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## Hydropower: It's a Small World after All

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Gina S. Warren\*

# Hydropower: It's a Small World After All

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## I. INTRODUCTION

Global warming is here. As exhibited by the recent droughts, heat waves, severe storms, and floods, climate change is no longer a question for the future, but a reality for the present. Of the many ways to help combat climate change, this Article discusses the use of the most abundant renewable energy source on the planet—water. While it is unlikely that large, conventional hydropower will see any significant development in the near future, technologies have advanced so as to allow for the generation of a substantial amount of electricity from small hydropower facilities, including conduit and hydrokinetic projects. These technologies produce clean, renewable energy without greenhouse gas (GHG) emissions and without significant impacts to fish, wildlife, or the environment. Development of these small hydro projects, however, has been stymied in part due to an antiquated, cumbersome, and expensive regulatory scheme intended for large-scale hydropower development. Without significant regulatory changes, development is, and will continue to be, cost-prohibitive for many projects.

More small hydropower resources would be developed if the federal government delegated to the states the authority to license these projects, either through legislation or, more likely, through delegation agreements between the federal government and the states. Granting licensing authority to the states would result in more efficient and less expensive licensing, but would still allow for thorough site-specific evaluations and solutions. The shift in oversight to the states would likely result in stronger local community ownership over sustainable renewable energy projects that would provide an economic benefit to the community and also contribute to the global fight against climate change. Without a regulatory change, the United States’ stated policy goal of promotion of renewable energy development, including small hydropower, will remain just that—a goal—and will struggle to become reality. This Article provides crucial information and direction for options to facilitate the needed regulatory change and analyzes the benefits—both local and global—of such a change.

Part I of this Article will explore the history and rise of hydroelectric power generation—from water mills to mega dams—and its regulation in the United States. The water mill was one of the first mechanisms used by mankind to harness power. It is a simple use of momentum to create energy. Water mills were used to grind grain, saw logs, create textiles, and fashion tools. As societies evolved, so did the use of water mills, and once electricity and generators arrived on the scene in the late 1800s, hydropower proved to be an efficient means of producing electricity. By the early twentieth century, 40% of the electricity in the United States was produced from hydropower projects located on rivers within or near cities. With the increased utilization of hydropower came a new regulatory scheme introduced in the Federal Water Power Act of 1920. This Act granted nearly exclusive regulatory authority to the federal government—and the Federal Power Commission specifically—over hydropower facilities located on navigable waters. The Commission (now FERC) remains the preeminent regulatory body, deciding whether development should occur and if so, by whom and how. Significant hydropower development occurred during this era, with both the federal government and large utilities constructing the majority of the United States' mega dams.

Part II will discuss the decline of hydropower utilization, resulting in fewer hydropower facilities being developed in the United States. This Article will discuss several factors that have contributed to the decrease in development, including increased environmental scrutiny, an increasingly complicated licensing scheme, and poor public perception of dams. While electricity generated from hydropower is inexpensive, emission free (i.e., non-polluting), and comes from a renewable source, hydropower ultimately came under scrutiny by states and environmental groups in the late 1960s and early 1970s as water quality and environmental concerns began to take form in the United States. In response to these concerns, Congress enacted several statutes intended to protect the environment and natural resources, including the Wild and Scenic Rivers Act, National Environmental Protection Act, and the Endangered Species Act. The implementation of these acts placed hydropower under increased environmental scrutiny, resulting in increased costs and delays in development. The Clean Water Act tangled the regulatory web further by requiring hydropower developers to obtain a certificate from the state in which the project will be located, certifying that the facility will not impair water quality and will meet "other limitations" set by states to ensure such compliance. In addition to these regulatory obstacles to development, hydropower has also suffered from a negative public opinion and an increasing attitude toward river restoration instead of hydropower development. As a result of these obstacles, large-scale hydropower is

unlikely to see increased development in the United States in the near future.

Part III will discuss how small-scale hydropower is not—or at least should not be—similarly situated to large, conventional hydropower. Studies have shown that small-scale hydropower, if fully developed, could increase current electricity generation by up to 200%. Unlike conventional large-scale hydropower, small hydropower has very little impact on the environment, fish, or wildlife and still provides clean, renewable energy. Regardless of the benefits to small hydropower development, there are significant regulatory hurdles to increased development, including antiquated and prohibitive licensing and regulatory schemes created for regulation of large, conventional hydropower. While small hydropower projects—including conduit and hydrokinetic projects—can apply for federal exemptions to the current licensing scheme, those exemptions are not in fact exemptions to licensing, but to relicensing. For the initial license, projects must still go through the three arduous consultation stages with potentially dozens of resource agencies, multiple design and environmental studies, and lengthy application requirements for the exemption.

Part IV will address ways to untangle this web of regulatory oversight, including delegating to the states the responsibilities for licensing, which would streamline the consultation phases of the licensing process and make small hydro licensing less time-consuming and less expensive. States would pre-screen the projects, ensure applications are complete, and identify any necessary consultations and studies so as to satisfy all licensing requirements. FERC would maintain oversight authority of state programs to ensure they are consistent with federal policy and that hydropower development is consistent among the different states. This would presumably encourage all states to ensure they are following the appropriate goal of promoting small hydropower development while protecting natural resources, fish, wildlife, and recreational opportunities. The most promising ways to accomplish this transition to state oversight are either through legislative changes modifying the Federal Power Act or through delegation agreements such as Memorandums of Understanding. Each option will be discussed in detail. Finally, this Part will also address the local and global benefits of increased small hydropower development by creating jobs and stimulating the economy while also playing a part in the overall fight against climate change.

## II. THE RISE OF HYDROPOWER

As early as 31 B.C., Greeks and Romans used the watermill as a means of harnessing power—mostly the power to grind grain into

flour.<sup>1</sup> The mechanics of a watermill are simple. Running water flows over a paddle wheel that is connected to a drive shaft. The drive shaft then moves a piece of machinery—historically a saw, a grinder, or a pump.<sup>2</sup> By the early eleventh century, the use of watermills was so widespread that in England one count estimated approximately one watermill per 350 people.<sup>3</sup> By the eighteenth century, water mills were widely used in England to run factories that created textiles, tools, and other commodities.<sup>4</sup> “American rivers were symbols of a burgeoning nation in the eighteenth and nineteenth centuries.”<sup>5</sup> When early Americans settled in the United States, they did so along the great New England rivers, ultimately resulting in construction of “clusters of large mills and housing for workers,” industry, and supporting infrastructure.<sup>6</sup> As Americans desired to become independent from England—and as the population grew—many saw dams as a means of harnessing more power to increase productivity.<sup>7</sup> Water would gradually be released from a reservoir located above the dam to allow a stronger, more consistent flow of water to run over the paddles, resulting in a continuous and even operation of the watermill and around-the-clock harnessing of energy.<sup>8</sup> While reservoir and dam construction resulted in increased productivity and bolstered industry, this “advancement” resulted in significant legal and environmental issues that have persisted to this day. Due to the artificial routing and blocking of the water, property upstream and downstream to the dams would be susceptible to flooding or drought, depending on the dam operation.<sup>9</sup> Mill acts were introduced throughout the northeastern states<sup>10</sup> to address eminent domain power and property owner

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1. FRED BOSSELMAN ET AL., *ENERGY, ECONOMICS AND THE ENVIRONMENT* 117 (Robert C. Clark et al. eds., Found. Press 2010); *see also* JOHN PETER OLESON, *GREEK AND ROMAN MECHANICAL WATER-LIFTING DEVICES: THE HISTORY OF A TECHNOLOGY* (1984) (detailing the history and depicting the mechanisms of the watermill as far back as 31 B.C.).
  2. *ENERGY, ECONOMICS AND THE ENVIRONMENT*, *supra* note 1, at 117.
  3. *Id.*
  4. *Id.*
  5. DAVID P. BILLINGTON ET AL., U.S. DEP'T OF THE INTERIOR: BUREAU OF RECLAMATION, *THE HISTORY OF LARGE FEDERAL DAMS: PLANNING, DESIGN, AND CONSTRUCTION IN THE ERA OF BIG DAMS* 1 (2005).
  6. *ENERGY, ECONOMICS AND THE ENVIRONMENT*, *supra* note 1, at 118 (citing D.W. MEINIG, II, *THE SHAPING OF AMERICA* 377 (1993) (“[M]ill towns were connected by river, canal, turnpike, and eventually railroad to major mercantile centers, which imported the raw cotton, shipped the finished goods, and served as general supply centers and managerial and financial headquarters.”).
  7. *See id.* at 118–19.
  8. *See id.* at 118 (“Water that naturally would have flowed freely downstream was captured and held by the dam so that its potential energy could be used to turn the mill’s machinery.”).
  9. *See id.*
  10. By 1885, the U.S. Supreme Court noted that:

compensation for the construction of these dams and reservoirs. Most mill acts gave dam builders authorization to construct and maintain a watermill, dam, and reservoir on a river or stream so long as they paid complaining property owners—generally farmers—for flood damage.<sup>11</sup>

These acts preempted common law damage claims and, in some states, allowed a specific amount of compensation to be paid to the injured party on an annual basis.<sup>12</sup> In 1885, the U.S. Supreme Court upheld New Hampshire's Mill Act noting that the purpose of the Act was to benefit the public at large so as to promote manufacturing and mechanical purposes.<sup>13</sup> The Court, quoting *Fiske*, stated the following:

[The Act was] designed to provide for the most useful and beneficial occupation and enjoyment of natural streams and watercourses, where the absolute right of each proprietor to use his own land and water privileges, at his own pleasure, cannot be fully enjoyed, and one must of necessity, in some degree, yield to the other.<sup>14</sup>

This was the beginning of a tug-of-war that will be described throughout this Article between development (and the harnessing of power) and protection of private rights, public and private lands, and the environment.

### A. Hydropower for Generation of Electricity

We are familiar with the story: Benjamin Franklin “discovered” electricity during a rain storm in the summer of 1752 when he flew

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General mill acts exist in a great majority of the states of the union. Such acts, authorizing lands to be taken or flowed in invitum, for the erection and maintenance of mills, existed in Virginia, Maryland, Delaware, and North Carolina, as well as in Massachusetts, New Hampshire, and Rhode Island, before the declaration of independence; and exist at this day in each of these states, except Maryland, where they were repealed in 1832. One passed in North Carolina in 1777 has remained upon the statute book of Tennessee. They were enacted in Maine, Kentucky, Missouri and Arkansas soon after their admission into the union. They were passed in Indiana, Illinois, Michigan, Wisconsin, Iowa, Nebraska, Minnesota, Mississippi, Alabama, and Florida while they were yet territories, and re-enacted after they became states. They were also enacted in Pennsylvania in 1803, in Connecticut in 1864, and more recently in Vermont, Kansas, Oregon, West Virginia, and Georgia [but were afterwards repealed in Georgia]. The principal statutes of the several states are collected in the margin.

Head v. Amoskeag Mfg. Co., 113 U.S. 9, 16–17 (1885).

11. See Alexandra B. Klass, *The Frontier of Eminent Domain*, 79 U. COLO. L. REV. 651, 667–68 (2008) (citing *Head*, 113 U.S. at 19–21); see also *Fiske v. Framingham Mfg. Co.*, 29 Mass. (12 Pick.) 68 (1831) (analyzing Massachusetts's Mill Act).
12. See *Head*, 113 U.S. at 25.
13. See *id.* at 26.
14. *Id.* at 24–25 (quoting *Fiske*, 29 Mass (12 Pick.) at 70–72).

the infamous kite with a key dangling from a string.<sup>15</sup> While Franklin's experiments with electricity were of obvious vital importance, it was not until the invention of the generator in the late nineteenth century that allowed electricity to be used as a secondary energy source.<sup>16</sup> It did not take long until generators and dams were combined to form hydroelectric power.

Hydropower generation is similar to watermills, but instead of turning a paddle wheel, flowing water turns turbine blades, which then spin a generator to produce electricity.<sup>17</sup> The Vulcan Street Plant was arguably the first hydroelectric power plant to begin operation in the United States on September 30, 1882.<sup>18</sup> The electricity powered three buildings—two paper mills owned by Appleton Paper & Pulp Company and a residence.<sup>19</sup> By 1889, there were two hundred hydropower facilities in the United States providing power on a small, local scale.<sup>20</sup> In 1896, the scale of hydropower use expanded considerably with Nikola Tesla's work on alternating currents, which allowed hydroelectric power to be distributed from a Niagara Falls power plant in New York to the public in Buffalo some twenty-six miles away.<sup>21</sup> Thereafter, in the late nineteenth and early twentieth centuries, hydropower flourished. According to the U.S. Department of Interior: Bureau of Reclamation, "By the early 1900's, hydroelectric

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15. See Brian J. Glenn, *God and the Red Umbrella: The Place of Values in the Creation of Institutions of Mutual Assistance*, 10 CONN. INS. L.J. 277, 286 (2003–2004).
  16. See Dan Tarlock, *The Legal-Political Barriers to Ramping Up Hydro*, 86 CHL-KENT L. REV. 259, 264 (2011).
  17. See *Renewable Hydropower*, U.S. Energy Info Admin., [http://www.eia.gov/kids/energy.cfm?page=hydropower\\_home-basics](http://www.eia.gov/kids/energy.cfm?page=hydropower_home-basics) (last visited Aug. 3, 2012).
  18. *Vulcan Street Power Plant*, ASME MILWAUKEE—HISTORY & HERITAGE, <http://sections.asme.org/Milwaukee/history/1-vulcan.html> (last visited Aug. 3, 2012); see also *Renewable Hydropower*, *supra* note 17 ("The first U.S. hydroelectric power plant opened on the Fox River near Appleton, Wisconsin, on September 30, 1882.").
  19. *Vulcan Street Power Plant*, *supra* note 18.
  20. *The History of Hydropower Development in the United States*, U.S. DEP'T OF THE INTERIOR: BUREAU OF RECLAMATION, <http://www.usbr.gov/power/edu/history.html> (last visited Aug. 3, 2012).
  21. *TESLA Life and Legacy-Harnessing Niagra*, PUBLIC BROADCASTING SERVICE, [http://www.pbs.org/tesla/l/1/1\\_niagara.html](http://www.pbs.org/tesla/l/1/1_niagara.html) (last visited Aug. 3, 2012) (Discussing the interesting story of Nikola Tesla, who was originally hired by Thomas Edison to be his electrical engineer and to work on direct current generators. Edison said he would pay Tesla \$50,000 for his work, but after the work was completed, Edison said he was joking and refused to pay. George Westinghouse then hired Tesla to work on alternating current, which would ultimately allow electricity to run hundreds of miles without intervening substations and is the basis for our system today.). See also *The History of Nikola Tesla—a Short Story*, YOUTUBE, (July 10, 2010), <http://www.youtube.com/watch?v=iEJNJ0rFSe8>.



power accounted for more than 40 percent of the United States' supply of electricity."<sup>22</sup>

Regulation of hydroelectric power was mostly left to the individual states until Congress passed the Rivers and Harbors Acts of 1890 and 1899.<sup>23</sup> The Acts made it illegal to construct bridges, causeways, dams, or dikes on or over navigable waters without the consent of Congress, which required approval by the Secretary of Transportation (for bridges or causeways) or the Chief of Engineers and Secretary of the Army<sup>24</sup> (for dams or dikes).<sup>25</sup> Regardless, "between 1894 and 1906 Congress issued [only] 30 permits for private dams, mostly along the Mississippi River," with most dam operators avoiding the licensing program.<sup>26</sup> Interestingly, the Refuse Act provision of the Rivers and Harbor Appropriation Act made it illegal to discharge refuse into navigable waters of the United States, arguably making it the first federal environmental protection act.<sup>27</sup> While the Rivers and Harbors

22. *The History of Hydropower Development in the United States*, *supra* note 20; see also *Hydroelectricity*, INT'L CONFERENCE ON EUROPEAN ELECTRICITY MARKET, <http://www.eem08.com/hydroelectricity> (last visited Aug. 3, 2012) ("Hydropower was referred to as *white coal* for its power and plenty.")

23. Rivers and Harbor Appropriation Act of 1899, 33 U.S.C. §§ 401-430 (1899); see also Gifford Pinchot, *Long Struggle for Effective Federal Water Power Legislation*, 14 Geo. Wash. L. Rev. 9 (1945) (giving historical account of federal water power legislation).

24. Now known as the U.S. Army Corps of Engineers.

25. 33 U.S.C. § 401. Violations of the act could result in a misdemeanor punishable by fine (between \$500 and \$2,500) and/or imprisonment up to a year and the authority of the government to remove the violating structure. *Id.* at § 406.

26. DAVID P. BILLINGTON ET AL., *supra* note 5, at 37 (citing MARTIN REUSS & PAUL K. WALKER, *FINANCING WATER RESOURCES DEVELOPMENT* 36 (1983), available at [http://publications.usace.army.mil/publications/eng-pamphlets/EP\\_870-1-13/EP\\_870-1-13.pdf](http://publications.usace.army.mil/publications/eng-pamphlets/EP_870-1-13/EP_870-1-13.pdf)).

