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# FACILITATING HYDROKINETIC ENERGY DEVELOPMENT THROUGH REGULATORY INNOVATION

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**Synopsis:** The development and integration into the electric grid of new clean and domestic renewable energy resources is one of the highest priorities for the United States, in light of the dual imperatives of blunting the climatic effects of greenhouse gases and stemming the flow of trillions of dollars overseas for oil imports. Hydrokinetic energy – which includes ocean wave, current, tidal, and in-stream current energy resources – is one promising, though not yet commercially proven, renewable resource. In addition to the further development of hydrokinetic technologies, a key factor in determining whether the country will capture the full potential of this energy source is the regulatory framework in which hydrokinetic systems will operate. The Federal Power Act (FPA) assigns the Federal Energy Regulatory Commission (FERC) a leading role with respect to hydrokinetic energy, and the FERC in recent years has initiated regulatory innovations to facilitate development of this energy source. This article discusses how the FERC has begun moving down that path. This article also identifies issues that the FERC is likely to confront in this area in the future, including the need for appropriate relationships with other federal and states agencies that will play roles in regulating the development of hydrokinetic energy.

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## I. INTRODUCTION

Global carbon dioxide levels today exceed 380 parts per million, much higher than the 200-300 parts per million experienced in the last 800,000 years.<sup>1</sup> Crude oil has sold above 100 dollars per barrel for much of this year, and the United States economy has become increasingly dependent on oil imports.<sup>2</sup> If we hope to blunt the climatic effects of greenhouse gases and stem the flow of trillions of dollars overseas, we need to develop energy alternatives to carbon-producing fuels. These dual imperatives make the rapid deployment and integration into the electric grid of new clean and domestic renewable energy resources one of our nation's highest priorities.

Some renewable resources that are well-recognized and commercially viable, such as wind, solar, and geothermal resources, are moving to large-scale deployment within the limits of capital, resource availability, equipment manufacturing, and transmission access.<sup>3</sup> Other promising renewable technologies, however, have yet to be proven commercially viable. Hydrokinetic energy – which includes ocean wave, current, tidal, and in-stream current energy resources – is one such promising resource.<sup>4</sup>

Hydrokinetic energy is a promising candidate for augmenting the nation's needed supply of carbon-free energy sources. It could provide a new supply of clean, domestic, renewable energy, much of which would be located close to the load centers of our major cities on the coasts and inland waterways. It has taken over 100 years to develop the 97,000 megawatts (MW) of hydropower capacity in the United States, which constitutes ten percent of the country's electricity supply.<sup>5</sup> According to some estimates, hydrokinetic technologies have the

1. *Ice Cores Reveal Fluctuations in Earth's Greenhouse Gases*, SCIENCE DAILY, May 17, 2008, <http://www.sciencedaily.com/releases/2008/05/080514131131.htm>.

2. UNITED STATES ENERGY INFO. ADMIN., ANNUAL U.S. CRUDE OIL FIELD PRODUCTION, <http://tonto.eia.doe.gov/dnav/pet/hist/mcrfpus1A.htm>; ANNUAL U.S. CRUDE OIL IMPORTS FROM ALL COUNTRIES, <http://tonto.eia.doe.gov/dnav/pet/hist/mcrimus1a.htm> (between 2000 and 2007, domestic production decreased from 2,130,707 to 1,802,441 thousand barrels per year while imports rose from 3,319,816 to 3,656,170 thousand barrels per year.)

3. *Go Solar, Wind or Geothermal If You Want Renewable Energy With Life-Cycle Efficiency*, SCIENCE DAILY, Aug. 18, 2007, <http://www.sciencedaily.com/releases/2007/08/070813153419.htm> (Issues related to the adequacy of infrastructure needed to link these renewable resources to the electric grid are beyond the scope of this article.)

4. In section 632 of the Energy Independence and Security Act of 2007, the Congress defined hydrokinetic energy as electrical energy from waves, tides, and currents in oceans, estuaries, and tidal areas; free flowing water in rivers, lakes, and streams, or man-made channels; and differentials in ocean temperature (ocean thermal energy conversion). 42 U.S.C. § 17211 (2007).

5. ENERGY INFO. ADMIN., EXISTING CAPACITY BY ENERGY SOURCE (2007), <http://www.eia.doe.gov/cneaf/electricity/epa/epat2p2.html>. (This figure includes approximately 77,500 MW of conventional hydroelectric capacity, and approximately 19,500 MW of pumped storage. Approximately 54,000 MW of this existing capacity is regulated by the FERC.)

potential, if fully developed, to double the amount of hydropower production to twenty percent of the national supply.<sup>6</sup>

One of the key factors in determining whether the potential of hydrokinetic energy will be achieved is the regulatory framework in which hydrokinetic systems will operate. Long regulatory timeframes can result in a lack of investment for these capital-intensive projects. The FPA assigns the FERC a leading role with respect to hydrokinetic energy. Given the importance of developing new renewable energy resources, the FERC, as a matter of policy in recent years, has initiated regulatory innovations to facilitate hydrokinetic energy development. This article discusses how the FERC has begun moving down that path, and identifies several issues that the FERC is likely to confront in this area in the future. One particularly important emerging regulatory issue is the need for appropriate relationships between the FERC and other federal and state agencies that also will play roles in regulating the development of hydrokinetic projects.

## II. HYDROKINETIC TECHNOLOGIES

Hydrokinetic energy may be produced through application of several different technologies. For example, wave energy technologies extract energy directly from surface waves.<sup>7</sup> Float or buoy systems use the rise and fall of ocean swells to drive hydraulic pumps. The systems can be mounted to a floating raft or to a device fixed on the ocean floor. The wave movement “strokes” an electrical generator and makes electricity.<sup>8</sup> Another means to capture wave energy is an oscillating water column device, in which the in-and-out motion of waves at the shore enters a column and forces air to turn a turbine. The column fills with water as the wave rises and empties as it descends. In the process, air inside the column is compressed, creating energy in the same way a piston does.<sup>9</sup>

By contrast, tidal/current energy technologies extract energy from currents below the wave surface. The types of hydrokinetic devices being developed to capture energy from tides and currents may also be deployed inland in both free-flowing rivers and in engineered waterways such as canals, conduits, cooling water discharge pipes, or tailraces of existing dams. One type of these systems relies on underwater turbines, either horizontal or vertical. Large turbine blades

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6. Hydroelectric Infrastructure Technical Conference, F.E.R.C. Docket No. AD06-13-000 at P 12. (December 6, 2006). (Somewhat lower estimates have been published by the Electric Power Research Institute (EPRI), which estimates a potential capacity of 12,500 MW from in-stream waterway projects and 10,000-20,000 MW from ocean wave/current projects); EPRI's *Assessment of Waterway Potential and Development Needs*, Final Report, at Table 3-2, [http://www.aaas.org/spp/cstc/docs/07\\_06\\_1ERPL\\_report.pdf](http://www.aaas.org/spp/cstc/docs/07_06_1ERPL_report.pdf). (However, the potential capacity from ocean wave/current projects may be significantly higher because EPRI assumed that only fifteen percent of the potential energy could be extracted. Further, the in-stream potential published by EPRI in 2007 was actually assessed in 1986 and did not include an estimate of potential capacity from constructed waterways.)

7. OCS ALTERNATIVE ENERGY & ALTERNATE USE PROGRAMMATIC EIS, OCEAN WAVE ENERGY, <http://ocseenergy.anl.gov/guide/wave/index.cfm> (Sept. 28, 2008).

8. Mark Peplow, *Swell magnet stokes support for wave power*, BIOED ONLINE, Oct. 11, 2005, <http://www.bioedonline.org/picks/news.cfm?art=2092>.

9. HOW IT WORKS: WAVE POWER STATION, BBC NEWS, <http://news.bbc.co.uk/1/hi/sci/tech/1032148.stm> (last visited September 16, 2008).

would be driven by the moving water, just as windmill blades are moved by the wind; these blades would turn the generators and capture the energy of the water flow.<sup>10</sup> Another tidal/current method calls for a barge moored in the current stream with a large cable loop to which parachutes are fastened. The cable would be moved along by the current acting against the open parachutes. When the parachutes reached the end of the loop, they would turn the corner and be dragged back against the current while closed. The continuous movement of the cable would be used to turn a generator to produce electricity.<sup>11</sup>

### III. LEGAL AUTHORITY OVER HYDROKINETIC PROJECTS

Full, commercial-scale systems utilizing these hydrokinetic technologies have yet to be deployed. Additional technical issues will need to be resolved in connection with such larger-scale implementation.<sup>12</sup> Nonetheless, it is important to recognize that the regulatory framework in which that growth would occur will also affect whether and how quickly progress is made toward achieving the full potential of hydrokinetic technologies.

