewable energy development are briefly addressed *supra* Part I.C.

In the next decade, wave energy development is likely to occur in or directly adjacent to state waters.[221] This will pose a significant challenge for state decisionmakers charged with protecting coastal ecosystems, who will need to determine what approach to ocean renewable energy best promotes the public interest.[222] FERC's recent activity could make this balancing process more challenging; but even under the best federal scheme, coastal states need to prepare to participate in, rather than merely react to, wave energy siting decisions, starting with the preliminary permit stage.[223]

A. STATE APPROACHES TO WAVE ENERGY

Oregon and California are currently the states with the highest level of wave energy interest and developer activity.[224] Oregon has set a goal of leading the nation in wave energy.[225] California, which has not been as proactive, is missing out on the opportunity to influence FERC's preliminary permit process, a crucial phase in the siting of wave energy projects.

1. Oregon: Planning for the Future

Many in Oregon believe wave energy offers an opportunity to increase reliance on clean energy while securing economic benefits for the state.[226] In 2006, a public-private partnership formed to examine the regulatory and economic barriers to wave energy.[227] The following year,

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[221] MMS, ALT. ENERGY EIS, *supra* note 20, at ES-1 (2007) (predicting that wave energy development will be technologically constrained to areas near shore during the time period covered by the EIS, from 2007 to 2014).

[222] Sivas & Caldwell, *supra* note 116, at 219-20 ("Processing applications for such facilities in the face of public concern looms as a large challenge for state regulators and, in many cases, also may raise difficult federalism issues.").

[223] *See* NOAA Office of Ocean and Coastal Res. Mgmt., Energy and Government Facility Siting, http://coastalmanagement.noaa.gov/ene_gov.html (last visited Mar. 30, 2008).

[224] The State of Washington, home of the first wave energy pilot project license, is a close third. Activity in states with less intense wave power will be affected by the success of initial development efforts on the West Coast and technological advances. MMS consultants noted that "the pioneer projects that do come on-line [in the period 2007-2014] will serve as important catalysts for expanded development in the future *if* a system is put in place that seeks to maximize long-term net benefits." JOHN C. WEISS ET AL., MINERALS MGMT. SERV., ASSESSING THE COSTS AND BENEFITS OF ELECTRICITY GENERATION USING ALTERNATIVE ENERGY RESOURCES ON THE OUTER CONTINENTAL SHELF 2 (2007) (emphasis original).

[225] *See* Ocean Wave Energy Development, http://www.oregon.gov/ENERGY/RENEW/Hydro/Ocean_Wave.shtml (last visited Apr. 6, 2008).

[226] Sadowsky, *supra* note 28.

[227] *Id.*

the Oregon state legislature approved over four million dollars to create the Ocean Wave Energy Initiative.[228] The initiative will use the funding to subsidize the cost of wave energy, promote research and development, and expedite permitting.[229]

The initiative also spearheaded the formation of the Oregon Wave Energy Trust (OWET), a nonprofit organization whose members include representatives from the state, the wave energy industry, researchers, investors, utilities, and the fishing industry.[230] OWET's mission is to help the industry grow responsibly.[231] The organization will serve as the statewide wave energy clearinghouse, providing a forum for the exchange of information between stakeholders.[232] OWET is developing a communication and outreach strategy, identifying research needs, and coordinating efforts to gather data.[233]

Several studies are already under way; for example, a team of biologists has plotted gray whale migration patterns near a planned wave energy facility.[234] This baseline data will later help researchers determine whether the presence of the devices is negatively affecting the whales' migratory behavior.[235]

Oregon's efforts to guide wave energy development led the state to negotiate an MOU with FERC.[236] Under the terms of the MOU, FERC acknowledges that Oregon is preparing a comprehensive plan for the siting of wave energy projects in state waters and agrees to consider the extent to which proposed projects are consistent with the plan.[237] FERC also agrees to consult with the state regarding the information and studies that will be required of potential applicants.[238]

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[228] Anne Marie DiStefano, *Oregon Hopes to Catch Energy Wave*, PORTLAND TRIB., July 24, 2007, *available at* **www.portlandtribune.com/sustainable/story.php?story_id=118522906357380400.**

[229] *Id.*

[230] *Id.*

[231] Oregon Innovation Council, Fact Sheet: Oregon Wave Energy Initiative, http://www.oregoninc.org/events/inno/waveFacts.pdf (last visited Apr. 12, 2008).

