

# William & Mary Environmental Law and Policy Review

---

Volume 25 (2000-2001)  
Issue 2 Symposium: Water Rights and  
Watershed Management: Planning for the  
Future

---

Article 7

December 2000

## Taking Nature into Account: Observations about the Changing Role of Analysis and Negotiation in Hydropower Relicensing

Kurt Stephenson

Follow this and additional works at: <https://scholarship.law.wm.edu/wmelpr>



Part of the [Energy and Utilities Law Commons](#), and the [Environmental Policy Commons](#)

---

### Repository Citation

Kurt Stephenson, *Taking Nature into Account: Observations about the Changing Role of Analysis and Negotiation in Hydropower Relicensing*, 25 Wm. & Mary Envtl. L. & Pol'y Rev. 473 (2000), <https://scholarship.law.wm.edu/wmelpr/vol25/iss2/7>

Copyright c 2000 by the authors. This article is brought to you by the William & Mary Law School Scholarship Repository.  
<https://scholarship.law.wm.edu/wmelpr>

# TAKING NATURE INTO ACCOUNT: OBSERVATIONS ABOUT THE CHANGING ROLE OF ANALYSIS AND NEGOTIATION IN HYDROPOWER RE-LICENSING

KURT STEPHENSON\*

Between the years 2000 and 2010, hydroelectric projects representing approximately twenty percent of the nation's installed hydroelectric generating capacity will be applying for new operating licenses.<sup>1</sup> These hydropower projects are operated by private and municipal (nonfederal) operators, and do not include federal hydropower projects operated by the U.S. Army Corps of Engineers, Bureau of Reclamation, or the Tennessee Valley Authority. The conditions under which nonfederal hydropower projects must operate are determined by the Federal Energy Regulatory Commission (FERC).<sup>2</sup> Under the Federal Power Act, the FERC is granted authority to authorize the construction of a hydropower facility on the waters of the United States.<sup>3</sup> The FERC can issue operating licenses for up to fifty years, and the terms of the license cannot be changed except by mutual consent.<sup>4</sup> A license contains the conditions by which a dam must operate and may include requirements for minimum downstream flows, fish passage issues (fish ladders and

---

\* Assistant Professor, Department of Agricultural and Applied Economics, Virginia Tech, Blacksburg, Virginia. Support for this research was provided by the National Science Foundation, Project #SBR-9815472.

<sup>1</sup> See Douglas W. Smith, General Counsel of the Federal Energy Regulatory Commission, Testimony before the Energy and Power Committee on Commerce, U.S. House of Representatives, Sept. 25, 1998, at 10. Currently, nonfederal hydropower projects produce over five percent of the nation's electric power generation. Nonfederal hydroelectric projects produce a little more than half of the nation's total hydropower output.

<sup>2</sup> Originally the FERC was called the Federal Power Commission. The name of the Commission changed in 1977. See Pub. L. No. 91-95, 91 Stat. 565 (1977). See also 42 U.S.C. § 7171 (1977).

<sup>3</sup> The FERC's powers to regulate hydropower development were initially established under the 1920 Federal Water Power Act (Federal Water Power Act of 1920, Pub. L. No. 66-280, § 1, 41 Stat. 1063 (1920)). The current version of the act can be found at 16 U.S.C. §§ 791(a) – 828(c) (2000). The FERC regulates over 1,600 hydropower projects at over 2,000 dams under the FPA. See Smith, *supra* note 1, at 2.

<sup>4</sup> See 16 U.S.C. § 799.

screens), and access to and creation of recreational activities.<sup>5</sup> The FERC also reissues licenses when the original license expires.<sup>6</sup>

The large number of hydropower licenses coming up for renewal in the next ten years is generating widespread general interest over how these existing dams will be operated in the future.<sup>7</sup> Uncertainties, conflicting interests and values, and complex trade-offs characterize a relicensing case.<sup>8</sup> Consider a short sample of these issues that might be encountered in a relicensing case. A hydroelectric project typically generates electricity at a fraction of the cost of a conventional thermal project (typically the lowest cost alternative).<sup>9</sup> Furthermore, the electricity is clean relative to other energy sources.<sup>10</sup> Hydropower generates electricity without producing air emissions associated with fossil fuels (particulates, sulfur dioxides, nitrogen oxides, and greenhouse gases, for example), and without the long-term disposal problems and costs associated with nuclear power.<sup>11</sup> If the project has substantial water storage capacity, the project provides one of the few practical means to

---

<sup>5</sup> See 16 U.S.C. § 803; 18 C.F.R. §§ 4.41, 4.51 (2000).

<sup>6</sup> See 16 U.S.C. § 808.

<sup>7</sup> See John McPhee, *Farewell to the Nineteenth Century*, THE NEW YORKER, Sept. 27, 1999, at 44; Andrew Murr, *A River Runs Through It*, NEWSWEEK, July 12, 1999, at 46; Marc Reisner, *Coming Undammed*, AUDUBON, Sept.-Oct. 1998, at 58. The Hydropower Reform Coalition was formed in 1992 to influence the course and direction of a bulk of licensing renewals that were scheduled for 1993. See American Rivers, *Hydropower Reform Coalition*, at <http://amrivers.localweb.com/aboutthrc.html>. The Coalition is made up of national, state and local conservation organizations with the intention of improving the ecological conditions on rivers dammed by nonfederal hydropower projects. See *id.*

<sup>8</sup> See generally James M. Fargo, *Evaluating the Economics of Hydroelectric Projects at the Federal Energy Regulatory Commission*, Federal Energy Regulatory Commission, Office of Hydropower Relicensing, Paper No. DPR-1, Sept. 1989; Murr, *supra* note 7, at 46.