As discussed immediately below, the FPA assigns the FERC a leading role with respect to hydrokinetic energy. The FERC's leading role in this area, however, does not preclude input from other federal and state agencies. One factor that will affect which other agencies are involved with regulating a particular project is the project's proposed location.

With respect to ocean waters, for example, the United States government has asserted jurisdiction up to twelve nautical miles offshore.<sup>13</sup> The three nautical miles closest to land are generally considered to be state coastal

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10. However, power densities are much higher with hydrokinetic systems than with wind systems due to the fact that water is approximately 800 times the density of air.

11. OCS ALTERNATIVE & ALTERNATE USE PROGRAMMATIC EIS, OCEAN CURRENT ENERGY, <http://ocsenergy.anl.gov/guide/current/index.cfm> (last visited September 16, 2008).

12. The FERC's Staff has identified several such issues, including challenges presented by "dense and turbulent forces of flowing water, corrosion from salt water, fouling by marine organisms, stress on internal mechanisms such as bearings, threats to buoyancy, adequacy of anchoring systems, containment of fluid leaks (such as in hydraulic systems), designs for underwater transmission of large amounts of electricity, safety during severe storms, and installation and maintenance problems." FERC Staff Comments, *Alternative Energy and Alternate Uses on the Outer Continental Shelf: Proposed Rule (RIN 1010-AD30)*, Minerals Mgmt. Serv. of the U.S. Dep't of the Interior, August 28, 2008, at p. 18, n.22 [hereinafter *FERC Staff Comments*]. This rulemaking proceeding is discussed further in Section V.A of this article.

13. Under international law, a coastal country has sovereign rights over the air space, water column, and sea bed within its territorial sea. In 1988, President Reagan proclaimed that the United States territorial sea extends twelve nautical miles seaward from the coast. Presidential Proclamation No. 5928, 54 Fed. Reg. 777, 103 Stat. 2981 (1988). International law also recognizes a more limited form of sovereignty over the outer continental shelf (OCS). The OCS boundary, as applied under the Outer Continental Shelf Lands Act (OCSLA), is defined under Part VI, Article seventy-six of the United Nations Convention on the Law of the Sea, with exceptions not relevant here, as follows: "[t]he continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance." [http://www.un.org/Depts/los/convention\\_agreements/texts/unclos/closindx.htm](http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm) (last visited Sept. 9, 2008).

waters.<sup>14</sup> In those state waters, a developer may need to obtain from relevant state resource agencies authorizations under applicable federal laws, which often will include the Clean Water Act (CWA)<sup>15</sup> and the Coastal Zone Management Act (CZMA).<sup>16</sup> Beyond state coastal waters, the Minerals Management Service (MMS) of the United States Department of the Interior is a relevant federal land management agency that is likely to play a role in regulating hydrokinetic development, such as by issuing leases. In either location, a project's specific characteristics may also require authorizations from other agencies, such as the United States Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), or the United States Army Corps of Engineers. Subsequent sections of this article discuss challenges associated with shaping a relationship between the FERC and other federal and state agencies that appropriately accounts for expertise while avoiding unnecessary regulatory burdens.<sup>17</sup>

A threshold issue for discussion, however, is the FERC's legal authority with respect to hydrokinetic energy. Several provisions of the FPA are particularly relevant to that issue. For example, section 4 of the FPA provides in part:

The [FERC] is authorized and empowered –

(e) To issue licenses...for the purpose of constructing, operating, and maintaining...power houses, transmission lines, or other project works necessary or convenient for...the development, transmission, and utilization of power across, along, from, or in any of the streams or other bodies of water over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several States, or upon any part of the public lands and reservations of the United States.<sup>18</sup>

Section 23(b)(1) of the FPA uses similar terminology to explicitly link the FERC's authority to issue such licenses with hydropower development, stating:

[i]t shall be unlawful for any person, State, or municipality, for the purpose of developing electric power, to construct, operate, or maintain any dam, water conduit, reservoir, powerhouse, or other work incidental thereto across, along, or in any of the navigable waters of the United States, or upon any part of the public lands of reservations of the United States...except<sup>19</sup> under and in accordance with the terms of...a license granted [under this subpart].

Finally, it is worth noting that section 3(8) of the FPA expressly defines “navigable waters” to mean:

“those parts of streams or other bodies of water over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several States, and which either in their natural or improved

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14. Submerged Lands Act, 43 U.S.C. §§ 1301-1315 (2002); Additional detail on the three nautical mile boundary to state coastal waters, as well as exceptions to that rule, is set forth at page seventy of the 2004 Final Report of the United States Commission on Ocean Policy, [http://oceancommission.gov/documents/full\\_color\\_rpt/welcome.html](http://oceancommission.gov/documents/full_color_rpt/welcome.html) (last visited Sept. 9, 2008).

15. 33 U.S.C. § 1341(e)(1) (2006).

16. 16 U.S.C. § 1456(3)(A) (2007).

17. See generally, Sections IV.A, IV.B.4, and V.A.

18. 16 U.S.C. § 797(e) (2007).

19. 16 U.S.C. § 817(1) (2007).

condition...are used or suitable for use for the transportation of persons or property in interstate or foreign commerce.”<sup>20</sup>

In 2002, the FERC was confronted with a case of first impression regarding whether its jurisdiction under these provisions of the FPA extended to offshore hydropower development.<sup>21</sup> That question arose in the context of the Makah Bay Project proposed by Aqua Energy Group, LTD (AquaEnergy).<sup>22</sup> AquaEnergy originally stated that the project was to be located approximately 1.9 nautical miles offshore of Waatch Point in Callam County, Washington, but stated later that year that the project would instead be located 3.17 nautical miles offshore of Waatch Point.<sup>23</sup> The project was to include four buoys with internal turbines tethered to the ocean floor (referred to as AquaBuOYs); a submarine transmission line was to extend from the buoys to the shore and continue under the beach to a power station, which would connect to an existing distribution line.<sup>24</sup> The offshore facilities would be located in the Olympic Coast National Marine Sanctuary, and the shore-based facilities would be on tribal lands within the Makah Indian Reservation.<sup>25</sup>

AquaEnergy proffered four arguments why the FERC did not have and should not assert jurisdiction over the Makah Bay Project. The FERC rejected each of these arguments and concluded that the project fell within the FERC’s jurisdiction under the FPA.

First, AquaEnergy argued that the Makah Bay Project was not a hydroelectric project as defined by the FPA.<sup>26</sup> Citing sections 4(e) and 23(b) of the FPA, AquaEnergy noted that the only references to structures in the statute were to dams, water conduits, reservoirs, powerhouses, or other related facilities. AquaEnergy stated that the Makah Bay Project, like the entire class of ocean projects, would not rely on a dam to build water pressure, a conduit to deliver pressurized water to a turbine, or a reservoir to store water for use during peak periods. Instead, the Makah Bay Project would rely on anchored AquaBuOYs to gather pressurized seawater and generate electricity. Moreover, the hydraulic-to-electric conversion process would not take place in a land-based powerhouse, but several miles out at sea within the AquaBuOYs.<sup>27</sup>

The FERC disagreed with AquaEnergy, finding that the Makah Bay Project was a hydroelectric project.<sup>28</sup> While acknowledging that the project did not involve a dam, water conduit, or reservoir, the FERC stated that it had not previously had occasion to determine what type of structure constituted a “powerhouse” in this context. The FERC explained that, enclosed within the AquaBuOYs, pressurized water would pass through a Pelton turbine, which

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20. 16 U.S.C. § 796(8) (2007).

21. *AquaEnergy Group, LTD.*, 102 F.E.R.C. ¶ 61,242 at P 2, 6 (2003).

22. *Id.*

23. *Id.*

24. *Id.*

25. *Id.* at P 2.

26. FERC Docket No. D102-3-001, AquaEnergy Group’s Request for Expedited Rehearing of Order Finding Jurisdiction and Revisions to Project Description, Nov. 1, 2002, at 14-18 [hereinafter *AquaEnergy 2002 Rehearing Request*].