[232] OWET Home Page, http://www.oregonwave.org/ (then select "FAQs" link) (last visited June 23, 2008).

[233] Anderson et al., *supra* note 119, at 4.

[234] Libby Tucker, *Whale Migration Routes Studied in Preparation for Wave Energy*, DAILY J. OF COM., Jan. 28; 2008, *available at* http://www.komonews.com/news/local/14482992.html.

[235] *Id.*

[236] *See* Press Release, Fed. Energy Reg. Comm'n, FERC, Oregon Sign Memorandum of Understanding for Wave Energy Projects (Mar. 27, 2008), *available at* http://www.ferc.gov/news/news-releases/2008/2008-1/03-27-08.pdf.

[237] *Id.* FERC also agreed that any wave energy license issued in Oregon state waters will "include conditions to protect and mitigate potential damage to fish and wildlife resources." *Id.*

[238] *See id.*

Not everyone in Oregon agrees about the desirability of wave energy development, and the fishing industry in particular remains skeptical.[239] Nevertheless, as a result of the emphasis on advance preparation and collaboration, Oregon is well-positioned to continue the dialogue, make informed decisions about facility siting, and monitor environmental impacts.[240]

2. *California: Treading Water*

California, which has been a leader in the state-driven response to climate change,[241] began considering the potential of wave energy several years ago. In 2005, the California Energy Commission (CEC) retained a consultant to evaluate the state's wave resource potential.[242] A 2006 report summarized technological, environmental, and permitting issues; its author noted the benefits of involving stakeholders and regulatory agencies early to ensure that environmental issues are addressed during the siting and design phase of the project.[243] The California Ocean Protection Council (OPC)[244] approved funding in 2007 for a study on the

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[239] *See, e.g.*, Cassandra Profita, *Wave Energy Projects Crash into Ocean Fishing Turf*, DAILY ASTORIAN, Nov. 19, 2007, *available at* http://dailyastorian.info/main.asp?SectionID=2&SubSectionID=398&ArticleID=46923.

[240] Oregon's preparation and early engagement with stakeholders allow it to keep abreast of public sentiment about the pace of development and respond adaptively to additional information. Thus, in late 2007, Oregon Governor Ted Kulongoski told the fishing industry that he would ask FERC to issue wave energy permits for no more than five to seven sites, in order to allow the state to "make longer-range decisions . . . informed by science and after careful analysis." Press Release, Statement of Governor Kulongoski to Oregon Fishing Industry Representatives (Nov. 1, 2007), http://governor.oregon.gov/Gov/P2007/press_110107a.shtml.

[241] *See, e.g.*, David R. Hodas, *State Law Responses to Global Warming: Is It Constitutional to Think Globally and Act Locally?*, 21 PACE ENVTL. L. REV. 53, 55-56 (2003) (describing California's efforts to address climate change). The state's renewable portfolio standard is one of the most aggressive in the nation, requiring utilities to generate 20% of their energy from renewables by 2010. This was a factor in PG&E's decision to pursue wave energy development off the state's prized north coast. *See* Marianne Lavelle, *Ocean-Wave Energy Goes Commercial*, U.S. NEWS & WORLD REP., Dec. 18, 2007, *available at* http://www.usnews.com/articles/business/economy/2007/12/18/ocean-wave-energy-goes-commercial.html.