<sup>9</sup> See Richard L. Mittelstadt, *Determining Hydro Project Dependable Capacity*, in WATERPOWER '89: PROCEEDINGS OF THE INTERNATIONAL CONFERENCE OF HYDROPOWER 38, 39 (American Society of Civil Engineers eds., 1989); Fargo, *supra* note 8; see also Daniel D. Huppert, *Snake River Salmon Recovery: Quantifying the Costs*, CONTEMP. ECON. POL'Y 476 (1999).

<sup>10</sup> See BEN W. EBENHACK, ENERGY RESOURCES: AVAILABILITY, USE, AND IMPACT 278-79 (1995).

<sup>11</sup> See *id.* at 278-79; Hermond Brekke, *Environmentalism and Hydropower*, Paper presented at the conference Hydro's Future: Technology, Markets, and Policy, Hydropower '99 (June 6-9, 1999). For a summary of environmental issues associated with hydropower production, see Michael T. Pyle, *Beyond Fish Ladders: Dam Removal as a Strategy for Restoring America's Rivers*, 14 STAN. ENVTL. L.J. 97 (1995).

store electricity on a large scale.<sup>12</sup> Such projects are able to provide power almost instantaneously at times of peak energy demand, helping prevent brownouts and power outages.<sup>13</sup> Early experience with deregulation reveals that the premium paid for peaking power can be significant.<sup>14</sup> The reservoir behind the dam may provide ancillary benefits in terms of flood protection, water supply, navigation, and recreation.<sup>15</sup>

At the same time, the operation of a hydro project can severely disrupt the riparian environment.<sup>16</sup> Hydropower projects alter the fish composition by blocking fish migrations and altering the flow and temperature of water downstream.<sup>17</sup> Barriers to migration have been identified as either contributing to the decline, or blocking recovery of, such migratory fish species as salmon, shad, and sturgeon.<sup>18</sup> Higher instream flows increase oxygen content and the water pollution dilution capacity downstream, making it easier for water quality managers to achieve water quality standards and lower the costs to society of treating wastewater discharges.<sup>19</sup> Fluctuations in downstream flow from peaking operations can also disrupt riparian ecosystem functioning and terrestrial wildlife inhabiting the riparian zone.<sup>20</sup> Dewatering of the by-pass reaches

---

<sup>12</sup> See EBENHACK, *supra* note 10, at 131-33.

<sup>13</sup> See *id.*

<sup>14</sup> See Edward Fulton, *Electric Industry Restructuring in North America: A Status Report*, HYDRO REV., Apr. 2000, at 10; Severin Borenstein & James Bushnell, *Electricity Restructuring: Deregulation or Reregulation?*, 23 REG. 46, 49 (2000).

<sup>15</sup> See generally Huppert, *supra* note 9; Terry H. Morlan, *A Note on the Role of Economics in Pacific Northwest Salmon Policy*, NORTHWEST J. OF BUS. & ECON. 1 (1999).

<sup>16</sup> See Pyle, *supra* note 10, at 103.

<sup>17</sup> See *id.* at 103-04.

<sup>18</sup> See *id.*

<sup>19</sup> See John S. Crossman & Richard J. Ruane, *Watershed-based Pollutant Trading Involving Hydropower Projects: Mississippi River Basin*, Paper presented at the conference Hydro's Future: Technology, Markets, and Policy, Hydropower '99 Conference (July 6-9, 1999).

<sup>20</sup> For example, instream flow management of dams along the Platte River are thought to be important factors influencing habitat of the Sandhill and Whooping cranes. See John Echeverria, *The Limits of Collaborative Approaches to Watershed Management: The Case of the Platte River*, Address at the Wm. & Mary Env'tl. L. & Pol'y Rev. Symp., Water Rights and Watershed Management: Planning for the Future (Mar. 31, 2000); Alan D. Mitchnick, *Hydropower Relicensing and Endangered Species: Potential Conflicts and Opportunities in the New Millennium*, Paper presented at the conference Hydro's Future: Technology, Markets, and Policy, Hydropower '99 (July 6-9, 1999).

and low flow conditions below the dam adversely impact downstream recreational opportunities.<sup>21</sup>

At the limit, the dam itself could be removed.<sup>22</sup> Many nongovernmental groups are increasingly calling for the FERC to consider dam decommissioning and removal as a serious alternative in a relicensing case.<sup>23</sup> Yet, removing a dam can be an extremely expensive option, not only in terms of lost low cost power, but in terms of the cost of physically removing the dam.<sup>24</sup> In addition, dam removal is not a completely positive environmental action for the riparian ecosystem.<sup>25</sup> Dam removal itself can impose significant costs on the environment in terms of releasing decades worth of sediment trapped behind the dam itself.<sup>26</sup> Environmental benefits in terms of aquatic restoration may in turn take years to be realized because of the sediment flushing process that needs to occur.<sup>27</sup> Even then, there may be uncertainty about how native species will respond to new riparian conditions.<sup>28</sup>

---

<sup>21</sup> Water flow in by-pass reaches is a common concern in many FERC licensing cases. For a sample of the issues, see generally Lydia T. Grimm, *Fishery Protection and FERC Hydropower Relicensing Under ECPA: Maintaining a Deadly Status Quo*, 20 ENVTL. L. 929 (1990).

<sup>22</sup> See generally Hydropower Reform Coalition, *Policy on Applied Science in the FERC Relicensing Process*, at <http://amrivers.localweb.com/science.html>.

<sup>23</sup> See *id.*

<sup>24</sup> Estimates of removing the two hydropower dams on the Elwha river range from \$111 to \$127 million. See National Park Service, *Elwha River Ecosystem Restoration Implementation: Summary of Draft Environmental Impact Statement* (Apr. 1996), at <http://www.nps.gov/planning/olym/drftsum/elwha.htm>. For a summary of the Elwha debate, see Phillip M. Bender, *Restoring the Elwha, White Salmon, and Rogue Rivers: A Comparison of Dam Removal Proposals in the Pacific Northwest*, 17 J. LAND RESOURCES & ENVTL. L. 189 (1997). See also Huppert, *supra* note 9.