27. *Id.*

28. *AquaEnergy Group, LTD.*, 102 F.E.R.C. ¶ 61,242 at P 16-18 (2003).

would drive a generator. Because the AquaBuOYs contained the equipment for the generation of electric power, the FERC concluded that these structures were powerhouses for purposes of FPA section 23(b)(1).<sup>29</sup>

Second, AquaEnergy argued that, even if the Makah Bay Project was a hydroelectric project, no license was required because the project is not located on a navigable waterway within the meaning of the FPA.<sup>30</sup> AquaEnergy asserted that the FPA refers primarily to inland streams and was not intended to extend to ocean waters. Further, AquaEnergy cited the legislative history of the FPA as expressing the need to immediately develop the nation's inland hydroelectric power resources. AquaEnergy extrapolated from these passages that Congress did not intend to include the ocean among the navigable waters of the United States or to extend the FERC's jurisdiction to offshore hydroelectric facilities.<sup>31</sup>

Responding to this argument, the FERC indicated that the FPA does not explicitly limit the FERC's jurisdiction to inland streams, nor does the relevant legislative history reveal any such intent.<sup>32</sup> While the legislative history indicates that Congress was focused primarily on projects located on inland water,<sup>33</sup> it did not incorporate that limit in the statute itself. Rather, as noted above, section 3(8) of the FPA defines "navigable waters" to include "other bodies of water over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several [s]tates...."<sup>34</sup> The FERC stated that it is beyond dispute that the United States Government has paramount rights over certain ocean waters,<sup>35</sup> and that since 1988, the United States Government had asserted jurisdiction up to twelve nautical miles offshore.<sup>36</sup> Therefore, the FERC found that the proposed project would be located in navigable waters, as defined in the FPA.

The third argument from AquaEnergy focused on the project's onshore facilities.<sup>37</sup> AquaEnergy argued that the purpose of the onshore facilities is to condition power generated offshore in the AquaBuOYs for distribution to the grid. Because section 23(b) of the FPA does not explicitly state that licenses are required for distribution or transmission facilities, AquaEnergy contended that the onshore facilities would not trigger the FERC's jurisdiction.<sup>38</sup>

The FERC stated, however, that FPA section 23(b) references "any dam, water [conduit], reservoir, power house, or *other works incidental thereto*."<sup>39</sup> The FERC further pointed out that FPA section 3(11) defines as part of a project not only transmission lines but "all miscellaneous structures used and useful in

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29. *Id.*

30. *AquaEnergy 2002 Rehearing Request* at 22-25.

31. *Id.*

32. *AquaEnergy Group, LTD.*, 102 F.E.R.C. ¶ 61,242 at P 8-12 (2003).

33. At most, the FERC reasoned, the legislative history simply stands for the proposition that the Congress was cognizant of the need to rapidly develop hydroelectric power.

34. 16 U.S.C. § 796(8).

35. 102 F.E.R.C. ¶ 61,242 at P 12, n.6 *citing* U.S. v. Maine, 420 U.S. 520 (1975); U.S. v. California, 332 U.S. 19 (1947).

36. *Id.* at P 12.

37. *AquaEnergy 2002 Rehearing Request* at 26-27.

38. *Id.*

39. *AquaEnergy Group, LTD.*, 102 F.E.R.C. ¶ 61,242 at P 13 (2003).

connection with” a project. Having found the AquaBuOYs to be “powerhouses” for purposes of establishing jurisdiction, the FERC determined that all facilities leading from the AquaBuOYs to the point of interconnection with the interstate grid also were part of the project and, therefore, required licensing.<sup>40</sup>

Finally, as a policy matter, AquaEnergy argued that FERC should not assert jurisdiction.<sup>41</sup> AquaEnergy asserted that the FERC’s complex licensing process for traditional hydro projects was ill-suited to the Makah Bay Project, a small-scale, first of its kind project designed to attract investors and demonstrate the commercial viability of a new technology.<sup>42</sup>

The FERC responded that it does not have the discretion to decline to assert jurisdiction for policy reasons.<sup>43</sup> Nonetheless, as discussed further below, the FERC has since pursued a series of regulatory reforms with the goal of facilitating the development of hydrokinetic technologies.

#### IV. THE NEED FOR REGULATORY INNOVATION

##### A. *Traditional Procedural Options*

The developer of a hydropower project traditionally has had the option of pursuing three types of issuances from the FERC: a preliminary permit, a project license, and an exemption from licensing.

First, section 4(f) of the FPA authorizes the FERC to issue preliminary permits for up to three years.<sup>44</sup> The purpose of a preliminary permit is to preserve the right of the permit holder to have the first priority in applying for a license for a project that is being studied.<sup>45</sup> Importantly, a preliminary permit does not grant land-disturbing or other property rights,<sup>46</sup> or otherwise authorize any construction or operation of a facility. Thus, obtaining a preliminary permit does not eliminate the need for either a license, or an exemption from licensing, but rather is a possible precursor to a developer obtaining one of those types of issuances. The permit holder must submit periodic reports to the FERC on the status of its studies.<sup>47</sup>

Second, the developer could apply for a license to construct and operate a project. It should be noted that the FERC’s rules do not require a developer to obtain a preliminary permit in order to apply for a license, though the failure to

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40. *Id.*

41. *AquaEnergy 2002 Rehearing Request* at 27-32.

42. *Id.*

43. *AquaEnergy Group, LTD.*, 102 F.E.R.C. ¶ 61,242 at P 19, n.18 (2003).

44. 16 U.S.C. § 797(f) (2007).

45. *Preliminary Permits for Wave, Current, and Instream New Technology Projects*, Notice of Inquiry and Interim Statement of Policy, F.E.R.C. STATS. & REGS. § 35,555, 72 Fed. Reg. 9281 (2007).

46. *Id.* at n. 11 (“Thus, a permit holder can only enter lands it does not own with the permission of the landholder, and is required to obtain whatever environmental permits federal, state, and local authorities may require before conducting any studies.”)

47. *Id.* at n. 23 (“As a standard condition in all preliminary permits, the [FERC] requires the permit holder to file progress reports every six months.”)

do so could result in loss of a site to another entity that does obtain a permit.<sup>48</sup> The preliminary permit process is a separate and distinct possible precursor to the licensing processes.

A FERC-issued license has many important characteristics. For example, the FERC's policy has been to issue original licenses for a thirty to fifty year period.<sup>49</sup> Standard Article 5 requires the licensee to acquire and retain all interests in non-federal lands and other property necessary to carry out project purposes.<sup>50</sup> The licensee can obtain these property interests by contract or, if necessary, by means of federal eminent domain. Section 21 of the FPA conveys to the licensee the right of eminent domain for the project site and for any other "works appurtenant or accessory thereto."<sup>51</sup> Thus, the right to eminent domain covers the project site and the land for a transmission line to interconnect with the grid.<sup>52</sup>

The FERC offers three licensing processes: the Integrated Licensing Process (ILP), the Traditional Licensing Process (TLP), and the Alternative Licensing Process (ALP). The ILP is now the FERC's default process: the FERC must approve the use of either the TLP or the ALP.<sup>53</sup> The FERC created the ILP in 2003 as a more efficient and timely licensing process that would: (1) increase assistance by FERC staff to the potential applicant and stakeholders during the development of a license application; (2) increase public participation in pre-filing consultation; (3) encourage informal resolution of disagreements involving studies needed to analyze a proposed project; and (4) allow for better coordination between the FERC's processes, including the preparation of documents required by the National Environmental Policy Act (NEPA),<sup>54</sup> and the processes of federal agencies and Indian Tribes that have authority to require conditions on FERC-issued licenses.<sup>55</sup>

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48. In addition, the FERC's staff has stated that it will not expend resources on processing pre-filing materials in pursuit of a license until a prospective applicant obtains a preliminary permit for the site in question. See, e.g., F.E.R.C. Docket No. P-12965, Letter from Ann F. Miles, Director, Division of Hydropower Licensing to Brent L. Smith, Symbiotics, LLC, Feb. 6, 2008.

49. 16 U.S.C. § 803(i) (2007) (section 6 of the FPA provides that a license cannot exceed fifty years).

50. Standard Article 5 appears in what are called "L-Forms," which are published at 54 F.P.C. 1792-1928 (1975) and are incorporated into project licenses by an ordering paragraph. 18 C.F.R. § 2.9 (2005).

51. 16 U.S.C. § 814 (2000).

52. 102 F.E.R.C. ¶ 61,242 at P 13.