[242] *See* MIKE KANE, CAL. ENERGY COMM'N, CALIFORNIA SMALL HYDROPOWER AND OCEAN WAVE ENERGY RESOURCES 14, 15, *in support of* THE 2005 INTEGRATED ENERGY POLICY REPORT (2005) (identifying 720 kilometers of available coastline with excellent wave conditions and a water depth of more than fifty meters within ten miles of the coast).

[243] *See* MIRKO PREVISIC, CAL. ENERGY COMM'N, CALIFORNIA OCEAN WAVE ENERGY ASSESSMENT 70 (2006), *available at* http://www.energy.ca.gov/2006publications/CEC-500-2006-119/CEC-500-2006-119-D.pdf.

[244] The OPC is a five-member "advisory body whose authority extends to guiding voluntary coordination between state agencies, recommending legislative changes, and funding projects that meet specified objectives." Sivas & Caldwell, *supra* note 116, at 242.

environmental implications of ocean energy,[245] which will complement an effort at the CEC to identify optimal sites and technology.[246] OPC staff intends the report to be a starting place for federal and state regulatory agencies, industry, and the public to address site-specific concerns and user conflicts.[247]

Unfortunately, as federal agencies have moved to establish the regulatory framework and grant rights to developers in California waters,[248] the state has not progressed beyond the study phase. California must take decisive steps soon in order to make the most of the information it has gathered. There is still "no legal mechanism in state law for addressing the complicated regulatory issues raised by overlapping jurisdictional authorities and no guidance on how state and local agencies might address the looming federalism concerns posed by the FERC licensing process."[249]

The state has also failed to connect effectively with local communities, as the 2006 study recommended.[250] For example, residents of Mendocino County, California, felt blindsided when Pacific Gas and Electric Company (PG&E) submitted a preliminary permit application for sixty-eight square miles off their coast.[251] Community leaders held a wave energy forum in January 2008, which drew representatives from the State Lands Commission, FERC, MMS, and PG&E.[252] While a state

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[245] *See* Cal. Ocean Prot. Council, Staff Recommendation: Environmental Implications of Ocean Energy Study, June 14, 2007, *available at* www.resources.ca.gov/copc/06-14-07_meeting/0607COPC11_Ocean%20Energy.pdf. An archived webcast of the meeting is available at www.cal-span.org/cgi-bin/archive.pl?owner=COPC&date=2007-06-14. The Natural Resources Def. Council voiced support of this study, but encouraged the OPC to also give attention to adaptive management, community impacts, and cumulative impacts in order to ensure that development is sustainable. Melina Williams & Kate Wing, Natural Res. Def. Council (NRDC), Testimony Before the California Ocean Protection Council, Consideration of Ocean Study, June 14, 2007, www.resources.ca.gov/copc/06-14-07_meeting/0607COPC04_Public%20 Comment.pdf.

[246] *See* Cal. Ocean Prot. Council, Staff Recommendation, *supra* note 245, at 1-2.

[247] *Id.* at 2. OPC staff also plans to hold a workshop to discuss the study's findings with federal and state agencies to open the door to interagency collaboration regarding the review and permitting of these projects. *Id.*

[248] In addition to PG&E, Finavera Renewables and California Wave Energy Partners also hold wave energy preliminary permits in California; Green Wave Energy Solutions has two applications pending. *See* FERC: Hydropower – Hydrokinetic Projects, http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp (to see tables showing issued and pending preliminary permits, select corresponding link) (last visited May 30, 2008).

[249] Sivas & Caldwell, *supra* note 116, at 226-27. California in fact needs large-scale reform to move toward integrated coastal management. *Id.* at 230 (noting that "truly integrated, comprehensive planning and coordinated management of [California's] ocean resources remains elusive").

[250] *See* PREVISIC, *supra* note 243, at 70.