<sup>25</sup> See National Park Service, *supra* note 24.

<sup>26</sup> See *id.*; see also American Rivers, Friends of the Earth, and Trout Unlimited, *Dam Removal Success Stories* (Dec. 1999), at <http://www.tu.org/library/conservation/drss.pdf>.

<sup>27</sup> See National Park Service, *supra* note 24; see also Pyle, *supra* note 10, at 113-14.

<sup>28</sup> See Morlan, *supra* note 15, at 14. Besides the existence of a hydro power facility, Huppert notes that fish response is also dependent on habitat conditions, fish harvest, and hatchery production. See Huppert, *supra* note 9, at 478-79. Dam removal may alone achieve fish recovery efforts. On July 20, 2000, the Clinton administration announced opposition to removing four federal power projects on the lower Snake River in part because dam removal "may not be essential . . . and probably would not be sufficient" to improve salmon numbers. Cat Lazaroff, *White House Opposes Removing Snake River Dams*, ENV'T NEWS SERVICE (July 20, 2000), at <http://ens.lycos.com/ens/jul2000/2000L-07-20-06.html> (quoting the chairman of the White House Council on Environmental Quality).

Obviously, defining new dam operating conditions requires choices among competing ends, interests, and values. The terms of a license or the denial of a license requires choices between plainly economic considerations (low cost power) and environmental ones (higher instream flows). Stabilizing and increasing downstream flow and providing fish passage facilities undermines the economic viability and attractiveness of a project by reducing power production. Yet the choice of license conditions also involves choices between competing environmental outcomes (adverse changes in air quality from burning more fossil fuels versus improved riparian conditions). Finally, recreational interests may conflict. For example, stable reservoir levels that would be favored by reservoir property owners and anglers may conflict with the desire for minimum variations in seasonal instream flow favored by downstream boaters, anglers, and property owners.

Given these competing ends, how should nature be taken into account in the relicensing decision? In other words, how should society decide between these competing ends, interests, and values? The criticism and dissatisfaction of the FERC relicensing process is intensifying, by both the assessments of the hydropower industry and environmental groups. This paper explores the changing role of analysis and negotiation in making decisions about the future use of our river systems in hydropower relicensing. While the relicensing process appears to have entered a period of intense scrutiny and change, tentative predictions are made here about how the decision process will evolve to account for the many environmental and economic consequences of hydropower relicensing. These tentative predictions are developed in four sections. Section one identifies two conceptual models of decision-making that could be used to make choices between competing ends. The role of professional analysis and analysts in each of these conceptual frameworks is discussed. The second section describes the FERC's historical decision-making approach and the type of analysis used to decide the conditions in a relicensing case. The third section summarizes the new pressures for change and reform of the relicensing process. The final section analyzes how these pressures are changing the FERC decision process. I conclude the paper with a tentative conclusion that while the processes used to decide how to take nature into account in relicensing decisions will continue to change, the underlying analysis that supports the decision process will not.

## I. CONCEPTUAL DECISION-MAKING FRAMEWORKS

A relicensing decision-process must decide questions such as:

- How will dam operating and management possibilities be revealed and discovered?
- How will the decision process ensure that all parties with an interest or stake in the outcome are properly represented (including environmental ones)?
- How will tremendous economic and biological uncertainties be addressed?
- How will trade-offs between competing environmental, economic, and recreational ends be made?

What process will decide these questions? Conceptually, at least two approaches to decision-making can be imagined. These two approaches—labeled here the rational analytic and political negotiation approaches—are not meant to represent reality but to merely portray two broad, stylized, and normative views of the way a process *should* answer these questions.

A rational analytic approach would create systems of structured analysis and a corresponding set of decision rules that would guide decisions about dam operations. The rational analytic approach begins with a limited number of decision participants that follow a formal decision logic.<sup>29</sup> These participants conceptually identify objectives, formulate alternatives to meet those objectives, evaluate the consequences of each alternative, develop procedures to weigh the many different consequences and then choose an alternative based on some *a priori* decision criteria.<sup>30</sup> Formal rules and procedures would be devised that would identify the rules of analysis that would evaluate, weigh, and choose between competing alternatives.<sup>31</sup> These rules would provide the basis for an “objective” analysis and identify the “best” answers to the above questions.<sup>32</sup>

<sup>29</sup> See generally CHARLES LINDBLOM, *THE INTELLIGENCE OF DEMOCRACY* 21 (1965) [hereinafter LINDBLOM, *INTELLIGENCE*].

<sup>30</sup> This formal rational analytic process has been described by many others. See, e.g., LINDBLOM, *INTELLIGENCE*, *supra* note 29; GIANDOMENICO MAJONE, *EVIDENCE, ARGUMENT, AND PERSUASION IN THE POLICY PROCESS* (1989); James G. March, *Theories of Choice and Making Decisions*, 20 SOC'Y, Nov.-Dec. 1982, at 29.

<sup>31</sup> See March, *supra* note 30, at 29.