27. 33 U.S.C. § 407. This section provides, in part:

It shall not be lawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited either from or out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, any refuse matter of any kind or description whatever other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable water of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable water; and it shall not be lawful to deposit, or cause, suffer, or procure to be deposited material of any kind in any place on the bank of any navigable water, or on the bank of any tributary of any navigable water, where the same shall be liable to be washed into such navigable water, either by ordinary or high tides, or by storms or floods, or otherwise, whereby navigation shall or may be impeded or obstructed: *Provided*, That nothing herein contained shall extend to, apply to, or prohibit the operations in connection with the improvement of navigable waters or construction of public works, considered necessary and proper by the United States officers supervising such improvement or public work: *And provided further*, That the Secretary of the Army, whenever in the judgment of the Chief of Engineers anchorage and navigation will not be injured thereby,

Act is still in force today, many of its provisions are superseded by and regulated under the Clean Water Act and the Federal Power Act.

## B. Hydropower Regulation Under the Federal Power Act

The Federal Water Power Act of 1920 (enacted in 1920, amended in 1935 and 1986, and renamed the Federal Power Act) (FPA) was the first national policy for the regulation of hydropower development.<sup>28</sup> The purpose of the FPA was to set forth a comprehensive plan for development of the Nation's water resources that were within the jurisdiction of the federal government. This comprehensive plan would replace "the piecemeal, restrictive, negative approach of the River and Harbor Acts and other federal laws previously enacted."<sup>29</sup> It created a new commission—the Federal Power Commission,<sup>30</sup> now known as the Federal Energy Regulatory Commission (FERC)—with the exclusive regulatory and licensing authority over hydropower facilities.<sup>31</sup> Under the FPA, licenses are required for all new and already-built hydroelectric facilities located within the Act's jurisdiction. The Act's jurisdiction includes all navigable waters<sup>32</sup> or waters that affect inter-

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may permit the deposit of any material above mentioned in navigable waters, within limits to be defined and under conditions to be prescribed by him, provided application is made to him prior to depositing such material; and whenever any permit is so granted the conditions thereof shall be strictly complied with, and any violation thereof shall be unlawful.

*Id.* (emphasis in original).

28. Federal Power Act, 16 U.S.C. §§ 791a–823 (2006); *see also* Pinchot, *supra* note 23, at 19 ("For the first time, the Act of 1920 established a national policy in the use and development of water power on public lands and navigable streams.")
29. First Iowa Hydro-Elec. Coop. v. Fed. Power Comm'n, 328 U.S. 152, 180 (1946).
30. Interestingly, the Federal Power Commission (FPC) members were originally the Secretaries of War, Interior, and Agriculture, but in 1930 it was reorganized into a five-member commission independent of the Secretaries and then in 1977, Congress created the Federal Energy Regulatory Commission (FERC) to replace the FPC. *See* § 792; *see also* Michael C. Blumm & Viki A. Nadol, *The Decline of the Hydropower Czar and the Rise of Agency Pluralism in Hydroelectric Licensing*, 26 COLUM. J. ENVTL. L. 81, 85–86 (2001) (discussing the Commission's history). Additionally, FERC is currently composed of five members, which include four commissioners and a chairman; "Commissioners serve five-year terms, and have an equal vote on regulatory matters." Commission Members, FED. ENERGY REG. COMMISSION, <http://www.ferc.gov/about/com-mem.asp> (last visited Aug. 3, 2012).
31. 16 U.S.C. § 797(e) (2006). Any plan for the dam or physical structure affecting navigation must be approved by the U.S. Army Corp of Engineers. *Id.* at § 804.
32. "Navigable waters" is a defined term meaning:

[T]hose 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 condition notwithstanding interruptions between the navigable parts of such streams or waters by falls, shallows, or rapids compelling land carriage, are used or suitable for use for the transportation of persons or property in interstate or foreign commerce, including

state commerce, dams or reservoirs that occupy federal land, or dams that utilize surplus water or water power from a government dam.<sup>33</sup> When enacted, the FPA was thought to be a detailed and comprehensive plan, which left “no room or need for conflicting state controls.”<sup>34</sup> Provisions of the Clean Water Act, discussed in detail *infra*, somewhat altered this view. Nevertheless, the Commission remains the preeminent regulatory body, deciding whether development should occur and if so, by whom and how.<sup>35</sup>

The Act authorizes the Commission to grant a fifty-year<sup>36</sup> license to a hydropower operator as long as the project is: (1) in the public interest and (2) “best adapted to a comprehensive plan for improving or developing a waterway.”<sup>37</sup> As discussed in more detail *infra*, the FPA was later amended to require the Commission to “give equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife (including related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality.”<sup>38</sup> In short, the Commission must now weigh the need for hydropower energy development within a national waterway against (1) the availability of alternative sources of power; (2) other potential uses of the river, including recreational uses; and (3) the protection of the environment, fish, and wildlife. Unfortunately, the statute provides the Commission little guidance—and allows for significant leeway—in balancing these values.

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therein all such interrupting falls, shallows, or rapids, together with such other parts of streams as shall have been authorized by Congress for improvement by the United States or shall have been recommended to Congress for such improvement after investigation under its authority.

§ 796(8). *See also* Rochester Gas and Electric Corporation v. Fed. Power Comm’n, 344 F.2d 594, 596 (2d Cir. 1965) (the current test for navigability for purposes of regulation is: (1) is presently in use or suitable for use; or (2) was used or suitable for use in the past; or (3) could be made usable by reasonable improvements).

33. *See* § 797(e).

34. *First Iowa*, 328 U.S. at 181.

35. *See id.* at 182; *see also* California v. Fed. Energy Regulatory Comm’n, 495 U.S. 490, 506–07 (1990) (relying on its decision in *First Iowa* to strike down state minimum flow requirements because they were in conflict with FERC’s requirements, and finding that “allowing California to impose significantly higher minimum stream flow requirements would disturb and conflict with the balance embodied in that considered federal agency determination” and “allowing California to impose the challenged requirements would be contrary to congressional intent regarding the Commission’s licensing authority and would ‘constitute a veto of the project that was approved and licensed by FERC’”).

36. 16 U.S.C. § 799.

37. *Id.* at § 803(a).

38. *Id.* at § 797(e).

The FPA provides for a two-fold preference for public over private development of hydropower.<sup>39</sup> First, it allows states and municipalities to have a preference for licensing if their plans are “equally well adapted . . . to conserve and utilize . . . the water resources of the region” as compared to the private hydropower developer’s plans.<sup>40</sup> There is no preference for relicensing.<sup>41</sup> Second, it gives the federal government the right to take over the project and develop it or to take over the project after the license has expired.<sup>42</sup>

While the Commission had exclusive authority to license and regulate private and municipal hydropower facilities, federally-owned hydropower facilities could be constructed and operated outside the FPA.<sup>43</sup> In the mid-twentieth century, the U.S. Army Corps of Engineers (Corps) and the U.S. Bureau of Reclamation worked together to build the largest dams in the United States.<sup>44</sup> In fact, “85 were built between 1902 and 1930, and 203 were built between 1930 and 1970,”<sup>45</sup> including the well-known Hoover Dam.<sup>46</sup> Construction of the Hoover Dam (originally known as the Colorado River’s Boulder Dam) began in 1931 with the first electric generation from the facility occur-

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39. As the authors of *Energy, Economics and the Environment* note:

The Federal Power Act was enacted at a time of national ambivalence over the question of whether the private sector or the public sector should take the lead in the development and control of electric power. This conflict was heightened in the context of hydroelectric development because many viewed the nation’s waterways as a public resource the flows of which ought not to be subjected to private control, irrespective of riparian property rights regimes.

ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 127.

40. 16 U.S.C. § 800(a).

41. *See id.* at § 808; Electric Consumers Protection Act of 1986 (“ECPA”), Pub. L. 99-495, sec. 4, § 808, 100 Stat. 1243, 1246 (1986) (abolishing a municipal preference at relicensing).

42. § 800(b), (c); § 807.

43. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 124.

44. In 1928, Congress passed the Boulder Canyon Project Act, which “authorized the construction of a dam and powerplant in either Boulder or Black Canyon, and the All-American Canal System in southern California.” 43 U.S.C. § 617 (2006); *see also Boulder Canyon Project—Hoover Dam*, U.S. DEPT. OF THE INTERIOR BUREAU OF RECLAMATION, [http://www.usbr.gov/projects/Project.jsp?proj\\_Name=Boulder Canyon Project—Hoover Dam](http://www.usbr.gov/projects/Project.jsp?proj_Name=Boulder+Canyon+Project—Hoover+Dam) (last visited Aug. 3, 2012).

45. Chris Edwards & Peter J. Hill, *Cutting the Bureau of Reclamation and Reforming Water Markets*, DOWNSIZING THE FED. GOVERNMENT, [http://www.downsizinggovernment.org/interior/cutting-bureau-reclamation#\\_edn47](http://www.downsizinggovernment.org/interior/cutting-bureau-reclamation#_edn47) (Feb. 2012) (relying on, *Bureau of Reclamation- Dams*, U.S. DEPT. OF THE INTERIOR BUREAU OF RECLAMATION, [www.usbr.gov/projects/dams.jsp](http://www.usbr.gov/projects/dams.jsp) (last visited Aug. 3, 2012)).

46. *See Boulder Canyon Project—Hoover Dam*, *supra* note 44. Of note, the Rivers and Harbors Act of 1925 “authorized and directed the U.S. Army Corps of Engineers and the Federal Power Commission jointly to prepare cost estimates for comprehensive surveys of all navigable streams and their tributaries” in an effort to determine the best areas to develop. BILLINGTON ET AL., *supra* note 5, at 120–21.

ring in 1936. Construction on the dam continued until 1961.<sup>47</sup> As completed, Hoover Dam is 726.4 feet high and 1,244 feet long, containing a total of 7.65 million cubic yards of concrete.<sup>48</sup> According to the Bureau of Reclamation, Hoover Dam generates an average of four billion kilowatt-hour (kWh) of electricity annually, making it one of the largest electric power generating facility in the world.<sup>49</sup> It remains the “highest and third largest concrete dam in the United States.”<sup>50</sup>

### III. A FALL FROM GRACE

Following the big dam era, hydropower project construction began to see a decline in the United States with fewer and fewer licenses being sought and issued. The industry received a brief boost in the 1970s and 80s after Congress enacted the Public Utility Regulatory Policies Act (PURPA) of 1978 in response to the energy crises of the 1970s,<sup>51</sup> but this boost was short-lived. PURPA encourages (1) energy conservation; (2) “optimization of the efficiency of use of facilities and resources by electric utilities”; and (3) equitable customer electricity rates,<sup>52</sup> through among other things, development of small hydropower dams.<sup>53</sup> In essence, the Act provides financial incentives for independent hydropower development by requiring utility companies to purchase power from independently owned hydropower producers at full “avoided cost” rates. “As a result of this statute, the FERC began to process hundreds of license applications for much smaller hydroelectric projects.”<sup>54</sup> The usefulness of the Act for promotion of hydropower development has seemingly come to a close.<sup>55</sup> The major-

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47. See *Boulder Canyon Project—Hoover Dam*, *supra* note 44.

48. *Hoover Dam*, U.S. DEPT. OF THE INTERIOR BUREAU OF RECLAMATION, [http://www.usbr.gov/projects/Facility.jsp?fac\\_Name=Hoover+Dam&groupName=Overview](http://www.usbr.gov/projects/Facility.jsp?fac_Name=Hoover+Dam&groupName=Overview) (last visited Aug. 3, 2012).

49. See *Boulder Canyon Project—Hoover Dam*, *supra* note 44.

50. *Id.*

51. Public Utility Regulatory Policies Act of 1978, 16 U.S.C. §§ 2601–2645 (2006).

52. *Id.* at § 2611.

53. See *id.* at § 2601(3). The Act also promotes “conservation of natural gas while insuring that rates to natural gas consumers are equitable” and “development of crude oil transportation systems.” *Id.* at § 2601(4), (5).

54. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 143.

55. U.S. GEN. ACCOUNTING OFFICE, GAO-01-499, LICENSING HYDROPOWER PROJECTS: BETTER TIME AND COST DATA NEEDED TO REACH INFORMED DECISIONS ABOUT PROCESS REFORMS 4 (2001), available at <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA389621>.

FERC issued original licenses for most of the about 1,000 nonfederal hydropower projects decades ago. Between January 1, 1993, and December 31, 2000, the licenses for 395 of these projects expired. Many of these were small projects that do not generate much power. According to FERC, over the next 15 years, the licenses for another 238 projects will expire. The 238 projects, many of which are large, combine to generate over half of the nation’s nonfederal hydropower.

ity of the contracts executed in the 1980s have, or will soon, expire. Electric deregulation and open access laws have resulted in a free market whereby most states—in charge of administering the programs—no longer require utilities to purchase from independently owned facilities.<sup>56</sup>

Development as a whole has been on the decline with FERC issuing fewer and fewer licenses for new hydropower projects over the last several decades.<sup>57</sup> In fact, “most of FERC’s licensing activities relate to the relicensing of projects with licenses currently nearing their expiration dates.”<sup>58</sup> Federal projects (non-FERC licensed projects) have similarly decreased. As of 2011, the median age of Corps hydropower facilities was forty-seven years, and 90% of Corps projects are thirty-four years or older.<sup>59</sup> This section will discuss some of the factors that have stymied hydropower development. While it is impossible to identify and discuss every factor or combination of factors, this section will discuss three of the factors that may have contributed to the fall: (1) environmental and endangered species protection awareness; (2) the evolution of a multi-faceted approach to licensing and regulation; and (3) an overall negative public perception of hydropower.

#### A. Environmental Protection Laws

As previously noted, when hydropower first came to prominence in the United States, there was little concern, or at least little understanding, about what the dams and reservoirs could do to the surrounding ecosystem.<sup>60</sup> However, “[a]s scientists began to study ecosystems and the life cycles of various water dependent species, they came to realize the decline of certain fish and animal species could be traced to the dams, which can destroy entire river habitats.”<sup>61</sup> Many environmentalists had a growing concern that FERC was too autonomous, with too much authority, and failed to take into account the environmental concerns when issuing licenses or relicenses.<sup>62</sup> In an effort to give environmental issues more importance in the FERC review process, Congress enacted the Electric Consumers Protection Act of 1986, which amended the Federal Power Act.<sup>63</sup> The Act also struck the municipal preference requirement at relicensing. This means that a competing municipal proposal will not be granted a license over an

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*Id.* at 2.

56. *Id.*

57. *Id.*

58. *Id.*

59. KELSIE BRACMORT ET AL., HYDROPOWER: FEDERAL AND NONFEDERAL INVESTMENT 5 (2012), available at <http://www.fas.org/sgp/crs/misc/R42579.pdf>.

60. Blumm & Nadol, *supra* note 30, at 86–87.

61. *Id.* at 87.

62. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 142.

63. Electric Consumers Protection Act of 1986, Pub. L. No. 99-495, 100 Stat. 1243.

existing operator's proposal unless the municipal project is somehow superior to the existing project.<sup>64</sup> More importantly, however, the Act added environmental protection provisions that require FERC to "give equal consideration" to energy development and the protection of and conservation of our natural resources, including fish, wildlife and the environment.<sup>65</sup> To facilitate the balancing of these interests, FERC is required to consult with state and federal environmental agencies prior to issuing licenses.<sup>66</sup> These state and federal resource agencies evaluate the project and place conditions and recommendations on the proposed license for the "protection, mitigation, and enhancement" of the environment, fish, and wildlife.<sup>67</sup> FERC must then accept the conditions and recommendations as part of the license or provide a written explanation as to why the recommendations or conditions are "inconsistent with the purposes and requirements of applicable law."<sup>68</sup> Whether this added provision has made any difference—other than to increase administrative costs—is unclear. As one commentator notes, "both the FERC and the courts have interpreted the language as merely procedural, rejecting the notion that environmental concerns be accorded any particular weight."<sup>69</sup>

A handful of other environmental laws enacted in the 1960s and 1970s, however, did have a significant impact on how FERC reviews proposed hydropower licenses and how hydropower is developed in the United States. What follows is a review of four environmental laws and how they have changed FERC review: (1) the Wild and Scenic Rivers Act of 1968;<sup>70</sup> (2) the National Environmental Policy Act of 1969;<sup>71</sup> (3) the Endangered Species Act of 1973;<sup>72</sup> and (4) the Clean Water Act of 1972.<sup>73</sup>

### 1. *The Wild and Scenic Rivers Act of 1968*

The Wild and Scenic Rivers Act of 1968 was enacted by Congress to prevent any damming of waterways designated as "wild or scenic" under the statute.<sup>74</sup> The purpose of the Act is to preserve and protect "certain selected rivers . . . [that] with their immediate environments,

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64. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 142.

65. § 3(a).

66. *Id.* at § 3(b)(4)(B).

67. *Id.* at § 3(b)(1).

68. *Id.* at § 3(c)(2).

69. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 145 (citing *United States v. Fed. Energy Regulatory Comm'n*, 952 F.2d 538 (D.C. Cir. 1992)).

70. Wild and Scenic Rivers Act of 1968, 16 U.S.C. § 1271-1287 (2006).

71. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4331-4370 (2006).