[251] *See* Frank Hartzell, *Wave-Power Proposals Alarm Locals*, CHRISTIAN SCI. MONITOR, Mar. 4, 2008 (noting the surprise of Fort Bragg's mayor at the application).

[252] *See* Frank Hartzell, *City and County Hear They Have Special Wave Energy Powers*, FORT

representative was also in attendance, there was a noticeable lack of state leadership[253]—not surprising, given the lack of preparedness.

FERC further agitated the situation by denying local officials' requests for late intervention in the application proceedings.[254] When the permit issued in March 2008, it sparked an outcry by locals.[255] Mendocino residents—some with signs reading "Let us Participate" and "FERC is Berserk"—called for a moratorium on wave energy permitting.[256]

In the face of public discontent, some California counties have contemplated an alternative approach to retaining local control of development: applying for their own preliminary permits.[257] Although municipal involvement could help to calm fears that federal regulators are holding a "clearance sale" on pristine stretches of ocean, it would not compensate for the lack of state leadership. The failure to organize, plan, and address local concerns undermines prospects for making the most efficient use of the resource while causing the least amount of harm to communities and the environment. Based on current filings, FERC may have issued as many as six preliminary permits for wave energy projects off the coast of California by the end of 2008,[258] each representing a lost

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BRAGG ADVOC.-NEWS, Jan. 24, 2008 (noting that state representatives failed "to settle unease about how locals can steer the process as it goes forward").

[253] *Id.*

[254] *See* Fed. Energy Reg. Comm'n, Pacific Gas & Electric Company, Project No. 12781-000, at 2 (Notice Denying Late Interventions) (Mar. 5, 2008). FERC claimed that granting late intervention would create prejudice and additional burdens for FERC and the applicant. FERC, as usual, called these parties' concerns "premature," because they related to "the actual project and not the permit, the issuance of which does not authorize the construction of the project." *Id.* Apparently, these would-be intervenors were both too late *and* too early.

[255] Mendo Coast Current, Mendocino Wave Energy Moratorium March Recap, Mar. 30, 2008, www.mendocoastcurrent.wordpress.com/2008/03/30/mendocino-wave-energy-moratorium-march-%e2%80%93-saturday-march-29th-11-noon/.

[256] *Id.* (see photo of participants accompanying posting); *see also* Mendocino County Residents Take On PG&E, Free Speech Radio News, Mar. 31, 2008, www.fsrn.org/content/mendocino-county-residents-take-pg%2526amp%3Be (audio report that includes local residents expressing concerns about the rapid pace of the process and lack of public input).

[257] Sivas & Caldwell, *supra* note 116, at 225 (citing Press Release, Sonoma County Water Agency, Sonoma Board Considers Action to Protect Sonoma Coast – Wave Energy Proposal Assures Local Control (Nov. 5, 2007)). FERC's preliminary permits do not grant any land-disturbing or construction rights, but they do grant the holder exclusive rights to apply for a license for the permitted area and to meanwhile hold claim on the area for three years. See discussion *supra* Part III.B.2.

[258] The California projects are Humboldt County Wave Project, Humboldt County Wave Connect, Mendocino County Wave Connect, and Centerville OPT Wave Energy Park. *See* Issued and Valid Hydrokinetic Projects Preliminary Permits, www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/permits-issued.asp (last visited June 30, 2008). Two California permits are pending: Green Wave San Luis Obispo Wave Park and Green Wave Mendocino Wave Park. *See*

opportunity for the state to optimally guide development.

B. THE IMPORTANCE OF BEING PROACTIVE

Absent evidence of significant, unavoidable environmental harm, enthusiasm for offshore renewable energy will continue to grow. Coastal states with favorable wave energy conditions must therefore confront the challenges of managing this new era of offshore activity.