<sup>32</sup> See *id.*

One manifestation of the rational analytic approach is formal benefit-cost analysis advocated by many economists and policy analysts.<sup>33</sup> Formal rules of conducting analysis are derived from mainstream microeconomic (welfare economic) theory.<sup>34</sup> Benefits and costs are, at the conceptual level, a measure of the different preferences people hold for the policy alternatives under consideration.<sup>35</sup> Benefit-cost analysis rests on the argument that the choices individuals make in market exchange provide the data that analysts can use to translate people's preferences into money terms.<sup>36</sup> The logic of the argument is straightforward. In a market exchange money income is sacrificed (a price is paid) in order to secure some good or service. By arguing that preferences guide market choices, analysts conclude that the money value of a good or service is at least equal to the amount of income a person spends to obtain the service.<sup>37</sup> Thus, market prices are the raw data for preference measurement. The often explicit premises of this revealed choice framework are that individuals know their preferences for goods and services (states of the world) before being confronted with a choice, that people are willing to pay to satisfy those preferences, and whatever an individual chooses is in the interests of that individual. By monetizing the preferences people hold for different alternatives in the form of willingness to pay, the analyst can weigh competing alternatives in a common unit of measurement.<sup>38</sup> The criterion to select the best alternative is the one that generates the highest net benefits (benefits less costs).<sup>39</sup>

---

<sup>33</sup> For a summary of this approach, see HANK C. JENKINS-SMITH, *DEMOCRATIC POLITICS AND POLICY ANALYSIS* (1990). For one attempt to generalize how a benefit-cost analysis software program can account for economic and environmental consequences of relicensing, see generally DECISION FOCUS, INC., *AWARE USER'S MANUAL* (1991). For a critique of the AWARE software, see John M. Bartholow et al., *Balancing Hydropower and Environmental Values: The Resource Management Implications of the U.S. Electric Consumers Protection Act and the AWARE Software*, 4 ENVTL. VALUES 257 (1995). It should be pointed out that calls for a more analytical structure to make the licensing decisions do not necessarily need to be for a benefit-cost analysis. See generally William R. Stewart, Jr. & Evan R. Horowitz, *Environmental Factor Weighting at the Federal Energy Regulatory Commission*, 25 SOCIO-ECON. PLAN. & SCI. 123 (1991) (discussing other proposed analytic decision processes).

<sup>34</sup> See generally JENKINS-SMITH, *supra* note 33.

<sup>35</sup> See *id.*

<sup>36</sup> See *id.*

<sup>37</sup> See *id.*

<sup>38</sup> See *id.*

<sup>39</sup> See Hank Jenkins-Smith, *supra* note 33.



Consider a hypothetical application of benefit-cost analysis to determine instream flow requirements of a hydropower license. Suppose a number of different instream flow regimes are being considered. The cost of increasing downstream flow could include forgone peaking power and less water for irrigation. Both consequences can be monetized given existing market-derived information. Power costs are typically calculated as the higher costs that must be incurred to produce power from the next best available power source.<sup>40</sup> Costs associated with forgone irrigation use can be monetized by using information from water rights markets or calculating reductions in farm incomes from lower water use. Estimating the benefits of the mitigation alternative may be more challenging, but not insurmountable. While the preferences for higher instream flow may not be adequately revealed in market transactions, economists have responded to this need by developing methods—called nonmarket valuation techniques—to place monetary values on environmental amenities not traded in markets.<sup>41</sup> Nonmarket valuation techniques have been developed and used to place dollar values on people's preferences for environmental services stemming from changes in instream flow.<sup>42</sup> For example, economists have attempted to monetize changes in water quality,<sup>43</sup> recreational opportunities,<sup>44</sup> preservation of endangered species,<sup>45</sup> fish

---

<sup>40</sup> See Mittelstadt, *supra* note 9, at 39. The logic of this calculation is that electricity producers would conceptually be willing to pay up to the difference in power rates to retain the hydroelectric source of power.

<sup>41</sup> These methods include contingent valuation, travel cost, and hedonic price methods. The literature on nonmarket valuation is voluminous. For an overview of these methods, see Maureen L. Cropper & Wallace E. Oates, *Environmental Economics: A Survey*, 30 J. OF ECON. LITERATURE 675, 700-21 (1992). For an easily accessible summary of the various methods and examples of how they have been applied to a variety of environmental services, see Dennis King & Marisa Mazzotta, *Ecosystem Valuation*, at [www.ecosystemvaluation.org](http://www.ecosystemvaluation.org).

<sup>42</sup> See John B. Loomis, *Estimating the Public's Values for Instream Flow: Economic Techniques and Dollar Values*, 34 J. AM. WATER RESOURCES ASS'N 1007 (1998).

<sup>43</sup> See Christopher G. Leggett & Nancy E. Bockstael, *Evidence of the Effects of Water Quality on Residential Land Prices*, 39 J. ENVTL. ECON. & MGMT. 121 (2000); V. KERRY SMITH & WILLIAM H. DESVOUSGES, *MEASURING WATER QUALITY BENEFITS* (1986).

<sup>44</sup> See A. Myrick Freeman, III, *The Benefits of Water Quality Improvements for Marine Recreation: A Review of the Empirical Evidence*, 10 MARINE RESOURCE ECON. 385 (1995); National Wildlife Federation, *Wet, Wild, and Profitable: A Report on the Economic Value of Water-Based Recreation in Vermont* (Feb. 1997), at <http://www.nwf.org/northeastern/resources/wetwild.html>; Jonathan G. Taylor & Aaron J. Douglas, *Diversifying Natural Resources Value Measurements: The Trinity River Study*, 12 SOC. & NAT. RESOURCES 315 (1999).

populations,<sup>46</sup> habitat,<sup>47</sup> and aesthetics.<sup>48</sup> Once the costs and benefits are calculated for each alternative, the instream flow alternative that generates the highest net benefits is selected.

Advocates of the rational analytic approach say it is the best way to systematically and rationally decide between competing ends.<sup>49</sup> This support is buttressed by contempt of "irrational" decisions made in a political process.<sup>50</sup> Advocates for the rational analytic approach fear that decisions made in a political process are subject to capture by narrow interest-group politics.<sup>51</sup> The political system is subject to control and disproportionate influence by the economically powerful parties.<sup>52</sup> In hydropower relicensing, this sentiment may be reflected in a general feeling that nature cannot compete against financially powerful hydropower interests in the political arena. In the rational analytic model, it is the analysts, with their formal analytical rules, that will consider and

<sup>45</sup> See James Bowker & John R. Stoll, *Use of Dichotomous Choice Nonmarket Methods to Value the Whooping Crane Resource*, 70 AM. J. AGRIC. ECON. 372 (1988); Kevin J. Boyle & Richard C. Bishop, *Valuing Wildlife in Benefit-Cost Analyses: A Case Study Involving Endangered Species*, 23 WATER RESOURCES RES. 943 (1987).