53. For purposes of this article, the most relevant process is the ILP. The Commission described the TLP and the ALP in detail in the Notice of Proposed Rulemaking that preceded creation of the ILP. See *Hydroelectric Licensing under the Federal Power Act*, Notice of Proposed Rulemaking, 68 Fed. Reg. 13988 (March 31, 2003); F.E.R.C. STATS. AND REGS. ¶ 32,568 (2003). Information on all three licensing processes is also available at: <http://www.ferc.gov/industries/hydropower/gen-info/licensing/licen-pro.asp> (last visited Sept. 2, 2008).

54. 42 U.S.C. §§ 4321-4370 (2000). Pursuant to NEPA, the Commission generally completes an Environmental Impact Statement or an Environmental Assessment in connection with hydroelectric projects.

55. *Hydroelectric Licensing under the Federal Power Act* (Order No. 2002), 104 F.E.R.C. ¶ 61,109, at P 1-2 (2003). Under section 4(e) of the FPA, 16 U.S.C. § 797e (2000), certain federal land management agencies have the authority to impose conditions as part of FERC licenses, to protect the lands under their control. FPA section 18, 16 U.S.C. § 811 (2000), further authorizes FWS and NMFS to require fishways. Those Indian tribes that have been certified by the United States Environmental Protection Agency to act as water quality certification agencies under the CWA may impose conditions in water quality certifications

An applicant for a license must also obtain whatever authorizations are needed from other regulatory entities pursuant to statutes such as the CWA, the CZMA, and the Endangered Species Act (ESA).<sup>56</sup> The CWA requires a water quality certification from the appropriate state. The CZMA requires a consistency concurrence from the state, confirming that the proposed activity complies with the policies of the state's coastal zone management program. The ESA provides for a ninety day consultation period, followed by a forty-five day period in which the relevant Secretary (of Commerce and/or the Interior) drafts and issues a document that is generally referred to as a biological opinion. Traditionally, the FERC has not issued a license if these other authorizations remain outstanding.<sup>57</sup>

Third, the FERC is authorized to issue two types of exemptions from the need for a license for a hydropower project. One type of exemption covers small hydropower projects, which are five megawatts or less, that will be built at an existing dam or utilize a natural water feature for head, or an existing project that meets those tests, proposes to increase capacity, and will still have a capacity of five megawatts or less.<sup>58</sup> The other category is a conduit exemption, which applies where the conduit has been constructed primarily for purposes other than power production and is located entirely on non-federal lands. The conduit exemption further applies to generating capacities fifteen megawatts or less for a non-municipal project and forty megawatts or less for a municipal project.<sup>59</sup>

It is noteworthy that exempted projects are not granted the right of eminent domain, which, as noted above, does attach to the FERC's licenses for hydropower projects. Moreover, projects that qualify for these exemptions are not exempt from all regulation. In fact, the FERC applies a number of standard conditions to the operation of exempted projects, and the FERC will impose additional conditions if needed in particular cases. Nonetheless, the process of obtaining an exemption is generally simpler than the process for obtaining a license, and these exemptions continue in perpetuity.

### B. Regulatory Process Reforms

In recent years, the FERC has determined that as compared to these traditional procedural options, innovative regulatory approaches may be better suited to hydrokinetic energy developers seeking to demonstrate the commercial feasibility of their systems or gain information about the potential environmental impact of those systems.

Several considerations have led the FERC to pursue innovative regulatory approaches in this area. For example, a preliminary permit does not allow any construction or on-site installations. For that reason, although establishing

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56. 16 U.S.C. § 1536(a)(2) (2000).

57. *In Alabama Electric Cooperative, Inc.*, 24 F.E.R.C. ¶ 61,141 (1983), the FERC issued a license prior to the water quality certification. There are also instances in which the FERC issued a license prior to the completion of the ESA consultation; however, the FERC did not rely on any of these cases to support its policy to issue conditioned licenses, discussed in Section IV.B.4.

58. HANDBOOK FOR HYDROELECTRIC PROJECT LICENSING AND 5 MW EXEMPTIONS FROM LICENSING, F.E.R.C. slide 6-2 (2004), [http://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing\\_handbook.pdf](http://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing_handbook.pdf) (last visited September 23, 2008).

59. *Id.*

priority in applying for a license may well justify pursuing a preliminary permit, that issuance is not, in and of itself, a promising option for a developer that needs to operate a small-scale facility at the proposed project site to assess commercial feasibility and gather data about operational impacts on the environment.<sup>60</sup> Similarly, at the demonstration stage of a technology, pursuing a license under the traditional processes described above may not be an attractive option. A developer may find that it lacks the information needed to prepare an application for a license, but that it cannot gather that information without making on-site installations for which a license is required. In addition, when the commercial feasibility of a technology is still unproven, it may be difficult for a developer to raise the capital necessary to complete the licensing process.

With respect to the third type of above-noted issuance, the FERC's exemptions are simply not available for most hydrokinetic projects. The physical characteristics and locations of hydrokinetic projects generally will not satisfy the criteria for exemption from licensing.<sup>61</sup> For example, most hydrokinetic projects will not be built at an existing dam, use a natural water feature for head, or involve a conduit constructed primarily for purposes other than power production.

The FERC is responding to the need for innovative regulatory processes to accommodate the nascent status of the hydrokinetic energy industry by introducing greater flexibility into its rules and policies. The adjustments the FERC has made to its regulatory processes have evolved over time and are likely to continue to evolve as the FERC identifies further challenges.

### 1. Test Projects

The FERC's first attempt to reduce the regulatory barriers to hydrokinetic energy development involved a finding that under limited circumstances, experimental hydroelectric facilities may be tested without the need for a FERC-issued license.

In 2002, the FERC granted Verdant Power, LLC (Verdant) a preliminary permit to study a proposed hydrokinetic project consisting of 494 twenty-one kilowatt turbine generator units (a total of ten MW) to be located below the water surface on the East River, off Roosevelt Island, in Queens County, New York, as well as power control and interconnection facilities to be located on the island (Roosevelt Island Project).<sup>62</sup> In 2005, Verdant filed a petition requesting relief from the FERC's licensing requirements to test six of the underwater turbines for an eighteen month period.<sup>63</sup> Verdant explained that the purpose of the test was to determine potential impacts of its technology on fish, navigation, and other non-developmental resources,<sup>64</sup> as well as to learn more about the

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60. LICENSING HYDROKINETIC PILOT PROJECTS, WHITE PAPER, F.E.R.C., [http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/pdf/white\\_paper.pdf](http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/pdf/white_paper.pdf) (last visited September 23, 2008)

61. *Id.*

62. 100 F.E.R.C. ¶ 62,162 (2002).

63. 111 F.E.R.C. ¶ 61,024 at P 3 (2005).

64. The FPA requires the FERC's licensing decisions to give equal consideration to developmental purposes (*e.g.*, power generation, water supply, flood control, irrigation, and navigation) and non-developmental purposes (*e.g.*, fish and wildlife, recreation, and other aspects of environmental quality).

performance of the technology. According to Verdant, the information to be gained from the test was necessary to complete operational and environmental studies required for preparing a license application.

Responding to Verdant's petition, the FERC determined that licensing was not required for in-water testing of hydropower facilities if: (1) the technology is experimental; (2) the proposed facilities were to be utilized for a short period for the purpose of conducting studies necessary to prepare a license application; and (3) power generated from the test project would not be transmitted into, or displace power from, the national energy grid, and thus the project would not affect interstate commerce. The FERC further stated that the Roosevelt Island Project met only the first two parts of this test, finding that the six turbines represented an experimental, tidal-power technology, and that the test period was sufficiently short.<sup>65</sup>

Verdant filed for clarification. Focusing on the third part of the FERC's test, Verdant argued that the testing of its new technology required interconnection with the grid. As Verdant explained, the induction generators it proposed to test needed to be connected to the grid in order to generate electricity by being excited by reactive power.<sup>66</sup> Further, the power generated by the test project would, inevitably, displace power from the grid. To satisfy the FERC's third criteria, Verdant proposed to mitigate the test project's impact on the grid by providing the power to an end user at no cost and to compensate the local utilities for the displaced power.

In its subsequent order, the FERC found that under Verdant's proposal as modified in its clarification request, Verdant's testing activities would effectively have no net impact on the grid or on interstate commerce. Therefore, the FERC held that Verdant could test the Roosevelt Island Project without a license.<sup>67</sup>

## 2. Enhanced Scrutiny of Preliminary Permit Applications

The FERC's next action to facilitate the development of this emerging technology was to modify its policy with respect to preliminary permits for hydrokinetic energy projects.