72. Endangered Species Act of 1973, 16 U.S.C. §§ 1531-1544 (2006).

73. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387 (2006).

74. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 143.

possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.”<sup>75</sup> Once a river has been designated as “wild or scenic” under the statute, FERC has no authority to issue licenses for projects in these environmentally sensitive areas. Over 12,000 miles of selected rivers have been designated as “wild or scenic” by Congress and the Secretary of Interior since the enactment of the Wild and Scenic Rivers Act in 1968.<sup>76</sup> While the Act places an absolute bar on development within these designated areas, the designations account for “[l]ess than 1/4 of 1% of” our Nation’s rivers.<sup>77</sup> Nevertheless, it has resulted in blocking some of the major potential hydropower sites.<sup>78</sup>

## 2. *The National Environmental Policy Act of 1969*<sup>79</sup>

The Second Circuit’s decision in *Scenic Hudson Preservation Conference v. Federal Power Commission*<sup>80</sup> set the backdrop for Congress’s enactment of the National Environmental Policy Act of 1969 (NEPA) and provides a good example of the times.<sup>81</sup> It stands as one of the first cases to *require* FERC look at all possible alternatives to a project prior to issuing a license or relicense, including non-development for protection of the environment and natural resources. In 1965, FERC granted a license to Consolidated Edison Company of New York for the construction of a huge hydroelectric power project—which included a storage reservoir, a powerhouse, and transmission lines—on the Hudson River in Cornwall, New York, approximately sixty miles from New York City.<sup>82</sup> At the time, the proposed project—known as the Storm King Project—was “the largest of its kind in the world” with an estimated cost of \$162,000,000.<sup>83</sup>

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75. 16 U.S.C. § 1271 (2006). Additional off-limit sites include wilderness areas designated under the Wilderness Act, 16 U.S.C. §§ 1131–1136 (2006), and the properties located within the National Park System, 16 U.S.C. § 797c (2006).

76. Michael P. Lawrence, *Damming Rivers, Damning Cultures*, 30 AM. INDIAN L. REV. 247, 263 (2005–2006); *About the WSR Act*, NAT’L WILD AND SCENIC RIVERS SYSTEM, <http://www.rivers.gov/rivers/wsr-act.php> (last visited Oct. 20, 2012) (“As of July 2011, the National System protects 12,598 miles of 203 rivers.”).

77. *Did You Know*, NATIONAL WILD AND SCENIC RIVER SYSTEM, <http://www.rivers.gov/rivers/> (last visited Aug. 4, 2012).

78. Tarlock, *supra* note 16, at 267.

79. 42 U.S.C. §§ 4321–4347 (2006).

80. *Scenic Hudson Pres. Conference v. Fed. Power Comm’n*, 354 F.2d 608 (D.C. Cir. 1965).

81. See Oliver Houck, *Unfinished Stories*, 73 U. COLO. L. REV. 867, 869 (2002) (“The Second Circuit’s opinion is widely credited for affording environmental interests ‘standing to sue,’ authority that empowered hundreds of local and national groups to enforce laws against polluters, even against their own governments, and became an engine moving new statutes towards their stated goals.”).

82. *Scenic Hudson*, 354 F.2d at 611.

83. *Id.*



In granting the license, FERC refused evidence of the project's potential environmental impacts and did not allow testimony of potential alternative forms of development for the waterway.<sup>84</sup> Petitioners argued that FERC's failure to do so violated FERC's statutory mandate to determine that the proposed project is "best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes."<sup>85</sup> The court agreed, requiring that on remand FERC "include as a basic concern the preservation of natural beauty and of national historic shrines, keeping in mind that, in our affluent society, the cost of a project is only one of several factors to be considered."<sup>86</sup> On remand, FERC once again issued a license to Consolidated Edison, but the project ultimately failed and was never constructed.<sup>87</sup>

On the heels of this case, Congress enacted the National Environmental Protection Act (NEPA), requiring federal agencies to undergo environmental analysis of a project prior to issuance of any licenses.<sup>88</sup> Under NEPA, FERC must prepare an Environmental Impact Statement (EIS) for any major project that will "significantly affect[] the quality of the human environment."<sup>89</sup> If FERC determines that the project will not significantly affect the quality of the human environment and that an EIS is not required, FERC must prepare a Finding of No Significant Impact (FONSI) setting forth its reasons for such finding.<sup>90</sup> This Act, like many of the other environmental laws, is procedural in nature and only requires FERC to assess the environmental impacts of a project and not necessarily to "avoid" them.<sup>91</sup> And, in fact, while most FERC licensing applications include Environmental Assessments, the "great majority of agency decisions on NEPA compliance conclude that an EIS is not necessary."<sup>92</sup> Nevertheless, it does add another layer of analysis, adding paperwork, manpower, and costs to the licensing process.

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84. *Id.* at 612.

85. *Id.* at 614 (citing § 10(a) of the Federal Power Act, 16 U.S.C. § 803(a)) (emphasis supplied).

86. *Id.* at 624.

87. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 141; Houck, *supra* note 81, at 869.

88. See 42 U.S.C. §§ 4321-4370 (2006).

89. *Id.* at § 4332(2)(C).

90. *Id.* at 141.

91. *Id.* at 142.

92. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 141-42; see also David B. Spence, *Agency Discretion and the Dynamics of Procedural Reform*, 59 PUB. ADMIN. REV. 425 (1999) (discussing FERC's practice of narrowly construing Congressional procedural requirements in order to retain their substantive discretion).

### 3. *The Endangered Species Act of 1973*<sup>93</sup>

The Endangered Species Act is a powerful environmental protection law with significant penalties for violation.<sup>94</sup> In enacting the law, Congress found that “[v]arious species of fish, wildlife, and plants” suffered extinction and various others are “in danger of or threatened with extinction” in the United States.<sup>95</sup> For example, in the highly controversial Columbia River Basin there are hundreds of different types of dams on the Columbia River and its tributaries.<sup>96</sup> Prior to the construction of dams in the mid-nineteenth century, it is estimated that the Columbia River hosted some sixteen million salmon.<sup>97</sup> “The damming of the Columbia Basin forever blocked salmon from well over a thousand river miles of their historic habitat” and was one key factor leading to a serious decline in population.<sup>98</sup> While it took several years after the enactment of the Endangered Species Act to do, several species of salmonids are currently listed and the list continues to grow.<sup>99</sup> The purpose of the Endangered Species Act is to provide a mechanism to conserve endangered and threatened species and “the ecosystems upon which endangered species and threatened species depend.”<sup>100</sup> Section 9 of the Endangered Species Act makes it unlawful for any person, individual, or entity, public or private, to “take” a listed species.<sup>101</sup> A “take” is a defined term meaning to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.”<sup>102</sup> “Harm” is likewise a defined term, meaning “an act which actually kills or injures wildlife . . . [which] may include significant habitat modification or degradation . . . by significantly impairing essential behavioral patterns, including breeding,

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93. Endangered Species Act of 1978, 16 U.S.C. §§ 1531–1544.

94. See OFFICE OF ENERGY PROJECTS, FED. ENERGY REGULATORY COMM’N, HYDROPOWER LICENSING AND ENDANGERED SPECIES: A GUIDE FOR APPLICANTS, CONTRACTORS, AND STAFF 1 (2001), available at [http://www.ferc.gov/industries/hydro-power/gen-info/guidelines/esa\\_guide.pdf](http://www.ferc.gov/industries/hydro-power/gen-info/guidelines/esa_guide.pdf).

95. 16 U.S.C. § 1531(a).

96. See Bill Lang, *Columbia River*, CTR. FOR COLUMBIA RIVER HISTORY, <http://www.ccrh.org/river/history.htm> (last visited August 2, 2012).

97. Helen Nowlin-Chantreau, *The Endangered Species Act and the Federal Energy Regulatory Commission: The Challenges in Saving the Pacific Northwest Salmon*, 9 ALB. L. ENVTL. OUTLOOK 245, 247 (2004) (citing Bill Lang, *Columbia River Article*, CTR. FOR COLUMBIA RIVER HISTORY, <http://www.ccrh.org/river/history.htm> (pointing out that humans have inhabited the riparian corridor of the Columbia River for more than 10,000 years; however, modern engineering has dramatically altered the river and its ecosystem)).

98. See Blumm & Corbin, *supra* note 106, at 525; Nowlin-Chantreau, *supra* note 109, at 255–56.

99. See Blumm & Corbin, *supra* note 106, at 586.

100. *Id.* at § 1531(b).

101. *Id.* at § 1538(a).

102. *Id.* at § 1532(19).

feeding, or sheltering.”<sup>103</sup> All Federal agencies are required to work together and to consult with state and local agencies to prevent takings and to further the purpose of the Act.<sup>104</sup>

Only after consultation with federal, state, and local authorities may FERC issue a license or relicense.<sup>105</sup> If FERC issues a license or relicense at all, it must include a section analyzing Endangered Species Act matters and conclude that the project will not likely adversely affect any endangered or threatened species.<sup>106</sup> Further, the section must set forth all conditions necessary to ensure the protection of said species.<sup>107</sup> These conditions will generally include such things as installation of fish ladders, passages, juvenile fish bypass systems, and requirements to maintain minimum flows, especially during spawning season.<sup>108</sup> In an effort to comply with the Endangered Species Act and to prevent the taking of the endangered or threatened fish, the new and relicensing of existing hydropower facilities has become more difficult and expensive. According to FERC, “[c]ompliance with provisions of the ESA can result in processing delays, frustration, higher costs, and additional complexity in the hydropower licensing process.”<sup>109</sup>

Furthermore, regulation of hydropower facilities under the Endangered Species Act has increased simply as a consequence of the fact that more and more species of fish have been added to the endangered or threatened species lists through the years, significantly affecting hydropower development and operation.<sup>110</sup> Nonetheless, many question whether the conditions are truly enough to protect the fish.<sup>111</sup>

The ESA and NEPA have added layers of environmental review to the hydropower licensing process and have thereby increased the amount of time, paperwork, and money it takes to obtain a license—if one is even issued at all. The Clean Water Act added yet another layer, rounding out the multi-faceted approach to regulation.

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103. 50 C.F.R. § 222.102 (1999).

104. *Id.* at § 1531(c); § 1536(a)(2).

105. *Id.* at 49 n.54.

106. *Id.* at 49.

107. *Id.* at 49–51.

108. See *Hydropower Service Expertise*, U.S. FISH & WILDLIFE SERVICE, [http://www.fws.gov/habitatconservation/hydro\\_service.pdf](http://www.fws.gov/habitatconservation/hydro_service.pdf) (last visited August 2, 2012).

109. OFFICER OF ENERGY PROJECTS, FED. ENERGY REGULATORY COMM’N, *supra* note 94, at 1.

110. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 158 (“The Columbia Basin is now awash with ESA listings of salmonids. No fewer than twelve Columbia Basin salmonid species are currently under ESA protection. [In 1990,] there were no salmonid listings at all. The ESA has assumed a dominant role in salmon law and policy in the basin.”).

111. See Michael C. Blumm & Greg D. Corbin, *Salmon and the Endangered Species Act: Lessons from the Columbia Basin*, 74 WASH. L. REV. 519 (1999) (discussing the ESA and its efforts at salmon restoration).

## B. A Multi-Faceted Approach to Regulation

As previously noted, when the FPA was enacted it was intended to provide a comprehensive approach to development within the Nation's waterways. It was said to leave "no room or need for conflicting state [or local] controls"<sup>112</sup> with the concept that the federal government would be solely responsible for hydropower licensing and regulation. While hydropower regulation has remained with the federal government, the Clean Water Act has given states an opportunity to directly, and significantly, influence hydropower development.

### 1. *The Clean Water Act*

In 1948, Congress passed the Federal Water Pollution Control Act. It was the first major act passed in the United States for the purpose of preventing water pollution.<sup>113</sup> In 1972, the Act was substantially amended, and as amended, it became known as the Clean Water Act (CWA).<sup>114</sup> The declared purpose of the Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."<sup>115</sup> In essence, the Clean Water Act, as amended, makes it unlawful to discharge a pollutant into navigable waters without a permit,<sup>116</sup> and authorizes the Environmental Protection Agency to

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112. *First Iowa Hydro-Electric Coop. v. Fed. Power Comm'n*, 328 U.S. 152, 181 (1946).

113. *History of the Clean Water Act*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/lawsregs/laws/cwahistory.html> (last visited Aug. 5, 2012).

114. See 1972 amendments, Pub. L. No. 92-500, 86 Stat. 816 (Oct. 18, 1972) (amending and reorganizing the FWCPA, currently codified at 33 U.S.C. §§ 1251–1387).

115. 33 U.S.C. § 1251(a) (stating further:

In order to achieve this objective it is hereby declared that, consistent with the provisions of this chapter—

(1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;

(2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;

(3) it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;

(4) it is the national policy that Federal financial assistance be provided to construct publicly owned waste treatment works;

(5) it is the national policy that areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State;

(6) it is the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans; and

(7) it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this chapter to be met through the control of both point and nonpoint sources of pollution).

116. § 1311(a).

create progressively more stringent national effluent limitation guidelines for entities that discharge pollutants.<sup>117</sup> Hydropower facilities are not required to obtain discharge permits under the Clean Water Act because they do not discharge or "add" pollutants to national waterways. However, section 401 of the Clean Water Act does require that projects obtain 401 Certificates from the State before they can be approved by the Corps or by FERC.<sup>118</sup> The law provides, in part:

Any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in *any discharge* into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate . . .<sup>119</sup>

"Discharge" has been interpreted by the U.S. Supreme Court to include any discharge, regardless of whether it adds a pollutant or not.<sup>120</sup> As a result, any "release of the water from the hydroelectric turbines into the river constitutes a 'discharge' within the meaning of the CWA" and the 401 Certificate requirement.<sup>121</sup> The 401 Certificate must "set forth any effluent limitations and other limitations . . . necessary to assure that any applicant . . . will comply with any applicable effluent limitations and other limitations . . . and with any other appropriate requirement of State law set forth in such certification."<sup>122</sup> Once issued, the state 401 Certificate conditions become conditions upon the FERC license.<sup>123</sup> If a hydropower developer fails to obtain the necessary state certification, or the state denies the certification, FERC is required to deny licensing for the facility.<sup>124</sup> In an effort to have more input into the FERC licensing process, states began to attempt to use the 401 Certificate as a means to influence development occurring within their borders.<sup>125</sup> These initial attempts were mostly unsuccessful, however, with courts interpreting the certification requirement narrowly giving homage to the preemptive power of FERC and the Federal Power Act.<sup>126</sup>

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117. *See id.* at § 1311(b).

118. § 1341(a).

119. *Id.* (emphasis added).

120. *S. D. Warren Co. v. Me. Bd. of Env'tl. Prot.*, 547 U.S. 370, 375-76 (2006); *see also* Daniel Pollak, Note, *S.D. Warren and the Erosion of Federal Preeminence in Hydropower Regulation*, 34 *ECOLOGY L.Q.* 763 (2007) (discussing the effect of the Supreme Court's interpretation of the term "discharge" on state and federal power in hydropower regulation).

121. Roderick E. Walston, *California Water Law: Historical Origins to the Present*, 29 *WHITTIER L. REV.* 765, 804-05 (2008).

122. § 1341(d).

123. *Id.*

124. *Id.* at § 1341(a).

125. *ENERGY, ECONOMICS AND THE ENVIRONMENT*, *supra* note 1, at 147-48.

126. *See e.g.*, *In re Matter of Niagra Mohawk Power Corp. v. N.Y. State Dep't of Env'tl. Conservation*, 624 N.E.2d 146 (N.Y. 1993); *California v. Fed Energy Regulatory Comm'n*, 495 U.S. 490 (1990) (holding that the State of California was without

For example, in *Niagara Mohawk*, an investor-owned utility company that owned and operated multiple hydroelectric facilities in the State of New York sought a license from FERC to construct additional facilities and to repair other dams in the state.<sup>127</sup> Instead of applying for a 401 Certificate, the utility sought a declaratory judgment that it was not subject to New York's Department of Environmental Conservation (DEC) requirements.<sup>128</sup> *Niagara Mohawk* appealed to the courts after the DEC found that the utility was required to "satisfy multiple provisions of the Environmental Conservation Law, *including the regulatory requirements* of the State Environmental Quality Review Act [] before it [would] issue the requisite Clean Water Act § 401 certification."<sup>129</sup> New York's highest court held in favor of *Niagara Mohawk*, concluding that the "Federal Power Act establishes a comprehensive scheme of Federal regulation of hydroelectric projects that essentially preempts State regulation of hydroelectric facilities within the Federal Energy Regulatory Commission's jurisdiction."<sup>130</sup> The state's regulatory authority over the utility's hydropower projects was limited and could only be "based on requirements affecting water quality, not on all State water quality provisions."<sup>131</sup> To hold otherwise, the court said, "would infringe on and potentially conflict with an area of the law dominated by the nationally uniform Federal statutory scheme."<sup>132</sup> In sum, the court believed that the 401 Certificate was merely a "conduit for the incorporation of relevant State water quality standards in this otherwise Federally filled universe" and not a means for the state to assert regulatory authority over a hydropower project.<sup>133</sup>

A year after the *Niagara Mohawk* case was decided, the U.S. Supreme Court issued its opinion in *PUD No. 1 of Jefferson County v. Washington Department of Ecology*,<sup>134</sup> which changed the course of

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authority to impose minimum river flow requirements in conflict with minimum river flow requirements set by FERC).