<sup>46</sup> See John B. Loomis, *Measuring the Economic Benefits of Removing Dams and Restoring the Elwha River: Results of a Contingent Valuation Survey*, 32 WATER RESOURCES RES. 441 (1996).

<sup>47</sup> See John B. Loomis et al., *Measuring the Total Economic Value of Restoring Ecosystem Services in an Impaired River Basin: Results from a Contingent Valuation Survey*, 33 ECOLOGICAL ECON. 103 (2000).

<sup>48</sup> See Mark Rockel & Mary Jo Kealy, *The Value of Nonconsumptive Wildlife Recreation in the United States*, 67 LAND ECON. 422 (1991).

<sup>49</sup> See generally EDITH STOKEY & RICHARD ZECKHAUSER, A PRIMER FOR POLICY ANALYSIS 134 (1978).

<sup>50</sup> See *id.* at 151.

<sup>51</sup> See *id.*

<sup>52</sup> According to one well-known text:

[o]ne of the great virtues of the benefit-cost approach . . . is that the interests of individuals who are poorly organized or less closely involved are counted. (This contrasts with most political decision making procedures.) Even when pushed by powerful interest groups, projects whose benefits do not outweigh their costs will be shown to be undesirable. The benefits and costs accruing to all—to the highway builders, the environmentalists, the 'little people,' the users and providers of services, the taxpaying public—will be counted on a dollar-for-dollar basis. Benefit-cost analysis is a methodology with which we pursue efficiency and which has the effect of limiting the vagaries of the political process.

*Id.* at 151.

take into account the preferences people have for nature.<sup>53</sup> Hank Jenkins-Smith—a student of the role of policy analysis in public decision-making—describes the rationale for the rational analytic approach as:

optimistic; it promises to improve the mapping of individual preferences into policy—encompassing the preferences of the “little guy” as well as those of the well-financed political lobby. In the tradition of Western liberalism, this form of decision making would rely more on the expressions of individual citizens and less on political representatives. The techniques of analysis would play a central role in collection and aggregation of individual preferences, and therefore, the information and advice of the analyst would become crucial and influential in the policy-making process.<sup>54</sup>

Nature, according to the rational analytic model, is best taken into account by allowing analysts to measure and weigh people's preferences for alternatives.<sup>55</sup>

An alternative model, called here the political negotiation approach, relies on bargaining processes to reach decisions.<sup>56</sup> Advocates of this approach view negotiation as an interactive process in which people revise and discover their preferences, discover and create alternatives, and better understand the outcomes of alternative policies.<sup>57</sup>

---

<sup>53</sup> See generally JENKINS-SMITH, *supra* note 33, at 1.

<sup>54</sup> See *id.* at 39.

<sup>55</sup> The rationale for greater use of placing money values on environmental amenities is to ensure that people whose preferences are not often considered or heard in a political negotiation are taken into account. See, e.g., STOKEY, *supra* note 49. See also Katharine K. Baker, *Consorting with Forests: Rethinking Our Relationship to Natural Resources and How We Should Value Their Loss*, 22 *ECOLOGY L.Q.* 677, 723 (1995).

<sup>56</sup> Charles Lindblom is one of the most thoughtful and articulate proponents of this general approach. See CHARLES E. LINDBLOM, *INQUIRY AND CHANGE* (1990) [hereinafter LINDBLOM, *INQUIRY*]; LINDBLOM, *INTELLIGENCE*, *supra* note 29. For a discussion of the philosophical perspective of this approach, see Mark Sagoff, *On the Value of Endangered and Other Species*, 20 *ENVTL. MGMT.* 897 (1996). For an example of congressional support of increased use of negotiation in environmental decision-making, see Margaret L. Claiborne, *Regulation by Consensus: The Expanded Use of Regulatory Negotiation Under the Clean Air Act*, 11 *NAT. RESOURCES & ENV'T* 44 (1996).

<sup>57</sup> See generally LINDBLOM, *INQUIRY*, *supra* note 56; LINDBLOM, *INTELLIGENCE*, *supra* note 29, at 320-323.

In this view, political negotiation is not just a power play of participants with well-defined preferences among known alternatives, but serves a valuable role in utilizing diverse and diffuse knowledge.<sup>58</sup> Giandomenico Majone argues that:

persuasion is a two-way interchange, a method of mutual learning through discourse. Real debate not only lets the participants promote their own views and interests, but also encourages them to adjust their views of reality and even to change their values as a result of the process.<sup>59</sup>

This perspective, in general, begins with the premise that there are severe limits on the ability of any one human mind, or small group of minds, to know and evaluate diverse alternatives.<sup>60</sup> Thus, people holding this perspective are critical of the rational analytic approach, since the analytic approach vests power and decision-making authority in the hands of unelected analysts and experts.<sup>61</sup> Creating open forums of negotiation in which a wide array of partisan participants can participate is a better method of making use of dispersed, fragmented knowledge and accommodating diverse sets of interests.<sup>62</sup>

This position does not necessarily mean analysis plays no role in the negotiation process. Analysis is critical to the negotiation process, but it is not the same kind of analysis present in the rational analytic approach. Analysis is not identified and generated *a priori*, based on formal analytic rules. Rather, the type of analysis being performed is selected and identified by the participants of the negotiation in order to clarify trade-offs and clarify and reveal opportunities.<sup>63</sup> Analytical needs evolve as the

---

<sup>58</sup> See generally *supra* note 56.

<sup>59</sup> See MAJONE, *supra* note 30, at 8.

<sup>60</sup> See *id.* at 9.

<sup>61</sup> See *id.* at 12.

<sup>62</sup> See *id.* at 9-20.