Because a preliminary permit grants no land-disturbing or other property rights, the FERC has historically granted such permits without requiring an extensive showing by the applicant.<sup>68</sup> As noted above, this same characteristic means that a preliminary permit is not, in and of itself, a promising option for a hydrokinetic energy developer seeking to assess the commercial feasibility of its technologies. Nonetheless, preliminary permits do give the holder priority in filing a license application for a possible project site. For this reason, many in the hydrokinetic energy industry expressed concern that the ease of obtaining a preliminary permit could lead to "site banking," in which entities that were not prepared to follow through with development of these new technologies would stockpile preliminary permits in order to obtain licensing priority for desirable

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65. 111 F.E.R.C. ¶ 61,024 (2005) at P 9.

66. *Verdant Power, LLC*, 112 F.E.R.C. ¶ 61,143 at P 6 (2005).

67. *Id.* at P 7.

68. See generally *Three Mile Falls Hydro, LLC*, 102 F.E.R.C. ¶ 61,301 at P 6 (2003); *Town of Summersville W. Va. v. FERC*, 780 F.2d 1034 (D.C. Cir. 1986) (discussing nature of preliminary permit).

project sites.<sup>69</sup> To address this concern, these developers suggested that the FERC adopt a stricter policy with respect to issuance of preliminary permits for new technologies.<sup>70</sup>

In response to this concern, the FERC issued a joint Notice of Inquiry (NOI) and Interim Statement of Policy.<sup>71</sup> In the NOI, the FERC sought comment on the standard of review that it should apply to applications for preliminary permits for hydrokinetic projects and how it should regulate the permit holder during the term of the permit. The FERC posed three possible alternatives: maintain the traditional lenient standard, apply a “strict scrutiny” standard, or not issue preliminary permits for new technology hydrokinetic projects.<sup>72</sup>

Pending the outcome of the NOI, the FERC issued an Interim Statement of Policy that adopted the “strict scrutiny” standard for hydrokinetic projects.<sup>73</sup> Under this approach, when deciding whether to grant a preliminary permit application, the FERC considers whether a limit on the boundaries of a site is necessary to prevent site banking and promote competition. Further, to ensure that the permit holder is actively pursuing its project, the FERC will carefully scrutinize the progress reports that permit holders must file. Where sufficient progress is not shown, the FERC will consider canceling the permit. In addition, the FERC added a condition that requires the permit holder to provide a schedule with target dates for all activities to be carried out under the permit, as well as beginning the license application process within one year of permit issuance.<sup>74</sup>

### 3. Expedited Pilot Project Licensing Process

As discussed above, pursuing a license under the FERC’s existing processes may not be an attractive option for a developer at the demonstration stage of a technology. In addition, the test project approach reflected in *Verdant* does not provide an economic return for the developers of hydrokinetic technologies. That test project approach requires the developer to incur the cost responsibility of both the project and the displaced power, yet does not allow the developer to offset those expenditures with revenue from the sale of project power.<sup>75</sup>

Recognizing these issues, the FERC’s staff issued a white paper in April 2008 to provide guidance on how the ILP could be applied in an expedited manner for proposals that are appropriately characterized as hydrokinetic pilot

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69. OCEAN RENEWABLE ENERGY COALITION, DRAFT OREC POLICY PAPER ON PRELIMINARY PERMITS, SITE BANKING AND WIND AND TIDAL ENERGY DEVELOPMENT, <http://www.oceanrenewable.com/linksreports> (last visited Sept. 28, 2008).

70. Hydroelectric Infrastructure Technical Conference, Docket No. AD06-13-000 (Dec. 6, 2006) (Comments of Gil Sperling, Verdant Power, LLC, transcript at 106-07).

71. Notice of Inquiry and Interim Statement of Policy, *Preliminary Permits for Wave, Current, and Instream New Technology Projects*, 72 Fed. Reg. 9,281 (2007).

72. *Id.* (To date, the FERC has taken no action on the NOI.)

73. *Id.* at 9,283.

74. *Id.*

75. *See generally* Section IV.B.1.

projects.<sup>76</sup> To be eligible for that expedited licensing processing, as described in the Staff Pilot Project White Paper, a pilot project must meet these criteria:

- Small – “[S]taff expects that pilot projects will be 5 MW [or less] and often will be substantially smaller. In addition to generating capacity...the number of generating units and the project footprint [will be relevant to] determining whether [a project] qualifies as a pilot project;”<sup>77</sup>
- Short term – “[S]taff expects that pilot projects will have terms of five years,”<sup>78</sup> though they will be “evaluated on a case-by-case basis;”<sup>79</sup>
- Avoiding sensitive areas – “The applicant must describe potential areas of sensitivity in the proposed project area and indicate the reasons for the sensitivity;”<sup>80</sup>
- “[R]emovable and able to be shut down on short notice”<sup>81</sup> in the event that an unforeseen risk to public safety or adverse environmental impacts occur; and
- “[R]emoved, with the site restored, before the end of the license term,”<sup>82</sup> unless the licensee seeks and the FERC grants a new license.<sup>83</sup>

The FERC’s staff described these criteria as providing safeguards to ensure that qualifying pilot projects would present minimal risk to public safety and the environment, while the rewards in terms of testing technologies and understanding such projects’ interactions with the environment could be substantial.<sup>84</sup> For projects satisfying these criteria, the FERC’s staff stated that the goal would be to provide expedited procedures through which the FERC could render a decision in as little as six months after the filing of a final application.

The starting point for the expedited pilot project license process remains the existing requirements of the ILP.<sup>85</sup> Under the FERC’s ILP regulations, applicants are required to consult with diverse stakeholders in preparing a draft application and a subsequent final application.<sup>86</sup> The FERC’s staff stated that such an application should describe the existing environment; details of the project; potential effects of the project; proposed plans for monitoring the

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76. LICENSING HYDROKINETIC PILOT PROJECTS, F.E.R.C., STAFF WHITE PAPER, 12, 17 <http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/pdf./white-paper.pdf>. (last visited Sept. 2, 2008) [hereinafter *Licensing Hydrokinetic Pilot Projects*].

77. *Id.* at 12.

78. *Id.*

79. *Id.*

80. *Id.*

81. *Id.*

82. *Id.*

83. *Id.* at 6-7, 12-13.

84. *Id.* at 6-7.

85. Integrated License Application Process, 18 C.F.R. Pt 5 (2007).

86. *Licensing Hydrokinetic Pilot Projects*, supra note 76, at 5-7, 14-21 (Appendix A to the Staff Pilot Project White Paper presents a flow chart that illustrates the hydrokinetic pilot project licensing procedures, as well as a detailed description of steps involved with each stage of those procedures.)

project, safeguarding the public and environmental resources, and assuring financing to remove the project and restore the site, if necessary; and the consultation record. The FERC's staff also stated that it intends to analyze potential effects on a wide range of fish, wildlife, and environmental issues, as it does with any license application for a hydropower project.<sup>87</sup>

Importantly, however, the FERC's staff stated that with an emphasis on the above-noted safeguards and post-license monitoring, it hoped that the FERC and other relevant entities could exercise their authorities in a manner that would enable the timely authorization of meritorious pilot projects.<sup>88</sup> The pilot project licensing process, thus, could provide greater flexibility than the FERC's existing licensing processes to accommodate the nascent status of the hydrokinetic industry.<sup>89</sup> In addition, unlike the test project approach reflected in *Verdant*, a pilot project license would allow a hydrokinetic project developer to receive revenues from the sale of the electricity generated by the pilot project.

#### 4. Conditioned Licenses

As noted above, the FERC's leading role under the FPA in facilitating hydrokinetic energy development does not preclude input from other federal and state agencies. To provide greater clarity as to relationship among such agencies and to establish a regulatory climate that better facilitates the development of hydrokinetic technologies, the FERC, in November 2007, issued a policy statement announcing its willingness to issue a license to a hydrokinetic developer in cases where the FERC has completed processing an application but other authorizations remain outstanding.<sup>90</sup> In such cases, the license would include conditions precluding the developer-licensee from commencing construction until it has obtained all necessary authorizations. For this reason, the FERC referred to this type of license as a "conditioned license."<sup>91</sup>

The FERC identified several considerations that support this action. First, issuing a conditioned license would have no environmental impacts because no construction can begin until all necessary authorizations are received.<sup>92</sup> Second, states and other federal agencies would fully retain their authority to take action under relevant federal law.<sup>93</sup> Third, the developer-licensee can move forward in a timely manner with non-construction activities such as securing financing for the project.<sup>94</sup> Finally, the FERC noted that it routinely issues certificates for natural gas pipelines with a condition that the certificate holder cannot commence construction before obtaining all necessary approvals.<sup>95</sup>

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87. *Id.* at 7-8.