127. *Niagara Mohawk*, 624 N.E.2d at 194.

128. *Id.* at 194-95.

129. *Id.* at 195 (emphasis added). These regulatory provisions included laws regarding: (a) Protection of Waters: disturbance of stream beds; (b) Protection of Waters: dam construction; (c) Protection of Waters: excavation or fill; (d) Dam Safety; (e) Reservoir Release; (f) Wild, Scenic, and Recreational River System; (g) Freshwater Wetlands; (h) Fish and Wildlife; and (i) Environmental Quality Review. *Id.*

130. *Id.* at 196.

131. *Id.*

132. *Id.*

133. *Id.* at 197.

134. *PUD No. 1 of Jefferson Cnty. v. Wash. Dep't of Ecology*, 511 U.S. 700 (1994). Interestingly, the Court denied certiorari of the *Niagara Mohawk* case the same year it heard and ruled in the *PUD* case. *N.Y. Dep't of Envtl. Conservation v. Niagara Mohawk Power Corp.*, 511 U.S. 1141 (1994). *Niagara Mohawk Power Corporation* filed an amicus brief. See *PUD No. 1*, 511 U.S. at 700.

FERC's "universal" power and opened the door for states to assert significant power of their own when placing conditions upon 401 Certificates.

*a. Conditions on Water Quality, Quantity, and "Other Limitations"*

In *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, the Public Utility District (PUD) and the City of Tacoma sought a 401 Certificate from the state of Washington in application for a license to construct a dam and hydroelectric facility (the Elkhorn Hydroelectric Project) on the Dosewallips River located near the Olympic National Park.<sup>135</sup> The facility was to include a diversion dam that would block 75% of the river's water and divert it into a tunnel.<sup>136</sup> "The project would divert water from a 1.2-mile reach of the river (the bypass reach), run the water through turbines to generate electricity and then return the water to the river below the bypass reach."<sup>137</sup> The existing water flow of the river was "undiminished by appropriation [and] range[d] seasonally between 149 and 738 cubic feet per second (cfs)."<sup>138</sup> The project was to significantly decrease the natural minimum flow of the river to between 65 and 155 cfs.<sup>139</sup> The river is home to steelhead trout and two different types of salmon: the Coho and Chinook.<sup>140</sup> The Washington Department of Ecology did a study to determine what minimum flow would be required to protect the fish.<sup>141</sup> Relying on that report, the state issued a 401 Certificate that imposed, among other things, a "minimum stream flow requirement of between 100 and 200 cfs depending on the season."<sup>142</sup> The city and PUD appealed and won at the administrative appeals level with the appeals board finding that the purpose of the minimum flow requirement was to enhance, not simply to protect and maintain the

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135. *PUD No. 1*, 511 U.S. at 708.

136. *Id.* at 708-09.

137. *Id.* at 709.

138. *Id.*

139. *Id.*

140. *Id.*

141. *Id.* The Court also explained that one of the goals of the CWA is to attain "water quality which provides for the protection and propagation of fish, shellfish, and wildlife." *Id.* at 704 (quoting 33 U.S.C. § 1251(a)(2)). Under the Act, states are required to develop and implement comprehensive water quality standards. Importantly, the state plan must "tak[e] into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational [and other purposes]." *Id.* at 705 (citing § 1313(c)(2)(A)). The CWA (as amended in 1987) also requires states to have an "antidegradation policy" and to set standards necessary to protect existing uses. *See id.* at 718; *see also* § 1313(d)(4)(B) (provision of the statute requiring any revisions to quality standards be in accordance with the antidegradation policy).

142. *PUD No. 1*, 511 U.S. at 709.

fish, and therefore was overreaching.<sup>143</sup> The state appealed. The State Superior Court reversed the administrative appellate board, concluding that the minimum flow conditions were not meant to improve the fishery, but instead were meant to protect and preserve the fish, as the state is authorized to do.<sup>144</sup> The Washington Supreme Court affirmed, adding that the plain language of § 401 and the broad purpose of the Clean Water Act authorizes states to place conditions upon a license as necessary to ensure state law requirements are met.<sup>145</sup> The court concluded that “§ 401(d) confers on States power to ‘consider all state action related to water quality in imposing conditions on section 401 certificates.’”<sup>146</sup> The U.S. Supreme Court granted certiorari and affirmed.<sup>147</sup>

The PUD and the City argued that a state only has authority to place conditions on a license that relate to discharge, and because the minimum flow requirements had nothing to do with the project’s proposed discharges, the requirements were beyond the state’s authority.<sup>148</sup> The Court disagreed. Subsection (a) of 401 requires a state certification if the project will result in a discharge. Subsection (d), the Court stated, does not limit the conditions of the certification to only attach to issues surrounding “discharge,” but instead “expands the State’s authority to impose conditions on the certification of a project.”<sup>149</sup> It authorizes states to set “‘any effluent limitations and other limitations . . . necessary to assure that *any applicant*’ will comply with various provisions of the Act and appropriate state law requirements.”<sup>150</sup> The Court reasoned that because the subsection requires compliance by “any applicant” that it is not linked to the discharge but instead to the applicant’s entire project.<sup>151</sup> In essence, once a project is determined to cause a “discharge” under § 401(a), § 401(d) allows the state to establish conditions on the project as a whole.<sup>152</sup> The Court held that “States may condition certification upon any limitations necessary to ensure compliance with state water quality standards or any other ‘appropriate requirement of State law.’”<sup>153</sup>

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143. *Id.*

144. *Id.* at 710.

145. *Id.* (citing 33 § 1341(d)).

146. *Id.* (citing *Washington Dep’t of Ecology v. PUD No. 1 of Jefferson County*, 849 P.2d 646, 652 (Wash. 1993) (en banc)).

147. *Id.*

148. *Id.* The proposed discharges included “the release of dredged and fill material during the construction of the project, and the discharge of water at the end of the tailrace after the water has been used to generate electricity.” *Id.* at 711.

149. *Id.*

150. *Id.* (quoting § 1341(d)) (emphasis added).

151. *Id.*

152. *Id.* at 712.

153. *Id.* at 713–14 (quoting § 1313(c)(2)(A)).



Next, the Court looked at the specific conditions of the 401 Certificate at hand to determine whether the imposition of minimum stream flow requirements fell within the state's authority.<sup>154</sup> In finding for the state, the Court rejected the argument that the State's requirements would somehow infringe upon FERC's authority to regulate and license hydropower projects.<sup>155</sup> The Court distinguished its holding in *California v. FERC*, wherein it held that the state did not have the authority to impose minimum stream flow standards in conflict with standards set forth in FERC's hydropower license.<sup>156</sup> First, the Court noted that no such conflict exists in this case. FERC had not established minimum flow requirements for this project and in fact, FERC representatives stated that the federal government had "no objection to the stream flow condition contained in the § 401 certification" and any alleged conflict is hypothetical.<sup>157</sup> Second, the Court noted that the 401 Certificate requirement is not limited to a hydro-power license by FERC. Instead, it applies to "all federal licenses and permits for activities which may result in a discharge into the Nation's navigable waters," such as building piers, docks, ramps, reservoirs or canals.<sup>158</sup> The Court held that a state may set forth minimum stream flow requirements in a 401 Certificate "as necessary to enforce a designated use contained in a state water quality standard."<sup>159</sup>

*b. FERC Must Accept in Total or Reject in Total Conditions Placed on Certification by States*

While FERC did not have any objections to Washington State's certification conditions in the *PUD* case, it was only a matter of time before FERC would receive a 401 Certificate containing a set of conditions of which it did not agree. What options, if any, did FERC have? Could it pick and choose which conditions to accept or could it simply reject the state's conditions altogether? The Second Circuit decided the issue in 1997.<sup>160</sup>

The Tunbridge Mill Corporation sought a license from FERC to restore a historic mill site and operate "a small hydroelectric facility on

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154. *Id.* at 714.

155. *Id.* at 722.

156. *Id.* (citing *California v. Fed. Energy Regulatory Comm'n*, 495 U.S. at 498).

157. *Id.* (citing Transcript of Oral Argument at 43-44).

158. *Id.*

159. *Id.* at 723.

160. *Am. Rivers, Inc. v. Fed. Energy Regulatory Comm'n*, 129 F.3d 99 (2d Cir. 1997). For additional discussion regarding *American Rivers* as well as a subsequent *American Rivers* case, *Am. Rivers v. Fed. Energy Regulatory Comm'n*, 201 F.3d 1186 (9th Cir. 1999) (further limiting FERC's authority and requiring it to accept and incorporate fishway prescriptions), see Blumm & Nadol, *supra* note 30, at 100-16.

the First Branch of the White River in Orange County, Vermont.”<sup>161</sup> As required under the CWA, Tunbridge sought a 401 Certificate from the state of Vermont in order to obtain its license from FERC.<sup>162</sup> The state of Vermont issued the certification with eighteen conditions. Following public hearing and comment (in accordance with Vermont law), the conditions became final and Tunbridge did not appeal.<sup>163</sup> FERC incorporated fifteen of the eighteen conditions into its grant of Tunbridge’s forty-year license for the project.<sup>164</sup> FERC rejected the other three conditions as beyond the scope of Vermont’s authority.<sup>165</sup> In general, the three conditions allowed the state to have ongoing authority over the project and allowed Vermont to revisit the certification if it deemed appropriate to do so.<sup>166</sup> Vermont and American Rivers appealed.

Interestingly, “[p]rior to Tunbridge Mill . . . FERC had held that it was required by § 401 to include in its licenses all conditions imposed by a state in its certifications notwithstanding the Commission’s view that the conditions were beyond a state’s authority under § 401.”<sup>167</sup> FERC reversed course in the case at hand, however, finding that if a state exceeds its authority under the CWA to place conditions on water quality, FERC has the authority to reject the “unlawful” conditions.<sup>168</sup> In making this finding, FERC “reasoned, in part: ‘We believe that, in light of Congress’ determination that the Commission should have the paramount role in hydropower licensing process, whether certain state conditions are outside the scope of Section 401(d) is a federal question to be answered by the Commission.’”<sup>169</sup>

The court first looked to the plain language of the statute which requires any applicant whose project may result in discharge into navigable waters to first obtain a state certification before applying for a license or permit from a federal agency.<sup>170</sup> Next, the court turned to § 401(d) that states, in part: “Any certification provided under this section . . . shall become a condition on any Federal license or permit

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161. *Am. Rivers, Inc.*, 129 F.3d at 102.

162. *Id.*

163. *Id.*

164. *Id.* at 105.

165. *Id.* at 106.

166. The three rejected conditions are identified as P, J, and L. Condition P gave the state the right to “reopen” the certification if it deemed it was appropriate. Condition J gave the state the right to review and approve any significant changes to the project. Condition L required state approval “before commencement of construction so that the state may ensure that plans are in place to control erosion and manage water flows.” *Id.* at 102–03.

167. *Id.* at 105.

168. *Id.* at 106.

169. *Id.* (quoting Tunbridge Mill Corp., 68 Fed. Energy Reg. Comm’n Rep. (CCH) ¶ 61,078 at 61,387).

170. *Id.* at 107 (citing 33 U.S.C. § 1341(a)).

subject to the provisions of this section.”<sup>171</sup> The court found this statutory language to be “unequivocal” in its requirement that FERC accept any water quality condition made by the state, stating that the language left “little room for FERC to argue that it has authority to reject state conditions it finds to be *ultra vires*.”<sup>172</sup> While the court acknowledged that the statutory language only allows states to impose conditions related to water quality, FERC does not have the authority to pick and choose.<sup>173</sup> The court relied upon the U.S. Supreme Court’s decision in *Escondido Mutual Water Company v. La Jolla Band of Mission Indians*, *supra*, for support.<sup>174</sup>

The application before FERC in *Escondido* was for a hydropower license for multiple projects “located on or near six Mission Indian Reservations.”<sup>175</sup> Pursuant to the Federal Power Act, licenses issued for facilities on Native American reservations “shall be subject to and contain such conditions as the Secretary of the department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation.”<sup>176</sup> FERC nevertheless rejected or modified the Secretary of Interior’s conditions and granted the license.<sup>177</sup> As previously noted, before Congress enacted the Federal Power Act, hydropower licensing authority was split between the Secretaries of Interior, War and Agriculture, with “each ha[ving] authority to issue licenses for hydroelectric projects on lands under his respective jurisdiction.”<sup>178</sup> The FPA changed that by creating one Commission made up of the three Secretaries,<sup>179</sup> and ultimately changed again to a five person Commission independent of the Secretaries.<sup>180</sup> Because of these changes, the Commission argued that requiring it to accept objectionable conditions issued by the Secretary of Interior would “frustrate the purpose of centralizing licensing procedures.”<sup>181</sup> The Court agreed that Congress intended to “centraliz[e] federal licensing authority into one agency.”<sup>182</sup> However, the Court disagreed that this intent somehow relieved the Secretary of Interior from its duty ensuring the reservations are adequately protected.<sup>183</sup> The plain language of the statute requires FERC’s license

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171. *Id.*

172. *Id.*

173. *Id.*

174. *Id.* at 110 (relying on *Escondido Mut. Water Co. v. La Jolla Band of Mission Indians*, 466 U.S. 765 (1984)).

175. *Escondido*, 466 U.S. at 767.

176. *Id.* at 772 (citing 16 U.S.C. § 797(e)).

177. *Id.* at 770.

178. *Id.* at 773.

179. *Id.*

180. *Id.* at 773 n.14.

181. *Id.* at 773.

182. *Id.*

183. *Id.*

to contain conditions established by the Secretary for the protection of the reservations.<sup>184</sup> The Court held that FERC has no authority to modify or pick and choose. If it grants the license, it must incorporate the conditions.<sup>185</sup>

Consistent with the Court's ruling in *Escondido*, the Second Circuit in *American Rivers* held that Congress did not give FERC the "authority to review conditions imposed by the certifying agency" and that unless the applicant appeals the condition, FERC shall—pursuant to the plain language of the statute—either incorporate the certificate conditions fully or deny the license altogether.<sup>186</sup> On remand, FERC issued the license, subject to Vermont's conditions.<sup>187</sup>

Importantly, the court agreed with FERC that it "has a wide preemptive reach" and that it cannot be required to incorporate state conditions that are issued beyond the state's authority to do so, or in conflict with the goals of the FPA. However, the court stated that FERC's "concerns are overblown" because the Commission has the power to simply deny the hydropower license if it believes the conditions frustrate the purpose of the FPA or impair FERC's authority to act under the FPA.<sup>188</sup> The Commission pointed out that it is not always plausible to simply deny a license, particularly when it is a relicense of an existing facility, because it could mean decommissioning the facility.<sup>189</sup> The court recognized that denying such a relicense application could have significant real-world repercussions to local and national energy and economic interests, but held that FERC could not "turn a blind eye" to its Congressional mandate and plain language of the statute.<sup>190</sup> In short, if FERC is dissatisfied with the language of the statute, its only recourse is to seek legislative action to change it.

The above cases collectively dealt quite a blow to the seemingly impenetrable armor of FERC as "Captain Universe" of hydropower licensing, giving states and other federal agencies a newfound avenue to control not just water quality, but quantity and "other limitations" as well, thus resulting in what many refer to as a complex, burdensome and multi-faceted approach to regulation.<sup>191</sup> New layers of re-

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184. *Id.* at 775.

185. *See id.* at 778–79.

186. *See Am. Rivers Inc. v. Fed. Energy Regulatory Comm'n*, 129 F.3d 99, 111 (2d Cir. 1997).

187. *Tunbridge Mill Corp.*, 82 Fed. Energy Regulatory Comm'n Reports ¶ 61,265 (1998).

188. *Am. Rivers Inc.*, 129 F.3d at 112.

189. *Id.* at 111.

190. *Id.*

191. *See Blumm & Nadol, supra* note 30, at 100 (citing *Escondido*, 466 U.S. 765 (1984)) (representing first major, successful attack on FERC's exclusive hydropower licensing authority, when the Court held in 1984 that § 4(e) of the FPA

view and analysis—which FERC cannot ignore—have been added to the licensing process with potentially significant implications as to whether a project will get built, and if so, what form it will take.

### C. Poor Public and Political Opinion of Hydroelectric Dams

In addition to the above obstacles, hydropower has suffered from an increasingly negative public opinion of the use of dams and reservoirs. Hydropower, once able to supply 40% of the nation's electricity now only accounts for approximately 8%. The focus has shifted from promotion of hydropower development to protection and restoration of rivers, fish, and wildlife. Public pressure to remove dams, as well as the increased complexity and cost of hydropower licensing and relicensing, has resulted in the decommissioning of several dams—both voluntarily and involuntarily.