Wave energy's future as a sustainable source of electricity depends on a comprehensive approach that takes into account cumulative effects on ecosystems and the human community.[259] Siting these projects in state coastal waters calls for a collaborative process that includes participation by local communities and consideration of competing interests.[260] States are in a better position to manage such a process than FERC, but they are preempted under the FPA from siting hydropower projects.[261] Nonetheless, states have at their disposal tools and options they may use to affect the scope and pace of development.[262] Policymakers can make the most of their opportunities to influence wave energy by engaging in advance planning and coordination, incorporating stakeholder input, cultivating alternative routes of influence, and strategically using their statutory authority during the application phase.[263]

1. Advance Planning

Each coastal state has a statutory obligation to ensure that coastal zone development is consistent with its CMP and a concurrent duty to use its authority over submerged state lands in the interest of the public.[264] According to NOAA, coastal management programs must include policies and planning processes addressing coastal siting of

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FERC: Hydropower – Hydrokinetic Projects, *supra* note 248..

[259] Jonathan Allen et al., Cumulative Effects Analysis for Wave Energy Offshore the Oregon Coast 6 (2007), *available at* www.oregon.gov/LCD/OPAC/docs/meetings/tortoricippt092507.pdf.

[260] *See, e.g.*, Nick Furman, Or. Wave Energy Trust, The Epicenter of Exchange (2008), *available at* http://76.12.167.63/communityvoice.php (urging fishing industry members to participate in the planning process, "as it will ultimately shape the outcome of how wave energy 'fits' into the fabric of our local economy and lifestyle").

[261] *Cf.* Van de Kamp & Saurenman, *supra* note 92, at 134 (arguing that states are better situated "to balance the competing interests associated with OCS [oil and gas] development").

[262] Anderson et al., *supra* note 119, at 2.

[263] *See* Carolyn Elefant, The Role of States in Offshore Renewable Development in the United States, at slides 17-20 (2003), *available at* http://www.his.com/~israel/loce/statrol_ files/v3_ document.htm.

[264] OCEAN JURISDICTIONS, *supra* note 80, at 71; *see also* Kalen, *supra* note 94, at 220 (discussing the application of the public trust doctrine to consistency decisions under the CZMA).

energy facilities if states hope to simultaneously address energy needs, resolve coastal use conflicts, and preserve coastal resources.[265] Because the public has a stake in both ocean health and renewable energy, coastal regulators should become informed about the issues surrounding wave energy and other ocean renewable development, especially the importance of site selection.[266]

NOAA urges states to be proactive, rather than waiting to respond to individual proposals.[267] For example, the state needs to identify and map environmentally sensitive areas as early as possible.[268] Also, because commercial wave energy facilities would potentially involve clusters of several hundred devices, states should work with developers on a plan to roll out in phases while monitoring cumulative impacts.[269]

Another advantage of advance planning and coordination is that the state will be better prepared to justify any decisions to deny consistency certification or to specify conditions for approval. However, the most important benefit of this approach is that it will support coastal states to achieve the right balance between preserving ocean ecosystems, integrating renewable sources into the electricity fuel mix, and protecting other state interests.[270]

2. *Stakeholders*

In general, stakeholder involvement improves the quality of the information available for policy formulation and decisionmaking.[271] A state-led wave energy process can create opportunities for effective inclusion of stakeholders with knowledge of local concerns and potential conflicts.[272]

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[265] NOAA Office of Ocean and Coastal Res. Mgmt., Energy and Government Facility Siting, *supra* note 223.

[266] EPRI, PRIMER, *supra* note 4, at 1; U.S. Dep't of Energy, A Consumer's Guide to Energy Efficiency and Renewable Energy: Ocean Wave Power, http://www.eere.energy.gov/consumer/renewable_energy/ocean/index.cfm/mytopic=50009 (last visited May 30, 2008) ("[C]areful site selection is the key to keeping the environmental impacts of wave power systems to a minimum.").

[267] NOAA Office of Ocean and Coastal Res. Mgmt., *supra* note 223.

[268] *See id.* (acknowledging coordination challenges of this type of planning).