88. *Id.* at 5.

89. *Id.* at 1-2.

90. Policy Statement on Conditioned Licenses for Hydrokinetic Projects, 121 F.E.R.C. ¶ 61,221 at P 1 (2007).

91. *Id.* at P 8.

92. *Id.* at P 9.

93. *Id.* at P 10.

94. *Id.* at P 11.

95. *Id.* at P 7 *citing* Crown Landing, LLC, 117 F.E.R.C. ¶ 61,209 at P 21, n.19, and n.36 (2006); Georgia Strait Crossing Pipeline, LP, 108 F.E.R.C. ¶ 61,053 at P13-16 (2004); Millennium Pipeline Company, LP, 100 F.E.R.C. ¶ 61,277 at P 225-231 (2002).

The FERC applied the new conditioned license policy shortly thereafter to an application related to the Makah Bay Project over which the FERC asserted jurisdiction in 2002.<sup>96</sup> Since the FERC's assertion of jurisdiction, the project's sponsor had changed its name from AquaEnergy to Finavera Renewables Ocean Energy, Ltd (Finavera) and filed an application for an original license.<sup>97</sup> In its application, Finavera stated that its project would be located about 1.9 nautical miles offshore of Waatch Point.<sup>98</sup> At the time the FERC completed its review of Finavera's application, the CZMA consistency concurrence, a CWA water quality certification, and the ESA consultation were pending before the relevant agencies. In light of those outstanding authorizations, the FERC issued a license to Finavera, but made approval of on-site construction and installation contingent on Finavera receiving all authorizations required under federal law.<sup>99</sup>

As the agency responsible for issuing the CZMA consistency concurrence and CWA certification for the Makah Bay Project, the Washington State Department of Ecology (Washington Ecology) filed a request for rehearing of the FERC's order granting a conditioned license to Finavera. Washington Ecology argued that the CZMA and the CWA expressly prohibit the FERC from issuing a license prior to the issuance of a CZMA consistency concurrence or a CWA certification.<sup>100</sup> Washington Ecology also argued that case law supports its position that the FERC lacks authority to issue a license prior to the CZMA consistency concurrence<sup>101</sup> or a CWA certification.<sup>102</sup> Finally, Washington Ecology argued that the practice of issuing natural gas pipeline certificates in advance of compliance with the CZMA and CWA is contrary to the plain language of those statutes and, therefore, provides the FERC no legal basis for its conditioned license policy for hydrokinetic projects.

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96. *Finavera Renewable Ocean Energy, Ltd.*, 121 F.E.R.C. ¶ 61,288 (2007).

97. *Id.* at 1 (The license issued to Finavera for the Makah Bay Project was not processed under the expedited process for hydrokinetic pilot projects.)

98. *Id.* (As noted above, the applicant stated in its original 2002 filing with the FERC that the project would be located approximately 1.9 nautical miles offshore of Waatch Point, but later that year informed the FERC that the project would instead be located 3.17 nautical miles offshore of Waatch Point. Thus, the license application returned the project to the originally envisioned offshore distance, placing the project inside the three-mile boundary of state coastal waters.)

99. *Id.*

100. FERC Docket No. P-12751, Request for Rehearing of State of Washington Department of Ecology, Jan. 17, 2008, at 3-11 [hereinafter *Washington Ecology Request for Rehearing*]. With respect to the CZMA, Washington Ecology cited provisions that provide in pertinent part: "[n]o license or permit shall be granted" until the state has concurred with the applicant's consistency certification for a proposed activity "affecting any land or water use or natural resource of the coastal zone of [a] state." 16 U.S.C. § 1456(c)(3)(A) (2000). With respect to the CWA, Washington Ecology pointed to language in section 401(a)(1) providing that an applicant for a federal license to conduct an activity that "may result in any discharge into the navigable waters" must obtain water quality certification and, further, that "[n]o license or permit shall be granted until the certification required by this section has been obtained or has been waived" 33 U.S.C. § 1341(a)(1) (2000).

101. *Washington Ecology Request for Rehearing* at 10, citing *Mountain Rhythm Resources v. FERC*, 302 F.3d 958 (9th Cir. 2002).

102. *Washington Ecology Request for Rehearing* at 6-9 citing *Takoma v. FERC*, 460 F.3d 53 (D.C. Cir. 2006); *Fredericksburg v. FERC*, 876 F.2d 1109 (4th Cir. 1997); *North Carolina v. FERC*, 112 F.2d 1175 (D.C. Cir. 1989).

The FERC rejected each of Washington Ecology's arguments,<sup>103</sup> making four major points. First, prior to the order on rehearing, Washington Ecology had filed its CZMA consistency concurrence, along with a CWA water quality certification that contains several conditions. The CZMA consistency concurrence states that the project will be consistent if Washington Ecology's water quality conditions are made part of the license. The FERC found the conditions to be reasonable and amended the license. Therefore, the FERC determined that Washington Ecology's rehearing request was moot.<sup>104</sup> Nonetheless, the FERC took the opportunity to directly address the other issues that Washington Ecology had raised on rehearing.

Second, the FERC observed that there is no statutory bar to issuing conditioned licenses. Because a conditioned license does not authorize on-site construction or installation, the developer-licensee cannot conduct any "activity" that would violate the statutes.<sup>105</sup>

Third, the FERC stated that the legal precedent cited by Washington Ecology is inapposite for the same reason that no statutory prohibition exists: no prohibited activities are authorized by a conditioned license. Unlike the situation presented by Finavera's conditioned license, each of the cases cited by Washington Ecology involved the issuance of a license that would have authorized construction activities prior to obtaining a CZMA consistency concurrence or a CWA certificate.<sup>106</sup>

Fourth, the FERC drew upon judicial holdings in *Grapevine v. Department of Transportation*<sup>107</sup> and *Public Utilities Commission of California v. FERC*<sup>108</sup> to support its position. In *Grapevine*, the court upheld the Federal Aviation Administration's (FAA) approval of a runway, conditioned upon the applicant's compliance with the National Historic Preservation Act (NHPA). In rejecting Washington Ecology's arguments, the FERC stated that the NHPA is analogous to the CZMA and CWA. The relevant language of the NHPA provides that the "head of any Federal agency... shall, prior to the [issuance] of the expenditure of any Federal funds on the undertaking... take into account the effect of the undertaking"<sup>109</sup> on any historical property. The FERC noted that this language expressly prohibits federal action prior to compliance with the NHPA, and that this fact that did not prevent the court from upholding the FAA's conditioned approval of a runway.<sup>110</sup> Similarly, the language to which Washington Ecology pointed in the CZMA and CWA would not preclude the FERC from issuing a conditioned license.<sup>111</sup>

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103. *Finavera Renewables Ocean Energy, Ltd.*, 122 F.E.R.C. ¶ 61,248 (2008).

104. *Id.* P 9.

105. *Id.* PP 11-12.

106. *Id.* n.9, n.11.

107. 17 F.3d 1502 (D.C. Cir. 1994) [hereinafter *Grapevine*].

108. 900 F.2d 269 (D.C. Cir.1990) [hereinafter *California*].

109. *Grapevine*, 17 F.3d at 1508 (D.C. Cir. 1994) (emphasis added).

110. *Finavera Renewables Ocean Energy, Ltd.*, 122 F.E.R.C. ¶ 61,248 at P 14 (2008).

111. *Id.* at P 14, 18 (2008); The FERC also drew an analogy based on *Idaho v. Interstate Commerce Commission*, 35 F.3d 585 (D.C. Cir. 1994) [hereinafter *Idaho*]. 122 F.E.R.C. ¶ 61,248 at P 17-18. In *Idaho*, the Interstate Commerce Commission (ICC) authorized a railroad to abandon and salvage a stretch of track. However, because it was unclear when salvage activities would begin, the ICC imposed a number of pre-

In the orders underlying *California*,<sup>112</sup> the FERC issued a certificate approving the non-environmental aspects of a pipeline project. The certificate was conditioned upon the completion of a review of all environmental aspects of the project. The court upheld the FERC's procedural approach. In doing so, the court noted specifically that the "FERC's "non-environmental approval was expressly not to be effective until the environmental hearing was completed"<sup>113</sup> and that an agency can make "even a final decision so long as it assessed the environmental data before the decision's effective date."<sup>114</sup> The FERC found that this precedent also supported the conditioned license policy for hydrokinetic projects.<sup>115</sup>

## V. EMERGING REGULATORY ISSUES

The reforms discussed above are noteworthy steps by the FERC to recognize, in the regulatory process, the distinctive obstacles to the development and implementation of hydrokinetic technologies. The FERC's efforts to date, however, have not eliminated all such obstacles. This section considers several emerging regulatory issues that also may present impediments to achieving the full potential of hydrokinetic technologies.