In 1994, FERC issued a policy statement that it has the statutory authority to order dam decommissioning at the owner's expense if FERC rejects a new license for an existing facility.<sup>192</sup> The policy provides, in pertinent part:

At the time a license expires, the Commission will review any application for a new license in terms of current conditions and public interest considerations. There may be instances where a new license can be fashioned, but the terms will not be acceptable to the licensee, and so the license will be rejected. This is most likely to occur where the licensee of an already marginal project is confronted with additional costs at relicensing that render the project uneconomic. The Commission concludes that this possibility will not preclude it from imposing the environmental (and other) conditions it deems appropriate to carrying out its responsibilities under the Act.

In those instances where it has been determined that a project will no longer be licensed, because the licensee either decides not to seek a new license, rejects the license issued, or is denied a new license, the project must be decommissioned.<sup>193</sup>

The policy went into effect February 1995.<sup>194</sup>

Only three years after issuing the policy statement, FERC had opportunity to rely upon it in ordering the decommissioning of the Edwards Dam near Augusta, Maine.<sup>195</sup> The Edwards Dam was built in 1837 across the Kennebec River.<sup>196</sup> It was originally used to produce energy to run nearby textile mills. In 1913, hydroelectric generating

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requires FERC to "accept without modification the conditions that the Secretary [of Interior] deems necessary for the adequate protection and utilization of the reservations.")

192. Project Decommissioning at Relicensing; Policy Statement, 60 Fed. Reg. 339-01, 339 (Jan. 4, 1995) (to be codified at 18 C.F.R. pt. 2).

193. *Id.* at 340.

194. *Id.* at 339.

195. Edwards Mfg. Co., 81 Fed. Energy Regulatory Comm'n Reports 61,255 (Nov 25, 1997).

196. *Id.* at 62199.

facilities were installed at the dam and it began producing electricity.<sup>197</sup> The Kennebec River was once a haven for anadromous fish, “support[ing] runs of every native species of anadromous fish in the northeast United States.”<sup>198</sup> When the Edwards Dam was constructed across the river it became “the first barrier upstream from the bay.” It completely blocked fish migration, because it did not include any fishways. By the time fishways were installed in 1880, “anadromous species above the dam were essentially eliminated.”<sup>199</sup> In 1964, the Commission issued a thirty-year hydropower license for the project.<sup>200</sup> The license did not require installation of any additional fishways, but reserved the right to revisit the issue if circumstances so warranted.<sup>201</sup>

In 1977, Maine began looking at ways to restore the anadromous fish to the Kennebec River and in 1987 it enacted legislation (the Maine Comprehensive Rivers Management Plan) to protect certain parts of the river. The state “identified the Edwards Dam as posing a major obstacle to anadromous fish restoration in the Kennebec River Basin, and concluded that relicensing of the dam should proceed only if its eventual removal is assured.”<sup>202</sup> At the end of 1991, Edwards Manufacturing Company filed an application for a license renewal for The Edwards Project.<sup>203</sup> As was no surprise, the application was met with significant resistance from “environmental groups, sporting organizations, state and federal agencies, and other businesses.”<sup>204</sup> After a lengthy review process, multiple public hearings, and the preparation of two EIS reports, which “determined that the project’s significant negative impacts on fishery resources could not be mitigated except by removal of the dam,”<sup>205</sup> FERC denied the relicense and ordered decommissioning of the dam.<sup>206</sup> In issuing its order, FERC found that all regulatory agencies were in agreement that, absent dam removal, certain species of fish could not be restored even with installation of additional fishways.<sup>207</sup> In addition, FERC looked at the economic status of the project if it did install state-of-the-art fishways and found that it would “make the annual costs of project operation significantly higher than current power costs in the region,

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197. *Id.*

198. *Id.*

199. *Id.* at 62202. The Commission notes that in any event, the installed fishways were inadequate to protect the fish. *Id.*

200. *See id.* at 62199.

201. *Id.* at 62202.

202. *Id.*

203. *Id.* at 62200.

204. ENERGY, ECONOMICS AND THE ENVIRONMENT, *supra* note 1, at 157.

205. Fed. Energy Regulatory Comm’n, *Edwards Mfg. Co.*, 81 *FERC Reports* at 62202.

206. *Id.* at 62199.

207. *Id.* at 62210.

or than the cost of retiring the project and removing the dam.”<sup>208</sup> While the case was on appeal, a settlement was reached among multiple upstream Kennebec River dam owners and resource agencies and the dam was decommissioned.<sup>209</sup>

It is unclear exactly how many dams have been decommissioned in the United States to date. According to American Rivers, the number approaches one thousand over the last hundred years with several hundred of those being removed in the last decade since the Edwards Dam removal.<sup>210</sup> Most recently, American Rivers has focused its attention on the Elwha Ecosystem Restoration Project, which is the largest dam removal project in U.S. history.<sup>211</sup>

The Elwha Ecosystem Restoration Project has an interesting history in that it took an act of Congress to accomplish the project. In 1992 Congress enacted the Elwha River Ecosystem and Fisheries Restoration Act, which authorized the Secretary of Interior to take over the projects and decommission dams located on the river if it was determined that their removal was necessary to meet the goal of restoring native anadromous fish.<sup>212</sup> After investigation, “the Secretary [ ] determined that removal of both the Elwha and Glines Canyon dams is the only alternative that would achieve the goal of full restoration of the Elwha River ecosystem and native anadromous fisheries.”<sup>213</sup> Two dams are in the process of being decommissioned and removed from the Elwha River located on the Olympic Peninsula of Washington state. According to the National Park Service, the process began in September 2011 and is expected to take two to three years to complete, with the goal of fully restoring the native anadromous fisheries and the river’s ecosystem.<sup>214</sup>

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208. *Id.* The cost of adding the needed technology was approximately \$10 million while the cost of decommissioning and removing the dam was about \$2.7 million. *Id.* See also Blumm & Nadol, *supra* note 30, at 119–21 (giving more detailed discussion on FERC’s analysis).

209. Blumm & Nadol, *supra* note 30, at 121 (under the settlement, upstream operators agreed to pay for the dam’s removal “in exchange for a delay in imposition of fish passage requirements at their projects until there was sufficient fish restoration in the river to justify fish passage”).

210. *Making Hydropower Safe for Rivers*, AMERICAN RIVERS, <http://www.americanrivers.org/our-work/restoring-rivers/hydropower-and-rivers/> (last visited July 22, 2012).

211. *Id.*; see generally Russell W. Busch, *Tribal Advocacy for Elwha River Dams Removal on Washington’s Olympic Peninsula*, 2 GOLDEN GATE U. ENVTL. L.J. 5 (2008) (discussing the project’s history).

212. Elwha River Ecosystem and Fisheries Restoration Act, Pub. L. No. 102-495, 106 Stat. 3171 (1992).

213. Busch, *supra* note 211, at 15.

214. *Elwha River Restoration*, NAT’L PARK SERVICE, <http://www.nps.gov/olymp/naturescience/elwha-ecosystem-restoration.htm> (last visited July 22, 2012).

## IV. HYDROPOWER'S FUTURE IS SMALL

Large-scale hydroelectric dam facilities are unlikely to make a comeback in the United States. While electricity produced from these large facilities has historically been inexpensive,<sup>215</sup> consistent, and climate-friendly, the negative impacts on fish, wildlife, and the ecosystem, coupled with the increasingly complex web of regulatory oversight and a faltering public opinion, make it unlikely that new large-scale hydropower will make any additional significant contribution to our future energy supply.<sup>216</sup> Nevertheless, the benefits of hydropower as a clean, renewable energy source are still available through the utilization of small-scale hydropower facilities. Furthermore, the benefit of small hydropower should not be overlooked or overshadowed by the negative impacts of large dams. The remainder of this Article will outline various options for opening up avenues to increase small hydropower development and will explore the potential benefits of state licensing to local communities and for the global climate.

Small-scale hydropower projects are generally considered to be those projects that generate 30 MW of electricity or less;<sup>217</sup> however, FERC currently defines small hydropower as 5 MW or less.<sup>218</sup> Currently, small hydropower projects contribute approximately 11% of the electricity generated by hydropower in the United States.<sup>219</sup> Small hydropower generates electricity when free-flowing water moves through a turbine strategically placed within a natural flow of a river, pipeline or canal.<sup>220</sup> These facilities do not need to utilize

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215. Hydropower has historically been one of the least expensive sources of power with the majority of the cost being incurred for infrastructure and construction. According to a 2008 study, power generated from existing dams costs between \$0.01 to \$0.10 per kilowatt-hour (kWh). “[N]ew small and micro hydropower [costs] between \$0.06 and \$0.14 per kWh, making incremental hydropower the least expensive option for new renewable generation and new hydropower roughly on par with new wind and biopower.” Hydropower: Quick Facts, CENTER FOR CLIMATE AND ENERGY SOLUTIONS, <http://www.c2es.org/print/technology/factsheet/hydropower> (last visited Aug. 9, 2012) (citing CAL. INST. FOR ENERGY AND THE ENV'T RENEWABLE ENERGY TRANSMISSION INITIATIVE PHASE IA, FINAL REPORT (2008), available at <http://www.energy.ca.gov/2008publications/RETI-1000-2008-002/RETI-1000-2008-002-F.PDF>).

216. See BRACMORT ET AL., *supra* note 59, at 19 (“there are serious doubts about whether investments in large hydropower projects, by either the public or private sector, are likely to happen soon, owing to economic and geographic constraints, environmental concerns, and public perception”).

217. Lea Kosnik, *The Potential for Small Scale Hydropower Development in the US*, 38 ENERGY POLICY 5512 (2010), available at <http://www.umsl.edu/~kosnik/Costs%20SSH.pdf>.

218. 18 C.F.R. § 4.101 (2012); 18 C.F.R. § 4.30(b)(29) (2012).

219. BRACMORT ET AL., *supra* note 59, at 4.

220. Kosnik, *supra* note 217, at 5513–14.



dams<sup>221</sup> or reservoirs, so the majority of the potential negative environmental impacts are mitigated.<sup>222</sup> “As the main criticism of conventional hydropower development has been the local impact on fishery resources and riverine ecosystems, small scale hydropower presents an alternative, win-win situation: no carbon emissions *and* a negligible local environmental footprint.”<sup>223</sup>

“Small hydro presents a substantial, largely-untapped opportunity for economic development . . . throughout the nation”<sup>224</sup> and many suitable locations exist in the United States for small generating facilities. It can be difficult to find suitable locations for large hydroelectric dams and reservoirs, generally due to a multitude of factors including decreased river flow due to climate change, legislation that blocks dam construction on certain rivers, and pre-existing dam facilities already located on the best sites.<sup>225</sup> Small-scale hydropower development is not similarly situated. New small hydropower technology can utilize existing infrastructure of canals and pipelines or can be independently placed in waterways allowing for the natural flow of the water to turn the turbines and generate electricity. According to the National Hydropower Association, “there is significant growth potential in the small hydro/conduit power sectors” with small towns and cities making an active move to evaluate the “feasibility of retrofitting their local dam infrastructure or invest[ing] in irrigation power projects and other conduit applications.”<sup>226</sup>

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221. Small hydropower facilities may also be placed on existing non-powered dams. “[O]nly 3 percent of the 80,000 dams in the United States generate electricity, so there is substantial potential for adding hydropower generation to nonpowered dams.” H.R. 5892, 112th Cong. (2012), *available at* <http://www.gpo.gov/fdsys/pkg/BILLS-112hr5892rfs/pdf/BILLS-112hr5892rfs.pdf>. This author, however, does not encourage the damming of rivers and therefore will limit any promotion of small hydropower to facilities located on existing conduits or that utilize the free water flow of a waterway.
222. Kosnik, *supra* note 217, at 5513–14 (“Without a permanent dam to block river flow, nor a large reservoir to flood arable land and disrupt river temperature and composition levels, many of the negative riverine effects of traditional hydropower are avoided with a small scale hydropower plant.”).
223. *Id.* at 5512. It should be noted that placement of multiple small projects in one waterway could have the same or similar negative environmental impact as one large existing project. This would certainly need to be addressed and monitored by local and state authorities to ensure cumulative effects of multiple projects did not jeopardize fish, wildlife, habitats, or interfere with interstate commerce.
224. *Colorado Small Hydro Ass’n: Hearing Before the H. Comm. On Energy & Commerce Regarding the Hydropower Regulatory Efficiency Act of 2012*, 112th Cong. 8 (2012) (testimony of Kurt Johnson, Colorado Small Hydro Ass’n), at 4, *available at* [http://democrats.energycommerce.house.gov/sites/default/files/image\\_uploads/Johnson\\_Testimony\\_EP\\_05.09.12.pdf](http://democrats.energycommerce.house.gov/sites/default/files/image_uploads/Johnson_Testimony_EP_05.09.12.pdf).
225. Tarlock, *supra* note 16, at 263 (“The best sites have been developed or protected from dams or small facilities.”).
226. *The America Energy Initiative: Hearing on the Hydropower Regulatory Efficiency Act of 2012 Before the H. Energy & Power Subcomm.*, 112th Cong. 9 (2012) (testi-

Government studies have found that there are literally “thousands of viable sites capable of producing significant amounts of hydroelectric power” via small-scale hydropower facilities.<sup>227</sup> As part of a study conducted in 2004, the Department of Energy identified almost 500,000 sites suitable for small hydropower development, with a combined capability of producing in excess of 100,000 MW of power. According to the Department of Energy, this would represent nearly 10% of the Nation’s total electric power generation capacity, and approximately 80% of the Nation’s supply of renewable energy generation.<sup>228</sup> In follow-up to the 2004 study, the Department of Energy undertook a feasibility assessment for small hydropower development at the identified sites. The study identified approximately 130,000 sites that would be feasible to develop.<sup>229</sup> If all of these sites were developed, the Department of Energy estimates that current annual hydropower generation in the United States would double.<sup>230</sup> While it is most likely unrealistic that all 130,000 projects could be built in the near future, the Department identified approximately 5,400 sites that are more likely to be developed soon, and if so developed would represent approximately 20,000 MW of annual energy production and equal a 50% increase in National hydropower generation.<sup>231</sup>

Accepting as true the premise that small, dam-free, reservoir-free hydropower is a highly advantageous form of renewable, clean, and environmentally friendly energy that, if developed, would increase electric generation from 50% to 200%, why is there not a boom in hydropower development? The following section will discuss the most significant barrier for small hydropower development—the complex web of regulatory oversight and, in particular, the costly and time-consuming consultation phases of the licensing process—and will offer opportunities for change in the licensing scheme.

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mony of Andrew Munro, Nat’l Hydropower Ass’n), available at <http://republicans.energycommerce.house.gov/Media/file/Hearings/Energy/20120509/HHRG-112-IF03-WState-MunroA-20120509.pdf>.

227. Kosnik, *supra* note 217, at 5512.

228. *Id.*

229. U.S. Dep’t of Energy, *Feasibility Assessment of the Water Energy Resources of the United States for New Low Power and Small Hydro Classes of Hydroelectric Plants*, [http://hydropower.inl.gov/resourceassessment/pdfs/main\\_report\\_appendix\\_a\\_final.pdf](http://hydropower.inl.gov/resourceassessment/pdfs/main_report_appendix_a_final.pdf) at 21 (last visited November 4, 2012).

230. *Id.* at 23.

231. *Id.*

### A. The Web of Regulatory Oversight

Hydropower—both large and small scale—is the most highly regulated form of energy development in the United States,<sup>232</sup> with the possible exception of nuclear power.<sup>233</sup> In fact, “FERC and other participants in the licensing process acknowledge that the process is far more complex, time-consuming, and costly today than it was when FERC issued the approximately 1,000 original hydropower licenses 30 to 50 years ago.”<sup>234</sup> The application process can involve dozens of federal and state agencies and in many instances can take more than five and a half years to complete.<sup>235</sup>

A new or relicense hydropower application will fall into one of three licensing processes: (1) the Traditional Licensing Process (TLP);<sup>236</sup> (2) the Alternative Licensing Process (ALP);<sup>237</sup> or (3) the Integrated Licensing Process (ILP), which became FERC’s default licensing process in July 2005 in response to demands that FERC develop a more efficient and streamlined licensing program.<sup>238</sup> The Integrated Licensing Process is intended to be more collaborative and bring the multiple parties together earlier so as to help resolve disputes earlier in the process. For example, it requires the National Environmental Policy Act (NEPA) review process to be completed in the pre-application phase of the licensing process instead of in the post-application phase, thus allowing for environmental concerns to be addressed and resolved earlier in the process.<sup>239</sup> And, in the event the

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232. CENTER FOR CLIMATE AND ENERGY SOLUTIONS, *Hydropower Quick Facts*, available at <http://www.c2es.org/technology/factsheet/hydropower> (last visited August 2, 2012).

233. CENTER FOR CLIMATE AND ENERGY SOLUTIONS, *supra* note 215 (Noting that the current regulatory scheme “may be time-consuming, expensive, and redundant as well as tailored to past experience with large hydropower projects, despite the likelihood that small-scale and incremental hydropower products will be most important for future U.S. hydropower growth.”); *see also Kosnik, supra*, note 217, at 5518.