[269] *See* Jonathan Allen et al., Cumulative Effects Analysis for Wave Energy Offshore the Oregon Coast 6, 11, (2007), *available at* www.oregon.gov/LCD/OPAC/docs/meetings/tortoricippt092507.pdf (describing how a cumulative-effects analysis relates to wave energy development).

[270] *See, e.g.*, Sivas & Caldwell, *supra* note 116, at 220 (discussing the challenge wave energy presents for California coastal agencies).

[271] Robert B. McKinstry, Jr. & Thomas D. Peterson, *The Implications of the New "Old" Federalism in Climate-Change Legislation: How to Function in a Global Marketplace when States Take the Lead*, 20 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 61, 87 (2007).

[272] *Id.*

Because of the diversity of interests affected, differences of opinion on wave energy will persist. However, participants in an inclusive process become aware of the goals and the constraints, leading to more confidence in the decisionmaking process.[273] This also tends to result in "higher levels of technical and policy consensus."[274] On the other hand, failure to seek community input and address the concerns of those who would be directly affected could lead to a backlash against wave energy, regardless of the potential for sustainable development.[275]

3. *Preliminary Routes of Influence*

By initiating early communication with federal agencies and potential applicants, state policymakers can begin affecting wave energy development far in advance of reviewing specific proposals. For example, a diverse group of organizations in Hawaii, including state agencies, the Sierra Club, and NOAA Fisheries Services, collaboratively produced *Ocean Energy Development Guidelines*, explaining the state's unique perspective to developers.[276] This document describes the cultural significance of the ocean to the people of Hawaii; it also alerts developers that they will be expected to demonstrate a strong sense of ocean stewardship and consideration of impacts on future generations.[277]

Oregon's MOU with FERC is another example of this approach.[278] After formulating its wave energy plan, the state managed to elicit an agreement from FERC to take this plan into account in FERC's permitting and licensing processes.[279] This indicates that the Commission is amenable to working with states that take the initiative to define their interests. Negotiating an MOU with FERC should therefore be a priority.

Laying the groundwork for better outcomes at the licensing phase

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[273] *Id.*

[274] *Id.*

[275] *See, e.g.*, Mendo Coast Current, *supra* note 255 (describing a protest fueled in part by FERC's failure to consider local input).

[276] Ocean Energy Guidelines 14 (2007), *available at* http://hawaiienergypolicy.hawaii.edu/PDFReports/2007/OEG1.pdf.

[277] *Id.* at 6. In an open letter to developers, representatives of the sponsoring organizations stated, "Many good development projects have failed, or experienced costly and timely challenges in Hawaii, because developers have failed to engage with our community early and productively. We cannot afford to allow the development of good, sustainable alternative energy projects to fail." Renewable Energy World, New Guidelines for Hawaiian Ocean Energy Projects, Nov. 5, 2007, www.renewableenergyworld.com/rea/news/story?id=50471.

[278] *See* Press Release, Fed. Energy Reg. Comm'n, FERC, Oregon Sign Memorandum of Understanding for Wave Energy Projects (Mar. 27, 2008), *available at* http://www.ferc.gov/news/news-releases/2008/2008-1/03-27-08.pdf.

[279] *Id.*

and thereafter requires early action and commitment of scarce resources. However, states that engage in a coordinated planning process for ocean alternative energy development will find they have more options—MOUs and policy statements being only two examples.[280]

4. Statutory Authority

Once a wave energy developer has reached the stage of submitting a license application for a project in or affecting coastal waters, states have substantial power related to consistency determinations under the CZMA and Section 401 certifications under the CWA.[281] In some circumstances, states can use their statutory authority to simply block unwanted development, but there may be other ways to use this power strategically in managing coastal uses and resources.[282]

CZMA regulations emphasize negotiation between states and project proponents, and California is one state that has successfully used consistency determinations to achieve environmental protections beyond what MMS required of mineral lease applicants.[283] States have another source of leverage in the right to grant or deny leases and easements for state-owned aquatic lands; whether a project is sited in state waters or on the OCS, developers will need to bring the electricity to shore.[284] The type of comprehensive planning and interagency coordination discussed above enhances opportunities for negotiation during the application stage.[285]

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[280] Developers, too, stand to benefit from engaging state agencies and local communities in early communication about site selection, which can reduce resistance during the licensing phase.