### A. *Jurisdiction over Projects on the Outer Continental Shelf*

Perhaps the most important emerging regulatory issue is the appropriate relationship among federal agencies that claim jurisdiction over hydrokinetic projects on the Outer Continental Shelf (OCS). The OCS is defined to include all submerged lands, including the seafloor and subsoil, that lie seaward of state coastal waters (generally, the first three nautical miles offshore) up to 200 miles offshore.<sup>116</sup> The resolution of this issue could dramatically affect the regulatory framework in which hydrokinetic technologies will develop.

As discussed in Section III of this article, the FERC asserted jurisdiction over an offshore hydrokinetic project for the first time in its 2002 *AquaEnergy* order. In short, the FERC explained that section 3(8) of the FPA<sup>117</sup> defines "navigable waters" to include "other bodies of water over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several states."<sup>118</sup> Because the United States has asserted jurisdiction up to twelve nautical miles offshore, the FERC found that the project was located on a navigable waterway within the meaning of the FPA and, therefore,

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conditions to salvage operations. One condition was that a biological assessment in compliance with the ESA needed to be completed under the supervision of the ICC staff. While finding the ICC had erred by not preparing an ESA biological assessment within the 180-day time limit imposed by the ESA regulations, the court nonetheless stated that it is "important to note that the [ICC] has still not given final approval to salvage operations; it has merely set forth the conditions under which [the railroad] may undertake them if it chooses to do so." 35 F.3d at 598.

112. Order No. 499, 44 F.E.R.C. ¶ 61,051, *order denying reh'g*, 45 F.E.R.C. ¶ 61,234 (1988).

113. *California*, 900 F.2d at 282.

114. *Id.*

115. 122 F.E.R.C. ¶ 61,248 at P 15-16, 18 (2008).

116. *See generally* Section III.

117. 16 U.S.C. § 797(8) (2007).

118. *Id.*

required a FERC license pursuant to section 23(b)(1) of the FPA. Thus, the FERC's reasoning for asserting jurisdiction rests on the plain language of the FPA.

Since the enactment of the Energy Policy Act of 2005 (EPA 2005), however, the MMS has also asserted jurisdiction with respect to OCS hydrokinetic projects.<sup>119</sup> Section 388(a) of EPA 2005 amends the Outer Continental Shelf Lands Act (OCSLA)<sup>120</sup> to authorize the Secretary of the Interior to grant leases, easements, and rights-of-way on the OCS for oil and natural gas exploration, development, production, storage, or transportation, and for the production or support of production, transportation, or transmission of energy from sources other than oil and gas for activities "not otherwise authorized... [by] the Deepwater Port Act of 1974, the Ocean Thermal Conservation Act of 1980, or other applicable law."<sup>121</sup>

The MMS interprets EPA 2005 section 388 as providing it with authority to regulate or permit activities that occur on the OCS leases, easements, or rights-of-way granted by the Secretary of the Interior, if those activities are energy-related. Based on that interpretation, the MMS is developing an alternative energy program that is modeled on the existing oil and gas program under the OCSLA and that would cover OCS hydrokinetic projects and other OCS energy development. Toward that end, the MMS issued a proposed rule in July 2008.<sup>122</sup> The FERC's staff filed comments with the MMS in August 2008, expressing concern that the MMS's proposed rule purports to replace the FERC's hydropower program with respect to OCS hydrokinetic projects and, therefore, does not adequately account for the jurisdiction with respect to hydrokinetic projects that the Congress conferred on the FERC in the FPA.<sup>123</sup>

A number of legal considerations run counter to any interpretation of EPA 2005 section 388 that precludes a FERC role in regulating OCS hydrokinetic projects. First, at least with respect to energy from sources other than oil and gas, EPA 2005 section 388 gives the MMS authority to grant leases, easements, or rights-of-way for activities that are "not otherwise authorized by...other applicable law."<sup>124</sup> In addition, the provision includes an explicit savings clause: "Nothing in this subsection displaces, supersedes, limits, or modifies the jurisdiction, responsibility, or authority of any Federal or State agency under any other Federal law."<sup>125</sup> It is noteworthy that the Congress enacted these provisions three years after the FERC first asserted jurisdiction over an offshore hydrokinetic project and specifically found that its jurisdiction

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119. Indeed, the U.S. Department of the Interior, of which the MMS is part, has argued in FERC proceedings that the FERC lacks jurisdiction to issue preliminary permits for projects on the OCS. In rejecting that argument, the FERC focused on its jurisdiction under the FPA and the plain meaning of EPA 2005. *See generally Pacific Gas & Elec. Co.*, 125 F.E.R.C. ¶ 61,045 at PP 39-65 (2008).

120. 43 U.S.C. § 1337 (2006).

121. Energy Policy Act of 2005, Pub. L. No. 109-58, § 388, 119 Stat. 594 (2005) (internal citation omitted).

122. Notice of Proposed Rulemaking, *Alternative Energy and Alternate Uses on the Outer Continental Shelf*, 73 Fed. Reg. 39,376 (2008).

123. *FERC Staff Comments*, *supra* note 12.

124. Energy Policy Act of 2005, Pub. L. No. 109-58, § 388(a).

125. *Id.*

with respect to navigable waterways under the FPA extends coincident with the United States Government's assertion of jurisdiction up to twelve nautical miles offshore.<sup>126</sup> The silence in EAct 2005 as to the FERC's assertion of jurisdiction, coupled with the above-noted savings clause and the limitation of the MMS's authority to activities not otherwise authorized by other applicable law, strongly suggests that the Congress did not intend EAct 2005 section 388 to curtail the FERC's jurisdiction over offshore energy hydropower (including OCS hydrokinetic projects) pursuant to the FPA.

J. Mark Robinson, the director of the FERC's Office of Energy Projects, made a similar point at a June 2007 hearing before the United States Senate Committee on Energy and Natural Resources, stating:

the Federal Power Act always gave the [FERC] authority to site hydroelectric projects in navigable waters...or Commerce Clause waters, where they're connected to the grid. Under that definition, which has been there since 1920, these projects are hydroelectric projects – they produce electricity using hydropower – they fall under the Federal Power Act. There are exclusions that were specifically laid out in EAct 2005 on the authorities of MMS to site energy projects in the OCS which allowed the [FERC] to maintain that authority, which it's always had, for siting hydropower projects in the OCS or in waters 12 miles and in.<sup>127</sup>

Second, even if the FPA were considered to be ambiguous as to the definition of "navigable waters" and the FERC's assertion of its jurisdiction were based on interpretation of that ambiguous language, it is axiomatic that, where an administrative agency is tasked with interpreting an ambiguous statute that it administers, a court will defer to that agency's interpretation so long as it is reasonable.<sup>128</sup> As a general matter, courts are required to give great deference to interpretations by administrative agencies of the statutes they are required to administer.<sup>129</sup> The rule of deference applies even to an agency's interpretation of its own statutory authority or jurisdiction.<sup>130</sup>

Several policy considerations also warrant attention with respect to the appropriate relationship between the FERC's and the MMS's jurisdiction over OCS hydroelectric projects. For example, it is noteworthy that if it were determined that MMS has exclusive jurisdiction over the licensing of OCS hydrokinetic projects, then the right to eminent domain set forth in section 21 of the FPA in relation to the FERC's hydropower jurisdiction would not apply to those projects. In light of the importance of the transmission lines needed to interconnect to the grid, this distinction presents an additional policy consideration in favor of a statutory interpretation that recognizes a role for the FERC with respect to these hydrokinetic projects.

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126. 102 F.E.R.C. ¶ 61,242, at P 12.

127. "Alternate Energy-Related Uses on the Outer Continental Shelf," Hearing before the U.S. Senate Committee on Energy and Natural Resources, June 7, 2007, at 27 [hereinafter *Alternate Energy Hearing*].

128. *Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 843-45 (1984).

129. *Investment Co. Inst. v. Camp*, 401 U.S. 617, 626-27 (1971).