234. U.S. GEN. ACCOUNTING OFFICE, *supra* note 58, at 6–7.

235. BRACMORT ET AL., *supra* note 59, at 11.

236. An applicant seeking to use the Traditional Licensing Process must first obtain Commission approval. FED. ENERGY REGULATORY COMM’N, LICENSING PROCESSES, available at <http://www.ferc.gov/industries/hydropower/gen-info/licensing/licenpro.asp> (last visited August 2, 2012); *see also* Avinash Kar, *Ensuring Durable Environmental Benefits Through a Collaborative Approach to Hydropower Re-licensing: Case Studies*, 11 HASTINGS W.-N.W. J. ENV. L. & POL’Y 27 (2004) (discussing the different types of licensing processes available at FERC).

237. Kar, *supra* note 236, at 29.

238. BRACMORT ET AL., *supra* note 59, at 11; *see* Fed. Energy Regulatory Comm’n, *Handbook for Hydroelectric Project Licensing and 5 MW Exemptions From Licensing* iii (2004).

239. BRACMORT ET AL., *supra* note 59, at 20 (“FERC indicates that these changes are intended to make the process shorter and more efficient without altering agencies’ authorities under the Federal Power Act (16 U.S.C. §791 et al. (2006)) or the Clean Water Act (33 U.S.C. §1341(2006)) to develop license conditions that pro-

environmental concerns are too great to be resolved, the license will be rejected earlier in the process, thereby reducing costs to the applicant of a project that will never succeed.

1. *Current "Exemptions" for Small Hydro, Conduits, and Test Hydrokinetic Projects*

FERC currently offers "exemptions" from traditional hydropower licensing for qualifying small-scale hydropower facilities, conduit projects, and pilot hydrokinetic projects. Unfortunately, the label "exemption" is misleading, as small hydro and conduit projects must still go through a lengthy and extensive application process—both pre- and post-application—to qualify for the exemption, including three stages of consultation. The number of parties involved in a licensing process is significant and can include: National Marine Fisheries Service, U.S. Fish and Wildlife Service, National Park Service, U.S. Environmental Protection Agency, the federal resource agencies involved in administering federal lands where the project may be located, any state resource agencies responsible for fish, wildlife, and botanical resources, water quality, coastal zone management plan consistency certification, shoreline management, and water resources, the State Historic Preservation Officer and Tribal Historic Preservation Officer, local, state, and regional recreation agencies and planning commissions, local and state zoning agencies, any Indian tribe that may be affected by the project, and any potentially adversely affected landowners.<sup>240</sup> It is not surprising that it can sometimes be extremely difficult to herd this many cats into reviewing an application in a timely and efficient manner.<sup>241</sup>

The benefit to utilizing the exemption licensing scheme is that small hydro and conduit facilities licensed under the exemption will receive perpetual licenses instead of the thirty- to fifty-year license received under traditional licensing. Hydrokinetic licensing for temporary test facilities is less extensive; however, permanent hydrokinetic facilities must still go through the small hydro exemption process.

a. *Small Hydropower and Conduit Project Exemptions*

The Federal Power Act provides for exemptions from licensing for small hydropower and conduit projects on a case-by-case basis.<sup>242</sup> Under the current licensing scheme, small hydropower developers

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tect fish, federal reservations (e.g., national forests, Indian reservations), or rivers' state-designated uses.").

240. *Id.*

241. *See id.* at 12.

242. 18 C.F.R. § 4.101 (2012) (exemptions for small hydropower); 18 C.F.R. § 4.90 (2012) (exemptions for conduits).

have two options available for an exemption from FERC licensing: a small hydroelectric power project or a conduit project. A qualifying small hydropower project must have an installed capacity of 5 MW or less and (1) will be built on an existing dam not owned by the federal government; (2) will utilize a natural water flow for generation without a dam, man-made impoundment or the retention of water for purposes of storage or release; or (3) is an existing facility ( $\leq 5$  MW) that proposes to increase capacity.<sup>243</sup> The conduit exemption is available for proposals to construct a hydropower project on an existing conduit. A conduit is defined as “any tunnel, canal, pipeline, aqueduct, flume, ditch, or similar manmade water conveyance that is operated for the distribution of water for agricultural, municipal, or industrial consumption.”<sup>244</sup> The conduit must have been constructed for a purpose other than production of electricity and must be located on non-federally owned property. Municipal projects can be up to 40 MW of generating capacity, and non-municipal projects are limited to 15 MW or less.<sup>245</sup>

As discussed, these exemptions, however, are not true exemptions from the initial licensing process, but are instead exemptions from relicensing. Once a small hydro project receives an exemption, it is not required to go through the process again in thirty to fifty years like conventional hydropower, but instead receives a license in perpetuity. It is questionable whether an unlimited license is actually beneficial. Historically, a thirty- to fifty-year licensing period was necessary because the license was intended to give developers of large hydropower facilities long enough to recoup and make a profit on such a large financial expenditure, before the project was to be turned over to the federal government. Neither issue exists today with small hydro development. First, the cost of actual construction of these projects is relatively minor, in the low thousands instead of the millions for large hydro. Second, any act by the federal government to take over a project requires an act of Congress and for the most part, the federal government has chosen to stay out of the takeover business for large-scale hydropower. It would be extremely unlikely for a takeover of small-

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243. 18 C.F.R. § 4.30(b)(29) (2012); § 4.101. *See also Oversight Hearing on The Hydro-power Regulatory Efficiency Act of 2012 Before the Comm. on Energy & Commerce, Subcomm. on Energy and Power, 112th Cong. 3* (2012) (testimony of Jeff C. Wright, Dir., Office Energy Projects, Fed. Energy Regulatory Comm'n), available at <http://www.ferc.gov/EventCalendar/Files/20120509094459-Wright-testimony-5-09-12.pdf> (“[I]n section 405(d) of the Public Utility Regulatory Policies Act, Congress authorized the Commission to grant exemptions for small hydroelectric power projects having an installed capacity of 5,000 kilowatts or less. . . . Both types of exemptions are subject to mandatory fish and wildlife conditions provided by federal and state resource agencies.”).

244. § 4.30(b)(2).

245. *Id.* at § 4.30(b)(28)(iii); 18 C.F.R. § 4.90 (2012).

scale hydropower and the statute specifically excludes from takeover "minor projects" with generation of 1.5 MW or less.<sup>246</sup>

As a result, there is no need for an indefinite licensing term for small hydropower and it could in fact be more beneficial to have a shorter licensing period than traditional hydropower. If FERC were to issue licenses for shorter durations, it would allow a project to be evaluated over a shorter period of time to see if it is indeed producing clean energy with little to no environmental impact as intended. If it is not, the project could be re-evaluated sooner and relicenses could be rejected. This incentivizes developers to ensure the environment is protected, or risk losing an opportunity to relicense the project. It likewise would incentivize environmentalists to give the project an opportunity to succeed knowing that the issue can be revisited before the damage has already been done. This option would be consistent with FERC's current treatment of hydrokinetic pilot projects under its Hydrokinetic Pilot Project licensing program, discussed *infra*.

In any event, to apply for the exemption, the applicant must undergo three stages of consultation unless it can obtain a waiver of the consultation requirements from all resource agencies.<sup>247</sup> If an applicant is unable to obtain a written waiver from all resource agencies, the applicant must meet the consultation requirements for stages one and two prior to filing the exemption application.<sup>248</sup> Stage one consultation requires the applicant to contact all "appropriate resource agencies, affected Indian tribes, and members of the public likely to be interested in the proceeding" and provide them with various information regarding the proposed facility.<sup>249</sup> This is followed by a joint meeting of the parties and written comments from the resource agen-

246. See 33 C.F.R. § 221.1(d)(6) (1978), which states:

An act whereby the Federal government assumes project ownership. Upon expiration of a license for a hydroelectric project, the United States, under certain specific conditions set forth in section 14 of the Federal Power Act may "take over", maintain and operate the project. This does not apply to any project owned by a State or local government. Take over procedures are not applicable to "Minor Projects."

Minor projects are those projects with an "installed capacity of 2,000 horsepower or less," which is approximately 1.5 MW. *Id.* at § 221.1(3).

247. 18 C.F.R. § 4.38(a)(1) (1985). The applicant must consult with:

the relevant Federal, State, and interstate resource agencies, including the National Marine Fisheries Service, the United States Fish and Wildlife Service, the National Park Service, the United States Environmental Protection Agency, the Federal agency administering any United States lands or facilities utilized or occupied by the project, the appropriate State fish and wildlife agencies, the appropriate State water resource management agencies, the certifying agency under section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. § 1341(c)(1), and any Indian tribe that may be affected by the proposed project.

248. *Id.*

249. *Id.* at § 4.38(b)(2).

cies and interested members. All participating parties have 60 days following the joint meeting to submit written comments; however, this deadline may be extended to 120 days at the request of any resource agency.<sup>250</sup> The first stage of consultation ends with the running of this deadline. After the first consultation stage, the applicant must (1) complete studies regarding environmental and wildlife impacts, the financial and technical feasibility of the project, and the facility design; and (2) respond to all reasonable requests for information made by resource agencies and Indian tribes.<sup>251</sup> The second stage of consultation is completed 90 days after submission of the studies and information requested by the resource agencies, so long as no one makes any substantive objection.<sup>252</sup> In the event of substantive objection or disagreement, the second stage of consultation will not conclude until after the last joint meeting of the participating parties to resolve the substantive disagreements.<sup>253</sup> The third stage of consultation begins with the filing of the exemption for small hydropower licensing.

The contents of the application for exemption from licensing must contain the following: (1) an application, which is a standardized form that includes an introductory statement identifying the parties; (2) the name and location of the project; (3) a detailed description of the project and its proposed mode of operation together with graphs, charts and studies; (4) a full environmental report outlining the location of the project, any potential animal, plant or habitat impacts, and proposed mitigation options; (5) evidence of real property ownership; and (6) identification of all Indian tribes that may be affected by the project.<sup>254</sup> The paperwork for filing for an exemption can be "very onerous," easily exceeding one hundred pages of reports, explanations, charts, diagrams, maps, letters, and other documents.<sup>255</sup> Gathering and compiling the necessary information can take months, as this process requires hiring of consultants, engineers, attorneys, surveyors, and environmental consultants to complete the initial paperwork. It becomes apparent when reviewing the requirements for consultation that after an applicant completes the lengthy application, the studies, and all the meetings, the exemption process for small hydro is no different than the integrated licensing process used by large hydropower developers. It is in fact not an exemption at all.

In addition to the time burden of putting all of the information together, the process is also costly and many times can exceed the cost of

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250. *Id.* at § 4.38(b)(7).

251. *Id.* at § 4.38(c)(1).

252. *Id.* at § 4.38(c)(10)(ii).

253. *Id.*

254. 18 C.F.R. § 4.107 (1980); 18 C.F.R. § 4.92 (1980).

255. Testimony of Kurt Johnson, *supra* note 224 at 4.

the proposed facility. The cost of hiring consultants and preparing the necessary paperwork for the exemption can cost between \$10,000 and \$30,000. The cost for the equipment and installation of a 1–2 kilowatt hydropower system is less than \$10,000.<sup>256</sup> As a result, this exemption process can be prohibitive for small-scale hydro development.<sup>257</sup>

*b. Pilot Hydrokinetic Projects*

Small hydropower that utilizes the natural flow of the river currents to produce electricity, without the need for dams or reservoirs, is sometimes referred to as hydrokinetic generation. In recent years, FERC has asserted authority over licensing and regulation for hydrokinetic projects.<sup>258</sup> Since that time, FERC has established the Hydrokinetic Pilot Licensing Process for applicants seeking to test hydrokinetic generation projects prior to applying for a license to construct and permanently operate the facility.<sup>259</sup> FERC's "goal of the pilot process is to allow developers to test new hydrokinetic technologies, to determine appropriate siting of these technologies, and to confirm their environmental effects, while maintaining FERC oversight and agency input."<sup>260</sup>

Qualifying hydrokinetic facilities are those proposed to be "(1) small; (2) short term; (3) not located in sensitive areas based on the Commission's review of the record; (4) removable and able to be shut down on short notice; (5) removed, with the site restored, before the end of the license term (unless a new license is granted); and (6) initiated by a draft application in a form sufficient to support environmental analysis."<sup>261</sup> To operate a hydrokinetic facility for the purpose of

256. *Id.*

257. *Small Hydropower Development in the United States*, FED. ENERGY REGULATORY COMM'N (April 15, 2010), available at <http://www.ferc.gov/media/news-releases/2010/2010-2/04-15-10-A-5-presentation.pdf> (last visited August 2, 2012).

258. *Hydrokinetic Projects*, FED. ENERGY REGULATORY COMM'N (2012), <http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics.asp>

259. *Hydrokinetic Pilot Project Criteria and Draft Application Checklist Pursuant to 18 CFR § 5.18 8*, FED. ENERGY REGULATORY COMM'N (2010), [http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/pdf/pilot\\_project.pdf](http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/pdf/pilot_project.pdf) (last visited July 26, 2012).

260. *Hydrokinetic Pilot Project Licensing Process*, FED. ENERGY REG. COMM'N, available at <http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/energy-> (last visited Aug. 7, 2012).

261. *Licensing Hydrokinetic Pilot Projects*, FED. ENERGY REGULATORY COMM'N 5 (2008), available at [http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/pdf/white\\_paper.pdf](http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/pdf/white_paper.pdf).

In order to receive the permit, an applicant must complete the following:

- (1) distribute its pre-filing materials to the potentially interested state, federal, and local resource agencies, Indian tribes, non-governmental organizations, and members of the public; (2) notice the availability of the materials in local newspapers; and (3) file the materials with the Commission. The pre-filing materials should include (1) a notice of intent



generating electricity “from waves or directly from the flow of water in ocean currents, tides, or inland waterways,” the operator must first apply for a preliminary permit.<sup>262</sup> The application to obtain a preliminary permit is essentially the same type of application for a small hydropower exemption or a conduit exemption.<sup>263</sup> It is an expensive and time-consuming endeavor. Additionally, the preliminary permit does not authorize the applicant to actually construct the project. It only gives the applicant priority for a project on that location over other applicants who may apply for a license for that same location.<sup>264</sup> The permit is valid for up to three years and gives the applicant an opportunity to complete studies and determine if a project on that site is a viable option.<sup>265</sup> If during that time the applicant desires to continue with the project and to initiate construction, the applicant has two choices: to file an application for Hydrokinetic Pilot Project License, or to file an application for a conventional hydropower license. Projects eligible and approved for the Hydrokinetic Pilot Project obtain short-term licenses for the purpose of continued testing of new hydrokinetic technologies, and require “rigorous environmental monitoring and safeguards.”<sup>266</sup> Applicants seeking a longer, more permanent license to construct and operate a hydrokinetic electric generation facility for thirty to fifty years must apply for the license through one of FERC’s three licensing processes.<sup>267</sup> Depending on its size and other factors,

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(NOI) to file an application; (2) a draft application (including proposed plans for monitoring, safeguarding the public and environmental resources, and assuring financing to remove the project and restore the site); (3) a request for the waivers necessary to pursue expedited processing of a pilot project license application (including a process plan/schedule and justification statement); and (4) requests for designation as non-federal representative for Endangered Species Act (ESA) and National Historic Preservation Act (NHPA) consultation. The justification statement must demonstrate that the project meets the pilot project criteria.

*Id.* at 6.

262. See *Preliminary Permits*, FED. ENERGY REGULATORY COMM’N, <http://www.ferc.gov/industries/hydropower/gen-info/licensing/pre-permits.asp> (last visited Aug. 7, 2012).

263. See 18 C.F.R. § 4.32 (2012); 18 C.F.R. § 4.81 (2012).

264. *Preliminary Permits*, *supra* note 262.

265. *Id.*

266. *Hydrokinetic Pilot Project Licensing Process*, *supra* note 260, at 7. FERC issued its first license under this program on January 23, 2012. It is a ten-year license to construct, operate, and maintain a 1,050-kilowatt (kW) project in the East River in New York County, New York Fed. Energy Regulatory Comm’n, *Verdant Power, LLC*, 138 *FERC Reports* P 62,049 (Jan. 23, 2012), available at <http://www.ferc.gov/media/news-releases/2012/2012-1/01-23-12-order.pdf>.

267. *Hydrokinetic Projects*, FED. ENERGY REGULATORY COMM’N, <http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics.asp> (last visited Aug. 7, 2012). According to FERC:

The Integrated Licensing Process (ILP, Part 5 of 18 CFR), with specific waivers granted under § 5.29(f)(2) on a case-by-case basis, is the best process to use to apply for a hydrokinetic pilot project license. The ILP

the project may qualify for a small hydropower exemption discuss above.<sup>268</sup> Unfortunately, as with small hydropower and conduit exemptions applications, “[t]he pace of FERC’s permit process for hydrokinetic plants has unnerved many suppliers.”<sup>269</sup>

## B. The Hydropower Regulatory Efficiency Act of 2012

In recognition of the need for a regulatory change, Congress is currently considering legislation that would give conduit projects a boost. The Hydropower Regulatory Efficiency Act of 2012 has garnered significant attention and support. On July 9, 2012, the House of Representatives unanimously passed the Hydropower Regulatory Efficiency Act of 2012.<sup>270</sup> The bill is co-authored by Representative Diana DeGette (D-CO) and Representative Cathy McMorris Rodgers (R-WA)—representatives from two extremely hydro-rich states.<sup>271</sup> The stated purpose of the bill is to promote electricity generation from small and conduit hydropower projects and if passed would result in little FERC involvement in qualifying projects. The bill makes several findings, including that hydropower can be beneficial to the environment and the economy. It is the “largest source of clean, renewable electricity in the United States” and currently employs some 300,000 workers in the United States.<sup>272</sup> If the untapped hydropower re-

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time frame can be reduced while preserving opportunities for consultation and comment, environmental review and analysis, and the conditioning authority of federal and state agencies and Indian tribes.”