<sup>63</sup> It should be stressed that this view does not propose that analysis should be used as the basis for settling conflicts between conflicting interests and values. Participants in a political negotiation ultimately need to decide between competing interests and values. Helen Ingram and Anne Schneider effectively argue that in many cases contemporary water policy (political negotiation) suffers when fundamental trade-offs between competing values are framed as technical questions that can be answered by additional analysis. Ingram and Schneider write "for every water resource question settled by an elite, an important opportunity to improve the deliberative process is forgone . . . scientists have credibility to more convincingly draw the boundaries between what experts need to address and what should be public issues." Helen Ingram & Anne

course of the negotiations changes. New attempts are now being made to think differently about the way analysis can facilitate negotiations.<sup>64</sup> These attempts are aimed at fostering greater two-way communication between professional analysts and decision participants, not in a way that purports to provide the "answer," but in a way that will facilitate and advance mutual understanding.<sup>65</sup> Finally, analysis may not always be formal, quantitative analysis. Effective, credible, and illuminating inquiry can be qualitative and based on the experience, analogies, and informal knowledge of lay participants.<sup>66</sup>

## II. THE HISTORICAL FERC DECISION PROCESS

The conceptual models of decision-making just described reflect simplified perspectives on the way public decisions should be made. Arguably, the FERC hydropower licensing process has much in common with the rational analytic perspective. The statutory delegation of authority to the FERC to determine how a public resource will be used drew intellectual support from a progressive-era faith in expertise and rational scientific management. The FERC was established as an independent commission.<sup>67</sup> As an independent commission, the FERC would determine what the public interest was in dam licensing decisions and could do so based on sound technical studies and insulated from political pressure. Even by standards of the day, the FERC was better insulated from public pressure than most water resource agencies. With a few exceptions, Congress granted the FERC broad and sweeping authority to decide whether a dam would be constructed and the conditions in which

---

Schneider, *Science, Democracy, and Water Policy*, 113 WATER RESOURCES UPDATE 21, 27 (Autumn 1999). In short, many political negotiations are dysfunctional because of *too little* political decision-making and *too much* reliance on analysis. See *id.*

<sup>64</sup> See Institute for Water Resources, *Shared Vision Planning*, at <http://www.wtrsc.usace.army.mil/iwr/Planning/svp.pdf>.

<sup>65</sup> See, e.g., *id.* This approach requires both the professional analyst and lay decision participant to jointly conduct analytical studies, so that they can better understand both the trade-offs they face and the limitations of analysis.

<sup>66</sup> For a discussion of the importance of informal inquiry, see generally LINDBLOM, *INQUIRY*, *supra* note 56.

<sup>67</sup> Initially, the Federal Power Commission consisted of the Secretaries of War, Interior, and Agriculture plus three other term members. See Federal Water Power Act of 1920, Pub. L. No. 66-280, § 1, 41 Stat. 1063, 1063 (1920). In 1930, Congress changed the membership of the Commission to five commissioners appointed by the President. See 16 U.S.C. § 792 (1994).

the dam should operate.<sup>68</sup> According to David Spence, "for more than [sixty] years the FPA has been the prototypical example of the unconstrained delegation of power to unelected bureaucrats."<sup>69</sup>

Congress did not explicitly instruct the FERC to approve and promote hydropower, although this was clearly an important rationale for passage of FPA.<sup>70</sup> From the beginning, the FERC was instructed to balance competing uses and select those "best adapted to a comprehensive scheme of improvement and utilization for the purposes of navigation, of water-power development, and of other beneficial uses."<sup>71</sup> Appointed commissioners and staff analysts were responsible for determining what was best adapted, beneficial, and in the public interest.

As the original thirty to fifty year licenses expire, the FERC must revisit the license conditions in which a dam operates. What type of analysis did the FERC use to decide what will be required of these existing dams? The analytical process that has emerged in the relicensing process was not based on a comprehensive balancing of benefits and costs of alternatives as envisioned by economists and according to the rules of welfare economic analysis.<sup>72</sup> Rather, the FERC analyses can best be described as "knee-of-the-curve cost analysis."

The general analytic process the FERC uses can be described in the following way.<sup>73</sup> First, the FERC approached the dam relicensing

---

<sup>68</sup> See Beth C. Bryant, *FERC's Dam Decommissioning Authority Under the Federal Power Act*, 74 WASH. L. REV. 95, 103 (1999).

<sup>69</sup> David B. Spence, *Managing Delegation Ex Ante: Using Law to Steer Administrative Agencies*, 28 J. LEGAL STUD. 413, 420 (1999).

<sup>70</sup> See Katharine Costenbader, *Damning Dams: Bearing the Cost of Restoring America's Rivers*, 6 GEO. MASON L. REV. 635, 646 (1998). For a history of the passage of the Federal Water Power Act, see JEROME G. KERWIN, *FEDERAL WATER-POWER LEGISLATION* (1926).

<sup>71</sup> Pub. L. No. 66-280, § 10 (1), 41 Stat. 1063, 1068 (1920). In 1935, Congress specifically amended the Federal Water Power Act to require the commission to consider "recreational purposes." Pub. L. No. 74-333, 49 Stat. 803 (1935). See generally Charles R. Sensiba, *Who's in Charge Here? The Shrinking Role of the Federal Energy Regulatory Commission in Hydropower Relicensing*, 70 U. COLO. L. REV. 603 (1999).

<sup>72</sup> In other areas of the nation's water programs, there exists a long history of development of benefit-cost guidelines and use of benefit-cost analysis. For instance, the Water Resources Council sets bounds on how benefit-cost analysis works for federal water projects. See United States Water Resources Council, *Economic and Environmental Principles Guidelines for Water and Related Land Resources Implementation Studies*, at <http://www.wrsc.usace.army.mil/iwr/pdf/p&g.pdf>.