[281] Anderson et al., *supra* note 119, at 2. "Under the CWA, FERC may not license an activity involving a 'discharge' into waters of the United States unless the applicant first obtains a [Section 401] certification or waiver from the state. . . . Plainly, 401 certification is a powerful means by which states can affect the characteristics of FERC-licensed projects. And since FERC licenses may be issued for up to 50 years, the importance to the states of having input at the licensing stage is hardly surprising. . . . In recent years, some states have come to view Section 401 as an important tool in [protecting the] integrity of their waters . . . ." ROBERT MELTZ & CLAUDIA COPELAND, CONG. RESEARCH SERV., THE STATE ROLE IN THE FEDERAL LICENSING OF HYDROPOWER DAMS: S.D. WARREN CO. V. MAINE BOARD OF ENVIRONMENTAL PROTECTION 2, 4 (2006).

[282] Russell, *supra* note 95, at 249; NOAA Office of Ocean and Coastal Res. Mgmt., *supra* note 223

[283] Van de Kamp & Saurenman, *supra* note 92, at 108; *see also* Russell, *supra* note 95, at 250 (noting that most projects not initially deemed consistent are modified through negotiation).

[284] *See* Jeremy Firestone et al., *Regulating Offshore Wind Power and Aquaculture: Messages From Land and Sea*, 14 CORNELL J.L. & PUB. POL'Y 71, 86 (2004) ("[I]n any instance where a developer proposes to transmit electrical power generated at sea to land, the developer will also need approval from the state to place transmission cables on the submerged lands that are under its jurisdiction.").

[285] NOAA Office of Ocean and Coastal Res. Mgmt., *supra* note 223.

CONCLUSION

In 1990, California Attorney General John Van de Kamp and Deputy Attorney General John Saurenman published a strong critique of the federal government and the courts regarding offshore oil and gas leasing.[286] They urged that in order to achieve a manageable, predictable process, it would be necessary to shift the focus of decisionmaking away from the federal government, "because only the states can actually balance the benefits of proceeding with OCS development and the full environmental costs."[287] This assessment is no less relevant today, but state policymakers must now also take into account the environmental costs of *not* proceeding with ocean renewable energy development.

Wave energy offers hope of a relatively benign source of electricity located close to coastal population centers. Careful siting and ongoing monitoring offer the opportunity to avoid, reduce, or eliminate many potential adverse effects. Siting decisions should therefore be the result of an ongoing, active process grounded in available data—a process in which the participation of the scientific and ocean conservation communities, as well as local stakeholders, is vitally needed. As one marine educator remarked, the key will be "to finesse a workable coexistence between the historical ocean uses and emerging ones . . . ."[288] FERC's regulatory scheme is ill-suited to the challenge.

There is currently an opening—albeit brief—for coastal states to guide wave energy development in a way that was not possible for offshore drilling; however, as federal agencies, developers, and local communities move ahead to protect their own interests, states that delay will find it increasingly difficult to assert leadership. Coastal states must be proactive about using their resources and authority to protect the public interest in sustainable wave energy development.

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[286] Van de Kamp & Saurenman, *supra* note 92, at 134.

[287] *Id.*

[288] Terry Dillman, *Tri-County Work Session Focuses on Wave Energy*, NEWPORT NEWS-TIMES, July 3, 2007 (discussing a meeting of county commissioners in Oregon), *available at* www.newportnewstimes.com/articles/2007/07/03/news/news03.txt.

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