*Licensing Hydrokinetic Pilot Projects*, FED. ENERGY REGULATORY COMM’N, *supra* note 261, at 4.

268. *Licensing Hydrokinetic Pilot Projects*, FED. ENERGY REGULATORY COMM’N, *supra* note 261, at 4.

269. Ram Narayan, *Hydrokinetics: Generating Power from Water*, REGBLOG (June 13, 2012), <https://www.law.upenn.edu/blogs/regblog/2012/06/hydrokinetics-generating-power-from-water.html>. For example, a company attempting to develop hydrokinetic power in the Mississippi River currently “has 45 permits pending before FERC and [] it was required to complete 11 studies prior to getting its proposal approved.” *Id.*

270. H.R. 5892, 112th Cong. (2012), *available at* <http://www.gpo.gov/fdsys/pkg/BILLS-112hr5892rfs/pdf/BILLS-112hr5892rfs.pdf>. This bill is similar to The Hydropower Improvement Act of 2011, co-sponsored by Lisa Murkowski (R-AK) and Jeff Bingaman (D-NM) last year, which passed the Senate Energy and Natural Resources Committee on a voice vote in April 2011. S. 629, 112th Cong. (2011), *available at* <http://www.gpo.gov/fdsys/pkg/BILLS-112s629rs/pdf/BILLS-112s629rs.pdf>; *see also* the Small-Scale Hydropower Enhancement Act of 2011, which seeks to exempt “a hydroelectric project that uses only a non-federally owned conduit to generate electric power that does not exceed 1.5 megawatts” from certain federal licensing requirements. This bill is has been referred to the Subcommittee on Energy and Power. H.R. 795, 112th Cong. (2011), *available at* <http://www.govtrack.us/congress/bills/112/hr795/text>.

271. H.R. 5892.

272. *Id.*

sources were developed, 60,000 MW of hydropower capacity and 700,000 new jobs could be added by 2025.<sup>273</sup>

The bill has gained support from FERC in addition to hydropower associations.<sup>274</sup> On May 9, 2012, Kurt Johnson, the president of the Colorado Small Hydro Association, submitted written testimony before the House Energy and Commerce Committee Energy and Power Subcommittee regarding the Hydropower Regulatory Efficiency Act of 2012.<sup>275</sup> He testified that the change was “long-overdue” and that it would be enormously beneficial to the industry. He opined that a reformed licensing scheme would bolster small hydropower development, increase renewable electricity generation, and create jobs and economic growth.<sup>276</sup> After unanimous approval by the House of Representatives on July 9, 2012, the bill is now before the Senate for its consideration.

The bill proposes to make changes to the regulatory and licensing process for conduit and small hydropower projects. It proposes to promote conduit hydropower projects by exempting qualifying facilities from the FERC licensing process, and would only require notice of construction. It reads in relevant part: “Any person, State, or municipality proposing to construct a qualifying conduit hydropower facility shall file with the Commission a notice of intent to construct such facility. The notice shall include sufficient information to demonstrate that the facility meets the qualifying criteria.”<sup>277</sup> Conduit is defined by the bill as “any tunnel, canal, pipeline, aqueduct, flume, ditch, or similar manmade water conveyance that is operated” for some purpose other than for generation of electricity.<sup>278</sup> To qualify for the exemption, the conduit project (1) must be non-federally owned;<sup>279</sup> (2) “constructed, operated, or maintained for the generation of electric

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273. *Id.*

274. Testimony of Jeff C. Wright, *supra* note 243, at 8.

275. Testimony of Kurt Johnson, *supra* note 224.

276. *Id.* at 3. Mr. Johnson testified that “Colorado currently has hundreds of hydro-related jobs, a number of which could grow substantially given the right federal and state policies.” Small hydro development can create job opportunities for consultants, project developers, engineers, lawyers, financiers, environmental consultants, construction companies, equipment manufacturers, and tradespeople including concrete workers, plumbers, carpenters, welders and electricians. *Id.* at 6.

277. H.R. 5892, 112th Cong. (2nd Sess. 2012), available at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr5892rfs/pdf/BILLS-112hr5892rfs.pdf>.

278. *Id.* at 4.

279. The House of Representatives also recently passed H.R. 2842, The Bureau of Reclamation Small Conduit Hydropower Development and Rural Jobs Act of 2011, which seeks to remove certain licensing requirement from conduits located on federally-owned properties. The bill is awaiting consideration by the Senate. H.R. 2842, 112th Cong. (2nd Sess. 2012), available at [http://thomas.loc.gov/home/gpoxmlc112/h2842\\_eh.xml](http://thomas.loc.gov/home/gpoxmlc112/h2842_eh.xml).

power"; (3) not include any dam or other impoundment; and (4) be have less than 5 MW of installed capacity.<sup>280</sup>

Within fifteen days of receiving the notice, the bill requires that FERC make an initial determination as to whether the project meets the criteria for exemption. If it does, FERC will publish public notice of the intent to proceed with construction of the facility.<sup>281</sup> Any person or entity wishing to contest the facility's exemption from formal licensing must do so within forty-five days.<sup>282</sup> If the exemption is contested, FERC will issue a formal written opinion outlining whether the projects meets the requisite exemption criteria.<sup>283</sup> If the exemption is not contested, it will be automatically approved.<sup>284</sup> The apparent goal of this forty-five-day notice period is to provide ample opportunity to ensure that the project is in fact non-controversial and will not create any adverse environmental impacts.<sup>285</sup> However, the bill is worded quite narrowly and does not require, at least on its face, that the project meet any environmentally-related criteria.

The bill also claims to promote small non-conduit hydroelectric power projects by increasing the exemption from 5 MW to 10 MW.<sup>286</sup> The bill does not, however, change the procedure for obtaining the exemption license from FERC. Unlike the conduit exemption, small hydropower exemptions will still need to go through the tedious, time-consuming and expensive process outlined above. Regardless of whether a facility has an installed capacity of less than 5 MW or less than 10 MW, the project will still need to go through the full FERC exemption process that can take years to process. Significant paperwork will still be required, experts will still need to be retained, and approvals will still need to be sought from all resource agencies in order to complete the process. The bill does nothing to alleviate these previously-discussed cost and time inefficiencies. It merely increases the allowed capacity to qualify for the exemption. It is unclear from the bill's history as to why it fails to treat small hydropower—at least with regard to installations on existing infrastructure—the same as

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280. H.R. 5892. A separate procedural criteria is that "on or before the date of enactment of the Hydropower Regulatory Efficiency Act of 2012, the facility [cannot be] licensed under, or exempted from the license requirements contained in, this part." *Id.*

281. *Id.* at 4.

282. *Id.*

283. *Id.*

284. *Id.* Interestingly, the bill further grants Commission the authority to issue an exemption to any facility that does not include a dam or impoundment, which is "constructed, operated, or maintained for the generation of electric power" and "(1) utilizes for such generation only the hydroelectric potential of a conduit; and (2) has an installed capacity that does not exceed 40 megawatts." *Id.*

285. Testimony of Kurt Johnson, *supra* note 224, at 10.

286. H.R. 5892.

conduit hydropower. Nevertheless, it would ease conduit development licensing requirements, which is a step in the right direction.

The bill further attempts to address the concern of some applicants who are finding that the three-year preliminary permit for hydrokinetic pilot projects does not offer enough time to complete all of the necessary licensing requirements and to conduct full environmental studies of the project.<sup>287</sup> Under the current structure, if the requirements are not complete within the designated three years, the developer could lose its project to other entities who can seek to develop on that site, resulting in significant loss of time and money.<sup>288</sup> In an attempt to alleviate this concern, the Hydropower Regulatory Efficiency Act of 2012 proposes to give FERC the authority to issue an additional two-year extension for preliminary permits “if the Commission finds that the permittee has carried out activities under such permit in good faith and with reasonable diligence.”<sup>289</sup> FERC supports an amendment allowing the two-year extension and would also support and amend “authorizing the Commission to issue permits for terms up to five years, which could avoid the need for developers to go through the process of seeking an extension.”<sup>290</sup>

#### V. UNTANGLING THE WEB OF REGULATORY BARRIERS TO SMALL HYDROPOWER DEVELOPMENT

FERC has updated its small hydropower procedures and guidelines to allow for exemptions to some of the licensing requirements for small hydropower, conduit facilities and hydrokinetic development. Additionally, there are currently several bills in the legislature to effectuate additional change, including the Hydropower Regulatory Efficiency Act, that would exempt certain conduit projects from most licensing requirements. However, the fact remains that the licensing process takes too long and can be cost prohibitive for small hydropower developers. It is “considerably longer than that of other energy resources, such as wind or natural gas,” taking up to five and a half years just to complete the Integrated Licensing Process, “while the development timeline for wind and natural gas projects can be as short as 18–24 months.”<sup>291</sup> As a result, licensing costs for small hydro projects “serve as a financial disincentive to pursue these facilities.”<sup>292</sup>

Licensing and development of large conventional hydropower necessitates continued scrutiny by FERC and stakeholders. This Article

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287. Testimony of Jeff C. Wright, *supra* note 243, at 9.

288. *See id.*; *see also* 18 C.F.R. § 4.83 (2012) (explaining that failure to file before the permit expires results in a loss of priority).

289. H.R. 5892.

290. Testimony of John C. Wright, *supra* note 243, at 9.

291. Testimony of Andrew Munro, *supra* note 226, at 12.

292. *Id.* at 13.

does not propose a change to that process. However, as discussed, small hydropower does not hold the same concerns as large hydropower. To truly meet the federal government's stated goal of increasing small hydropower development<sup>293</sup>—whether it be hydrokinetic, conduit, or some other form of small hydropower—as a means of generating clean, renewable, environmentally friendly, and inexpensive electricity, the licensing process needs to change and the “bureaucratic sclerosis” needs to end.<sup>294</sup>

### A. Streamlining the Consultation and “Exemption” Application Process

The most significant barrier to efficient and economic licensing appears to be the pre-application and post-application consultation requirements. Given the sheer number of entities and individuals with many competing interests involved in the process, it has proven difficult to get everyone together, on the same page, within a reasonable period of time. The current licensing process requires multiple stages of consultation and joint meetings, or receipt of waiver letters from multiple federal, state, and local resources agencies—and tribes when applicable. These stakeholders are “not necessarily incentivized to respond expeditiously to someone interested in securing an agency letter in order to secure a FERC exemption for a small hydro project.”<sup>295</sup> Furthermore, many of these resource agencies can place terms and conditions upon the application.<sup>296</sup> As one economist puts it, “permitting for small scale hydropower projects is subject to the tragedy of the anti-commons, where too many regulatory agencies at federal, state and local levels are repetitively involved in the regulatory process.”<sup>297</sup>

One option to untangle this web is for FERC to delegate to the states the responsibility to oversee the application and licensing process for qualifying exempt small hydro and conduit facilities. This type of delegation is not foreign to the federal government. The EPA has for decades delegated authority to the states to run environmental licensing programs, which are generally applicable to all forms of en-

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293. *Departments of Energy and Interior Award Nearly \$17 Million for Advanced Hydropower Technologies*, U.S. DEP'T OF ENERGY, <http://energy.gov/articles/departments-energy-and-interior-award-nearly-17-million-advanced-hydropower-technologies> (last visited August 2, 2012).

294. Kosnik, *supra* note 217, at 5518.

295. See Testimony of Kurt Johnson, *supra* note 224, at 8.

296. 18 C.F.R. § 4.106 (2012); 18 C.F.R. § 4.94 (2012). In addition, even if FERC approves the exemption, it may place additional terms or conditions on the project so as to: “(i) Protect the quality or quantity of the related water supply; (ii) Otherwise protect life, health, or property; (iii) Avoid or mitigate adverse environmental impact; or (iv) Better conserve, develop, or utilize in the public interest the water resources of the region.” *Id.* at § 4.105 (2012).

297. Kosnik, *supra* note 217, at 5518.

ergy development. The EPA's delegations include state environmental approvals, certifications, permits, agreements, registration, and decisions, consistent with the Clean Water Act and the Clean Air Act, and implemented through EPA-approved programs.<sup>298</sup> While states are given the authority to regulate under these EPA-approved programs, the EPA continues to have oversight over the program activities, and continues to work closely with the states to implement and run these federal environmental programs.<sup>299</sup>

Likewise, FERC-approved state programs could license and regulate small hydropower development. States could pre-screen the projects, ensure applications are complete, and identify any necessary consultations and studies so as to satisfy all licensing requirements. FERC could maintain oversight authority over state programs to ensure they are consistent with federal policy and that hydropower development is consistent among the different states. This would presumably encourage all states to ensure they are following the appropriate goal of promoting small hydropower development while protecting natural resources, fish, wildlife, and recreational opportunities.

Accomplishing this transition to state oversight of small hydropower licensing would require some form of legislation, rulemaking or process and policy changes. However, these changes may not be too far off given the significant pressure FERC has been under to eliminate jurisdiction over small hydropower projects altogether or to make significant regulatory changes to create a new licensing program for these projects.<sup>300</sup> The most effective, although less likely, means of delegating FERC's authority would be to delegate licensing and regulation to the states through legislation. Congress has in recent years shown a willingness to enact such legislation as shown by its approval to delegate certain small-scale hydropower licensing to the state of Alaska. Another promising option is a FERC policy and process change whereby FERC would contract with a state to perform licensing duties. FERC and the state of Colorado currently have a Memo-

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298. U.S. Env'tl. Prot. Agency, *Delegations of Authority - What Managers Need to Know*, EPA 202-F-94-002 (February 1994), available at <http://nepis.epa.gov/Exe/ZyNET.exe/20006BIU.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=>.

299. United States Environmental Protection Agency, *Facilities and Enforcement Activities related to the Clean Water Act National Pollutant Discharge Elimination System (NPDES) Program*, available at <http://www.epa.gov/compliance/data/results/performance/cwa/index.html>; 42 U.S.C. § 7410(a)(1) (2006); 40 CFR 131.4 (2012).

300. *Small Hydropower Development in the United States*, FED. ENERGY REGULATORY COMM'N, available at <http://www.ferc.gov/media/news-releases/2010/2010-2/04-15-10-A-5-presentation.pdf> at 5 (last visited August 2, 2012).

randum of Understanding in this regard and should the pilot program prove successful, FERC may be willing to delegate additional responsibilities to the state. Both options will be discussed below.

### 1. *Opportunities for Legislative Changes*

The federal government has a long history of delegating authority to the states to oversee environmental licensing programs generally and recent legislative and judicial findings have certainly indicated a willingness to give states increased power over hydropower licensing specifically. As discussed above, there are bills currently before Congress that, if passed, would remove conduit projects from existing federal licensing requirements. The Hydropower Regulatory Efficiency Act of 2012 would remove from federal authority licensing requirements for conduits located on non-federally owned properties. The Bureau of Reclamation Small Conduit Hydropower Development and Rural Jobs Act of 2011 would remove current FERC licensing requirements for conduits located on federally-owned properties.<sup>301</sup> Both bills have already passed the House.

Furthermore, as previously discussed, the Clean Water Act authorizes states to “set forth any effluent limitations and other limitations . . . necessary to assure that any applicant . . . will comply with any applicable effluent limitations and other limitations . . . and with any other appropriate requirement of State law set forth in such certification.”<sup>302</sup> In the last decade, this language has been given its full breadth of meaning, allowing states relatively extensive power to set water quantity and quality conditions and “other limitations” for hydropower facilities as “necessary to enforce a designated use contained in a state water quality standard.”<sup>303</sup>

Unfortunately, Congress’s first attempt to fully delegate small hydropower licensing authority to a specific state has not necessarily been successful to date. In 2005, Congress enacted legislation that gave the state of Alaska authority to issue hydropower licenses for qualifying projects.<sup>304</sup> Pursuant to 16 U.S.C. § 823c, small hydro projects are exempt from federal licensing if they (1) have a production capacity of 5 MW or less; (2) are located within the boundaries of Alaska; and (3) are not located on an Indian reservation, conservation system or river designated as Wild and Scenic River.<sup>305</sup> The statute

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301. H.R. 5892, 112th Cong. (2nd Sess. 2012), available at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr5892rfs/pdf/BILLS-112hr5892rfs.pdf>; H.R. 2842, 112th Cong. (2nd Sess. 2012), available at [http://thomas.loc.gov/home/gpoxmlc112/h2842\\_eh.xml](http://thomas.loc.gov/home/gpoxmlc112/h2842_eh.xml).

302. 33 U.S.C. § 1341(d) (2006).

303. PUD No. 1 of Jefferson Cnty.v. Wash. Dep’t of Ecology, 511 U.S. 700, 723 (1994).

304. 16 U.S.C. § 823c (2006).