<sup>73</sup> James M. Fargo, *Evaluating Relicense Proposals at the Federal Energy Regulatory Commission*, Federal Energy Regulatory Commission, Office of Hydropower Relicensing, Paper No. DPR-2, Apr. 1991; See also Fargo, *supra* note 8. Although Fargo

decision similar to an investment decision. If the current licensee wished to renew a license, a new license would be granted.<sup>74</sup> This approach eliminated the need for FERC staff to seriously examine dam removal as a mitigation alternative. Given that a new license would be issued, the FERC analytic process was directed at balancing mitigation alternatives between the economic interests of the licensee and the public's use of the water resource. Thus, the license process concerned the determination of what new operating conditions would be placed in the new license.

Formal and informal knee-of-the-curve cost analysis and logic was applied to strike a balance between economic and environmental ends.<sup>75</sup> Knee-of-the-curve analysis begins by calculating the cost of a number of mitigation alternatives. The mitigation alternatives are ordered in a range from no mitigation to the most extensive (and expensive) mitigation option. Mitigation alternatives are written into a license as long as the additional cost of the alternative is small relative to the environmental gains.

To illustrate knee-of-the-curve logic, suppose there are four different downstream flow regimes being considered—100, 200, 300, and 400 cubic feet per second ("cfs"). The FERC analysts calculate the cost of each alternative as the value of the forgone power of each flow regime.<sup>76</sup> The potential consequences of each flow regime, in terms of recreational activities or wildlife enhancement, are then considered. These "benefits" are not typically translated into dollar values, but instead are expressed in natural units or qualitative judgments.<sup>77</sup> Instream flow would be increased as long as the costs were small relative to potential gains downstream. For example, suppose increasing instream flow from 100 cfs to 200 cfs increases spawning runs of anadromous fish species by 1,000 adults and

---

does not use "knee-of-the-curve" language to describe FERC analysis, the phrase accurately reflects the FERC's published description of the analytical decision process.

<sup>74</sup> See Pyle, *supra* note 10, at 106; see also Spence, *supra* note 69, at 434.

<sup>75</sup> See generally Fargo, *supra* note 73.

<sup>76</sup> See generally *id.*

<sup>77</sup> Examples include habitat equivalency measures, changes in fish populations, or number of recreational user days. One review of FERC decisions failed to find a single monetized benefit estimate in a sample of nineteen FERC analyses. See Michael R. Moore et al., Testing Theories of Agency Behavior: Evidence from Hydropower Project Relicensing Decisions of the Federal Energy Regulatory Commission, Address at the Allied Social Science Association (Jan. 3-5, 1998) (manuscript on file with WM. & MARY ENVTL. L. & POL'Y REV.). See also David Marcus, *FERC's Economic Analysis of Hydro Projects: A Review of Policy and Practice Since the Mead Decision* (Mar. 18, 1997) (manuscript prepared for the Hydropower Reform Coalition on file with the WM. & MARY ENVTL. L. & POL'Y REV.).

costs \$5,000 in lost power benefits. Further increasing stream flow from 200 cfs to 300 cfs may again increase the number of returning fish by 1,000, but cost \$10,000 in lost power benefits. However, increasing stream flow from 300 to 400 cfs may increase the number of fish by 1,000 but cost \$100,000 in lost power benefits. In knee-of-the-curve analysis, additional in-stream flow would be required until the incremental costs of additional flow became high (sharply increasing cost is the "knee" on a marginal cost curve) compared to the environmental gains. In this hypothetical case, the incremental cost of a returning adult fish increases sharply between 300 cfs to 400 cfs. In this case the FERC staff may decide that the licensee should sacrifice \$10,000 for an extra 1,000 fish, but that \$100,000 is too much to forgo for another 1,000 fish.<sup>78</sup> The FERC staff itself makes the judgment about whether the additional cost was "worth" the additional environmental gain and not whether a benefit-cost calculation reveals that it is "worth" it.

This analytic approach does not imply that bargaining and negotiation are non-existent in the relicensing process. The FERC must entertain and consider recommendations from federal and state agencies.<sup>79</sup> Such a structure required the FERC analysts to consider, debate and negotiate with other agency experts about the consequences and relative worth of the mitigation alternatives. In fact, the pattern of behavior in licensing decisions clearly shows that the FERC accepted, or partially accepted, a majority of the recommendations made by state and federal wildlife and resource agencies regarding future dam operating conditions.<sup>80</sup> But it was a rather narrow bargaining process in which the FERC ultimately decided license conditions.

### III. NEW PRESSURES FOR CHANGE

Almost since its inception, the FERC has been charged by some with placing too much weight on hydropower interests in licensing and

---

<sup>78</sup> This simple example makes the choice of tradeoffs appear more straightforward than is typically the case. In actual relicensing cases, the ecological response to changes in operating conditions (stream flow) exhibits a high degree of uncertainty and is subject to considerable controversy.

<sup>79</sup> For a summary of the traditional relicensing process, see Melissa Powell, *A Case Study for Stakeholders: An Alternative to Traditional Hydroelectric Relicensing*, 18 ENERGY L. J. 405, 406-409 (1997).

<sup>80</sup> See Spence, *supra* note 69; Moore et al., *supra* note 77, at 10; see also General Accounting Office, *Electric Consumers' Protection Act's Effects on Licensing Hydroelectric Dams* (Sept. 1992), GAO/RCED-92-246.



relicensing decisions.<sup>81</sup> This criticism has strengthened and become more vocal in the past two decades.<sup>82</sup> Partly as a result of this criticism, the FERC has seen a gradual erosion in its authority to determine licensing conditions.<sup>83</sup> In 1986, Congress passed the Electric Consumers Protection Act (ECPA), which strengthened the balancing language in the Federal Power Act.<sup>84</sup> The ECPA also required the FERC to accept resource agencies' recommendations or to explain in writing why it was rejecting the suggested conditions.<sup>85</sup> In 1992 Congress passed the Energy Policy Act. Although the act was intended primarily to foster competition in the electric utility industries, the act also expanded the authority of agencies in the Secretaries of Interior and Commerce to require fish passage facilities in a FERC licensing case.<sup>86</sup>

The courts have also expanded the authority of state and federal agencies to override or dampen the FERC's authority to unilaterally impose license conditions.<sup>87</sup> For example, *PUD No. 1 of Jefferson County v. Washington Department of Ecology* expanded state water quality agencies' authority to specify downstream flow conditions in relicensing

---

<sup>81</sup> See David B. Spence, *Agency Discretion and the Dynamics of Procedural Reform*, 59 PUB. ADMIN. REV. 425, 427 (1999).