130. *United States v. Mead Corp.*, 533 U.S. 218, 229 (2001) ("Congress would expect the agency to be able to speak with the force of law when it addresses ambiguity in the statute or fills a space in the enacted law"); *see also* *Commodity Futures Trading Comm'n v. Schor*, 478 U.S. 833, 844-845, (1986); *National Labor Relations Bd. v. City Disposal Systems, Inc.*, 465 U.S. 822, 830, n. 7 (1984) ("We have never . . . held that such an exception [for issues of statutory jurisdiction] exists to the normal standard of review . . . indeed, we have not hesitated to defer").

In addition, some developers have expressed concern about regulatory uncertainty that may result from the FERC's and the MMS's potentially overlapping assertions of jurisdiction in this area. Testifying before the United States Senate Committee on Energy and Natural Resources in the summer of 2007, Finavera Chief Executive Officer Jason Bak stated:

We're very concerned about the negative effects of the dispute between FERC and MMS.... Our industry simply will not develop projects on the OCS until the dispute is resolved. Even then, if the resolution to the dispute leads to a duplicate of burdensome and inefficient Federal decision making process, we will not use the OCS for our projects. Projects there will simply be too difficult to finance with that risk. We will be compelled to stay in State waters, which hold a fantastic promise for wave energy,<sup>131</sup> but will not tap potentially valuable renewable energy resources in Federal waters.

Mr. Bak further testified that "one of the worst cases" he envisioned would be "if Congress were to do anything to cast uncertainty on FERC's licensing authority," because Finavera and other companies were already actively pursuing projects pursuant to the FPA process.<sup>132</sup> With this concern in mind, Mr. Bak urged the Congress to reinforce the FERC's authority regarding OCS hydrokinetic projects.<sup>133</sup> Mr. Bak stated that this request did not require weakening the MMS's authority or its ability to carry out its mission, including under EPAct 2005 section 388.<sup>134</sup> Rather, he stated that "MMS is the landlord and has clear power to set lease terms,"<sup>135</sup> and that "the Interior Department has authority to set conditions on Federal hydropower licenses."<sup>136</sup>

These legal and policy considerations together suggest that a cooperative relationship, which respects the jurisdiction and expertise of both the FERC and the MMS, is likely to most effectively facilitate appropriate hydrokinetic energy development. The FERC's staff detailed how such a relationship could operate in its comments on MMS's proposed rule. For example, the FERC's staff stated that "MMS has a critical role to play in all developments proposed on the OCS, that of a land management agency with specific authority under FPA section 4(e) to issue mandatory conditions for any license that the FERC issues for a hydropower project located on the OCS."<sup>137</sup> The FERC's staff further explained that this role for the MMS in the licensing process would be similar to that of the United States Forest Service for hydropower projects in national forests and the Bureau of Land Management (BLM) for hydropower projects on federal lands it administers.<sup>138</sup>

The FERC's staff also identified other opportunities for the FERC and the MMS to coordinate in the public interest, such as by executing a Memorandum

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131. *Alternate Energy Hearing*, *supra* note 127, at 40 (Mr. Bak further stated that although Finavera had determined that its "optimal site ... did straddle the 3-mile-and-beyond limit," the company chose a site within state waters because of a lack of regulatory clarity.)

132. *Id.* at 29.

133. *Id.* at 30.

134. *Id.* at 31.

135. *Id.* at 29.

136. *Id.*

137. *FERC Staff Comments*, *supra* note 12, at 6 *citing* *Escondido Mutual Water Co. v. LaJolla Band of Mission Indians*, 466 U.S. 765 (1984).

138. *Id.* at 7.

of Understanding.<sup>139</sup> Efforts along this line could include “leadership by the MMS on project leasing due to its experience with planning on the OCS, with [FERC] opting not to issue preliminary permits in deference to the lease program,”<sup>140</sup> as well as “[FERC] authorization of construction and operation of the [OCS] hydropower project[s] through the FPA licensing process, with MMS [participating] as a cooperating agency during the NEPA review.”<sup>141</sup>

*B. Further Modifications to the Licensing Process*

Because hydrokinetic energy is more dispersed than the energy concentrated behind a dam or directed through a diversion, hydrokinetic energy systems must be correspondingly more dispersed geographically to collect a comparable amount of energy. Therefore, most hydrokinetic energy systems will require multiple generator units at multiple sites. For example, if completed as originally proposed, the project that the FERC considered in *Verdant* would consist of 494 twenty-one kilowatt turbine generator units. The generator units would be deployed “in 30 rows with an average of 17 units per row,” and the rows would be separated by 200 feet.<sup>142</sup>

In the future, the FERC may wish to consider whether further changes to the licensing process are warranted to account for this attribute of hydrokinetic projects. For example, some hydrokinetic energy developers have suggested recently to the FERC’s staff an approach by which the licensing and permitting for large-scale commercial projects could be streamlined across their multiple sites. In that approach, a large group of sites could be organized into “Site Groups.” The sites included in any single Site Group would have similar biological, geophysical, and jurisdictional characteristics. Working in conjunction with stakeholders, the developer could then identify a Lead Site for each Site Group and initially prepare studies and other required documents for that site. In appropriate circumstances, this approach could allow a developer to rely on the same studies and other required documents for all sites within each Site Group, thereby avoiding duplication of effort in processing sites with similar issues.

Such a change may also offer benefits in terms of removing obstacles for deployment of hydrokinetic projects at commercial scale by making it more practical to construct a hydrokinetic energy system sequentially by building out from a Lead Site. An incremental approach to constructing a hydrokinetic system could reduce upfront costs and financial risk and thereby assist in attracting investment capital.

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139. *Id.* at 9. (The FERC’s staff stated that the agencies have already drafted a Memorandum of Understanding between the agencies, and recommended that the MMS sign and begin implementing that document.)

140. *Id.*

141. *Id.* at 8.

142. *Verdant Power, LLC*, 100 F.E.R.C. ¶ 62,162 at 64,204 (2002).

### C. Interconnection Rules

In Order No. 661, as amended by Order No. 661-A,<sup>143</sup> the FERC recognized that its existing interconnection rules could be a barrier to the development of the wind energy industry. In those orders, the FERC adopted certain interconnection provisions applicable exclusively to wind resources as appendices to both the “large generator interconnection procedures and the large generator interconnection agreements.”<sup>144</sup>

The FERC explained that it was adopting certain different procedures and technical requirements for wind generators because wind generators presented unique interconnection issues. Most notably, the interconnection rules properly recognize that wind facilities using asynchronous generators typically do not produce reactive power, and thus do not require these projects to provide reactive power to support the transmission grid unless a system impact study indicates this is needed for safety or reliability. The FERC set forth three justifications for why wind resources should be eligible for special interconnection provisions: “they [1] use induction generators, [2] consist of several or numerous small generators connected to a collector system, and [3] do not respond to grid disturbances in the same manner as large conventional generators.”<sup>145</sup>

At that time, the FERC stated that no other technology warranted the treatment afforded wind resources because the FERC had not received adequate evidence that other technologies possessed characteristics similar to wind and, therefore, warranted similar treatment.<sup>146</sup> That assessment could change if and when additional information about hydrokinetic technologies comes before the FERC. In this regard, it is noteworthy that hydrokinetic technologies are likely to use non-synchronous or asynchronous motors to make electric energy, which is also a characteristic of wind energy technologies.

## VI. CONCLUSION

Without diminishing the outstanding technical issues associated with hydrokinetic technologies, it is important to recognize that the regulatory framework in which hydrokinetic systems will operate is a key factor in determining the future of this renewable energy resource. Particularly in light of the need to reduce greenhouse gas emissions and reduce American dependence on imported oil, that recognition has led the FERC to take an active role in facilitating hydrokinetic energy development.

In recent years, the FERC has applied an aggressive and creative approach to regulatory innovations with respect to hydrokinetic technologies. Those same characteristics also will serve the FERC well as it confronts emerging issues such as those discussed above. The challenges in this area are substantial, but

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143. Interconnection for Wind Energy, Order No. 661, F.E.R.C. STATS. & REGS. ¶ 31,186, *order on reh'g*, Order No. 661-A, F.E.R.C. STATS. & REGS. ¶ 31,198 (2005).

144. *Id.*

145. Order No. 661 at P 12.

146. *Id.* at 31,601.

the rewards will be great if hydrokinetic energy achieves its full potential as a clean, domestic contributor to meeting the country's energy needs.