305. *Id.* at § 823c(b).



requires the state of Alaska to establish a regulatory program that protects the public interest and the environment “to the same extent provided by licensing and regulation by the Commission,” and gives equal consideration to energy conservation, protection of fish and wildlife and habitat, recreational opportunities, preservation of the environment, the interests of Alaska Natives, and other beneficial public uses.<sup>306</sup> The statute reserves the right of FERC to review Alaska’s program periodically to ensure it is in compliance. If FERC finds it is not in compliance, it may “reassert its licensing and regulatory authority.”<sup>307</sup> In 2003, Alaska enacted a water power statute; however, it appears that as of the writing of this Article it is still in the process of developing proper administrative procedures for licensing.<sup>308</sup>

It is unclear exactly why the licensing program is not yet functioning. It may be that Alaska, like many other states, has suffered from the economic downturn and has been unable to fully fund the program. Nevertheless, given the apparent lack of success with this legislation, it may be unlikely that Congress will go seek to explore this option with states, unless or until Alaska begins operating its program and the results prove beneficial.

## 2. *Memorandums of Understanding*

On the other hand, a recent Memorandum of Understanding entered between FERC and Colorado for delegation of the pre-screening, consultation, and application assistance has proven to be relatively more beneficial. The Memorandum of Understanding was executed in August 2010.<sup>309</sup> It establishes a pilot program “for the purpose of encouraging the development of small scale hydropower as a source of clean, renewable, and local energy while safeguarding environmental and other non-developmental resources.”<sup>310</sup> Pursuant to the MOU, FERC will waive certain consultation requirements (so long as all parties agree) for qualifying projects. Qualifying projects are small hydropower projects with a production capacity of 5 MW or less.<sup>311</sup>

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306. *Id.* at § 823c(a).

307. *Id.* § 823c(g), (h).

308. ALASKA STAT. ANN. § 42.45.350 (West 2003); *see also* REGULATORY COMM’N OF ALASKA, *Notice of Proposed Changes in the Regulations of the Regulatory Commission of Alaska and Scheduling Public Workshop (2008)*, [http://notes4.state.ak.us/pn/pubnotic.nsf/0/f15f6401e96ca9b2892573d90073b56a/\\$FILE/r08001\\_notice&info.pdf](http://notes4.state.ak.us/pn/pubnotic.nsf/0/f15f6401e96ca9b2892573d90073b56a/$FILE/r08001_notice&info.pdf) (last visited November 4, 2012).

309. Memorandum of Understanding between the Fed Energy Regulatory Comm’n and the State of Colorado Through the Governor’s Energy Office to Streamline and Simplify the Authorization of Small Scale Hydropower Projects (Aug. 19, 2010), *available at* <http://www.ferc.gov/legal/maj-ord-reg/mou/mou-co.pdf>.

310. *Id.* at 1.

311. *Id.*

Colorado resource agencies set up a pilot program to streamline the licensing process and prescreen projects to ensure they qualify for the exemption while ensuring environmental safeguards.<sup>312</sup> The project must use existing infrastructure—for which hydropower is an incidental use—and cannot increase water diversion or result in adverse environmental effects unless they can be easily mitigated.<sup>313</sup> If the project qualifies, FERC will waive the requirements for the first two stages of consultation, so long as all resource agencies agree that compliance of the requirements has been accomplished through Colorado's program.<sup>314</sup> The state of Colorado is in charge of coordinating consultations and meetings, evaluating the pre-application materials and studies, and prescreening the project. The state also provides technical guidance to the applicant and consults directly with FERC on a periodic basis.<sup>315</sup>

Once Colorado completes the pre-application process and all participating state and federal agencies (and affected Indian tribes) sign waivers affirming that the consultation requirements are met, FERC will act upon the application within thirty days. FERC has the option of (1) requesting additional information; (2) issuing a deficiency letter; or (3) issuing a notice of acceptance of the application.<sup>316</sup> If FERC requests additional information or issues a deficiency letter, Colorado will work with the applicant to obtain the additional information or to address the deficiency for re-submission to FERC. If the application is accepted and all necessary environmental analysis is complete, FERC will set a thirty-day deadline for filing responses to the application.<sup>317</sup> This pilot licensing process is to "continue until 20 projects have gone through the program."<sup>318</sup> If the program proves successful, the parties intend that the licensing process will continue.

The process is intended to streamline FERC review and to cut the time for review from years to months. Prior to entering into the MOU, only twenty-six small hydropower projects had been developed in the state of Colorado—through the FERC permitting process—over the last thirty-plus years.<sup>319</sup> With the new licensing program, Colorado has submitted eight projects.<sup>320</sup> As of February 2012, Colorado had

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312. *Id.* at 4.

313. *Id.* at 3.

314. *Id.* at 5.

315. *Id.* at 4–5.

316. *Id.* at 5.

317. *Id.*

318. *Id.* at 4.

319. Susan Carollo, *Colorado Governor's Energy Office Renewable Energy Development Team (REDT) Is Driving Small Hydropower in the State*, NAT'L ASS'N OF STATE ENERGY OFFICIALS, [http://www.naseo.org/news/newsletter/documents/2012-01-26/GEO\\_RED\\_T\\_Driving\\_Small\\_Hydropower.pdf](http://www.naseo.org/news/newsletter/documents/2012-01-26/GEO_RED_T_Driving_Small_Hydropower.pdf) (last visited July 24, 2012).

320. *Id.*

pre-screened twenty-six projects representing approximately a total of 5 MW and ten were in full review.<sup>321</sup> The first project submitted pursuant to the MOU was approved by FERC in September 2011 after only two months of FERC review.<sup>322</sup>

According to FERC and Colorado's Renewable Energy Development Team,<sup>323</sup> the program has been relatively successful with more efficient consultation and direct access to FERC for faster review and approval and less expense.<sup>324</sup> The estimated saving per project is approximately \$100,000.<sup>325</sup> Low impact projects that once had the same licensing process as applications for Hoover Dam-type projects can now be licensed faster and with less cost.<sup>326</sup> While the applicant is the first beneficiary of a more streamlined licensing process, FERC notes that "[t]hese projects have the potential to make a significant contribution to meeting Colorado's energy needs while helping to satisfy Colorado's new Renewable Energy Standard and create related business opportunities."<sup>327</sup>

Nevertheless, as of May 2012, after nearly two years of pre-screening, only two small hydroelectric projects had completed the Colorado and FERC licensing process, indicating that while a couple of small hydropower projects within the state of Colorado have benefited from the pilot licensing program, more work needs to be done.<sup>328</sup> It is too early to tell whether the program will be a success. The MOU will remain in force until twenty projects have gone through the program and it will be reevaluated at that time as to whether to continue.<sup>329</sup>

Other hydro-rich states, including Oregon and Vermont, are currently exploring this option as well. At the end of 2011, the Oregon Department of Energy issued a public notice for comment on "Considerations for an Oregon Hydropower Development Assistance program" such as the one established by Colorado pursuant to its MOU with

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321. See Colorado's Renewable Energy Dev. Team (REDT), *Streamlining Small Hydro Power Permitting: An Infrastructure and Economic Opportunity*, [http://energy.outlook.naseo.org/presentations/McVeigh-CO\\_REDT.pdf](http://energy.outlook.naseo.org/presentations/McVeigh-CO_REDT.pdf) at 13 (Feb. 9, 2012).

322. Press Release, Fed. Energy Regulatory Comm'n, FERC Approves First Hydroelectric Project in Colorado under Small Hydro Agreement (Sept. 14, 2011), *available at* <http://www.ferc.gov/media/news-releases/2011/2011-3/09-14-11.asp>.

323. Colorado's Renewable Energy Development Team "was established by the Colorado Governor's Energy Office to provide technical and business development assistance to renewable energy projects through a stage-gate process designed to ensure that projects with the best opportunity for success advance." Carollo, *supra* note 30.

324. Colorado's Renewable Energy Dev. Team (REDT), *supra* note 321, at 17; Press Release, Fed. Energy Regulatory Comm'n, *supra* note 322.

325. Carollo, *supra* note 319.

326. *Id.*

327. Press Release, Fed. Energy Regulatory Comm'n, *supra* note 322.

328. See Testimony of Kurt Johnson, *supra* note 224, at 2.

329. Memorandum of Understanding, *supra* note 309, at 4.

FERC.<sup>330</sup> The overwhelming majority of responses, including those from environmental groups in Oregon have been in favor of entering into the MOU. Vermont has also been active in evaluating whether to enter into an MOU with FERC. In March 2012, Senate bill S.148 passed the Vermont Senate, which “proposes to require the commissioner of public service, in consultation with the secretary of natural resources, to enter into an agreement with the Federal Energy Regulatory Commission for a pilot project to expedite development of small hydroelectric plants.”<sup>331</sup> Vermont’s Senator Dick McCormack supported the move to enter into an MOU with FERC, and is quoted as stating that “[t]he FERC process is aimed at much larger projects. It’s for the big stuff, like the Wilder Dam . . . In fact, the same level of environmental review and environmental protection could be achieved with a somewhat less expensive, less time-consuming process.”<sup>332</sup>

## **B. Change is a Win-Win for Local and Global Communities**

Regardless of the mode of change, a change is needed. The time and expense associated with the current licensing scheme is prohibitive for small hydropower projects. Even though FERC has seen an increase in interest in developing small hydropower, few projects are making it through the licensing process. The majority of stakeholders involved in the process agree that the issue is the extensive consultation process. Something needs to be done.

Localizing hydropower development, licensing, and regulation could serve a dual purpose of empowering local communities to protect and develop a sustainable future for their own benefit as well as for the benefit to the plant. Small hydropower facilities, hydrokinetic facilities, and conduit projects can provide clean, inexpensive renewable energy, with minimal environmental impacts and contribute to the global fight against climate change. Local licensing and development would increase public awareness, attitude and education of renewable energy sources. State-led licensing programs would result in economic benefits such as lower cost of electricity and creation of jobs to run the program, to design the facilities, to construct the facilities, and to monitor and evaluate the usefulness and efficiency of the facilities.

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330. Oregon Dep’t of Energy, Comment Opportunity: Considerations for an Oregon Hydropower Development Assistance Program, *available at* [http://cms.oregon.gov/energy/RENEW/Hydro/docs/hydropower\\_request\\_for\\_comments\\_122311.pdf](http://cms.oregon.gov/energy/RENEW/Hydro/docs/hydropower_request_for_comments_122311.pdf) (last visited August 2, 2012).

331. S. 148, Vt. Legis. Serv. 165 (Vt. 2012), *available at* <http://www.vermont.org/main/wp-content/uploads/S148-Final.pdf>.

332. Paul Heintz, *About Dam Time: A Senate Bill Would Open the Floodgates to Vermont Small Hydro*, SEVEN DAYS (March 28, 2012), <http://7dvt.com/2012/about-dam-time-senate-bill-would-open-floodgates-vermont-small-hydro>.

Moreover, states are in an equal or better position than the federal government to understand local needs for maintaining appropriate river flow and for conditions necessary to protect fish, wildlife, and the local environment. States can develop and implement new policies quicker than the federal government. States “can tailor policies to fit their particular circumstances—such as geography and natural resources—and they are arguably more aware of their unique stakeholder interests than is the federal government.”<sup>333</sup> Furthermore, states feasibly can dedicate more attention to fewer projects, and have a greater incentive to complete projects that would benefit local economy.

One concern with regard to local resources is whether states can obtain funding for the licensing programs, especially during this time of economic downturn. Funding is a significant issue for all state governments, especially for those attempting to start a new program and hire new personnel. Colorado’s pilot program has been costly. It originally used federal stimulus funds to help establish the program, but these funds are now running out and Colorado is considering whether to charge project developers a fee to maintain the program.<sup>334</sup> Any program fee would increase the cost to the developer of obtaining the permit, but it will depend on how much it is as to whether it will be a determining factor of whether to develop. As noted previously, funding may be one factor in Alaska’s unsuccessful initiation of its hydropower licensing program. If these programs are to succeed, states will most likely need to obtain funding from the federal government.<sup>335</sup>

Over 120 years ago, small hydropower supplied energy to small towns out of necessity,<sup>336</sup> and local and state governments successfully regulated those projects. Streamlining licensing of small hydropower could bring back those small generating facilities, with the

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333. World Resources Institute, *State and Federal Policy Roles*, THE BOTTOM LINE ON, [http://pdf.wri.org/bottom\\_line\\_state\\_fed.pdf](http://pdf.wri.org/bottom_line_state_fed.pdf) at 1 (last visited November 4, 2012).

334. Hydropower Reform Coalition, Comments of Hydropower Reform Coalition Members American Rivers, American Whitewater Cascade Wild, Gifford Pinchot Task Force, and Trout Unlimited on Opportunity Considerations for an Oregon Hydropower Development Assistance Program, at 2 (February 3, 2012), *available at* [http://www.oregon.gov/energy/RENEW/Hydro/docs/Hydropower\\_Development\\_Assistance\\_Comments-2012.pdf](http://www.oregon.gov/energy/RENEW/Hydro/docs/Hydropower_Development_Assistance_Comments-2012.pdf) (last visited August 2, 2012).

335. Funding may be available through such federal programs as the State Energy Program (SEP) under the 2009 American Recovery and Reinvestment Act, which grants to states \$3.1 billion for development of qualifying renewable energy programs. 111 P.L. 5; 123 Stat. 115 (2009). The SEP “provides financial and technical assistance to State governments to create and implement a variety of energy efficiency and conservation projects in order to provide leadership to maximize the benefits of energy efficiency and renewable energy” and to reduce fossil fuel emissions, among other things. *State Energy Program*, U.S. DEPARTMENT OF ENERGY, [http://www.nh.gov/recovery/programs/documents/energy-fpd\\_81-041.pdf](http://www.nh.gov/recovery/programs/documents/energy-fpd_81-041.pdf) (last visited August 2, 2012).

336. Testimony of Kurt Johnson, *supra* note 224, at 4.

added benefit of creating local jobs from a sustainable, clean and renewable energy source. In an age of global warming and climate change, new renewable energy technology is the key to localized sustainability. While maybe only an idealistic step, it is nevertheless a step in the right direction for addressing global climate change.

The concept of “relocalizing” environmental law to produce global benefits is superbly evaluated and expressed by Professor Sarah Krakoff in her article entitled *Planetary Identity Formation and the Relocalization of Environmental Law*.<sup>337</sup> Professor Krakoff’s article is “a qualitative evaluation of local climate action initiatives, including interviews with participants, as well as other data and observations about their ethics, attitudes, behaviors, and motivations.”<sup>338</sup> One conclusion reached by Professor Krakoff is that localization can play an important role in addressing climate change because it creates “sustained attitude and behavior changes [that] are most likely to be accomplished through the positive feedbacks between personal and community norms.”<sup>339</sup> While the federal government has struggled with a comprehensive climate change policy, states, counties, and cities have developed conservation and renewable energy programs.<sup>340</sup> “Local food, local work, local energy production—all are hallmarks of a resurgence of localism throughout contemporary environmental thought and action.”<sup>341</sup> Localized small hydropower licensing could be a part of that resurgence.

## VI. CONCLUSION

Global warming is here. Increasing small-scale hydropower development through localized licensing and regulation is one avenue of combating global climate change. Water is the largest renewable resource in the United States. Hydropower is a clean and inexpensive source of reliable renewable energy, making up the majority of the renewable energy generated in the United States. Currently approximately 8% of the electricity generated in the United States is from hydropower.<sup>342</sup> This accounts for nearly two-thirds of all electricity generated from a renewable source.<sup>343</sup> Hydropower, unlike many other forms of renewable energy, provides a consistent and reliable form of energy generation; water will continue to run even if the sun is

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337. Sarah Krakoff, *Planetary Identity Formation and the Relocalization of Environmental Law*, 64 FLA. L. REV. 87, 92–93 (2012).

338. *Id.* at 89–90.

339. *Id.*

340. *Id.* at 106–07.

341. *Id.*

342. *Hydroelectricity*, ENVIRONMENTAL PROTECTION AGENCY, <http://www.epa.gov/cleanenergy/energy-and-you/affect/hydro.html> (last visited August 2, 2012).

343. *Renewable Energy Consumption in the Nation’s Energy Supply (2010)*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/> (last visited August 2, 2012).

down and the wind stops blowing. Hydropower currently employs some 300,000 Americans and approximately 225 million metric tons of CO<sub>2</sub> are avoided annually by hydropower generation.<sup>344</sup>

More small-scale hydropower resources would be developed if the federal government delegated to the states the authority to license these projects. Granting licensing authority to the states would result in more efficient and less expensive licensing, but would still allow for thorough site-specific evaluations and solutions. With the development of small-scale hydropower, the United States could increase the annual hydropower generation by up to 200%, by some optimistic outlooks.

Localizing small-scale hydropower licensing would increase the development of facilities to generate clean, environmentally-friendly, emission free electricity. It would foster an attitude of "planetary environmental consciousness" for combating global warming and climate change. It would create local jobs and boost the local economy. It is a win-win-win situation for all. To quote Bob Dylan, "The Times They Are a-Changin'" and our policies, laws and perceptions should be flexible enough to change with them.

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344. Testimony of Andrew Munro, *supra* note 226 at 2.