<sup>82</sup> See generally *id.*

<sup>83</sup> See generally Sensiba, *supra* note 71.

<sup>84</sup> Congress broadened the FERC's balancing requirements to selected projects best adopted "for the improvement and utilization of water-power development, for the adequate protection, mitigation and enhancement of fish and wildlife (including related spawning grounds and habitat), and for other beneficial public uses, including irrigation, flood control, water supply, and recreational and other purposes." 16 U.S.C. § 803(a)(1) (1994). 16 U.S.C. § 797(e) was also amended to explicitly require the FERC 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." 16 U.S.C. § 797(e) (1994).

<sup>85</sup> See 16 U.S.C. § 797(j) (1994). Procedurally, the FERC had to accept agency recommendations or to explain in writing why it was rejecting the recommended conditions. For a history of this section, see Grimm, *supra* note 21.

<sup>86</sup> The Energy Policy Act "vacated a FERC regulation that narrowly interpreted the term "fishway" in Section 18." Andrew H. Sawyer, *Hydropower Relicensing in the Post Dam-Building Era*, 11 NAT. RESOURCES & ENV'T 12, 70 (Fall 1996). Section 18 (16 U.S.C. § 811) of the FPA states that the FERC "shall require the construction, maintenance, and operation by a licensee at its own expense . . . such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce as appropriate." Prior to the Energy Policy Act, the FERC had interpreted fish passage as providing upstream passage but not downstream passage of resident fish.

<sup>87</sup> See generally *PUD No. 1 v. Wash. Dep't of Ecology*, 511 U.S. 700 (1994).

cases.<sup>88</sup> One implication of *PUD No. 1* is that states have greater latitude to require dam operating conditions based on fish and wildlife needs, recreation, and aesthetics.<sup>89</sup>

These changes and the increased attention relicensing decisions are receiving from environmental groups and federal and state government agencies are having noticeable consequences for the relicensing process. Federal and state agencies have been more aggressive in asserting and testing their conditioning authority in the relicensing process.<sup>90</sup> The number of mitigation alternatives offered by agencies for each license is increasing over time, and there has been a slight increase in probability that the FERC writes these alternatives into a license.<sup>91</sup> Not surprisingly, the license process has become more costly and conflict-ridden.<sup>92</sup> Consequently, the time to process a relicense request has increased considerably.<sup>93</sup> A U.S. Department of Energy study indicated the relicensing process took nine months to complete prior to 1986, three years to complete in 1987, and over four to complete between 1994-96.<sup>94</sup>

The consequences of these changes appear to be unsatisfying to almost all parties with an interest in hydropower relicensing. The hydropower industry is bitterly opposed to these developments, because it sees the resource agencies' increasing influence in the licensing process as driving up costs and undermining the FERC's congressional directive to strike a balance between competing ends. The agencies are under no such requirement to "balance."<sup>95</sup> As one voice for industry recently wrote: "As currently constructed, the relicensing process lacks a central comprehensive decision-making authority responsible for assessing and balancing the important and often competing interests at play in

---

<sup>88</sup> See *id.* at 711.

<sup>89</sup> See Donald Clarke, *Relicensing Hydropower: The Many Faces of Competition*, 11 NAT. RESOURCES & ENV'T. 8, 11 (Fall 1996); see also Sawyer, *supra* note 86, at 14-15.

<sup>90</sup> See Sawyer, *supra* note 86; Sensiba, *supra* note 71.

<sup>91</sup> Moore et al., *supra* note 77, at 24; GAO, *supra* note 80.

<sup>92</sup> See National Hydropower Association, *Why Hydropower Licensing Improvement is Needed*, at <http://www.hydro.org/ga003.htm>; see also Carol Ann Giovando, *Hydro Relicensing Jeopardizes Renewable Base*, 144 POWER 66 (Jan.-Feb. 2000). See generally Powell, *supra* note 79.

<sup>93</sup> See generally RICHARD T. HUNT & JUDITH A. HUNT, U.S. DEP'T OF ENERGY, *HYDROPOWER RESOURCES AT RISK* (1997).

<sup>94</sup> See *id.*

<sup>95</sup> See generally Sensiba, *supra* note 71. For a recent example of how mandatory conditioning authority of a resource agency can make a project uneconomic to operate, see Charlton H. Bonham, *The Condit Dam Removal and Section 18 of the Federal Power Act: A Coerced Settlement*, 14 J. ENVTL. L. & LITIG. 97 (1999).

relicensing.”<sup>96</sup> Established patterns of FERC decision-making that allow expectations to form over what mitigation alternatives FERC staff consider “worth it” are changing. The perceived uncertainty of the outcomes of the relicensing process is deeply unsettling to an industry facing an increasingly competitive, deregulated environment.

For their part, environmental groups seem equally unsatisfied. Groups like American Rivers and Trout Unlimited are increasingly vocal and critical of the FERC’s long-standing premise that a license will be reissued.<sup>97</sup> These voices are now calling for the decommissioning and dam removal option to be considered as a serious alternative in every relicensing case.<sup>98</sup> The dam removal option was almost never seriously considered by even FERC critics as recently as fifteen years ago.<sup>99</sup> In a much discussed 1994 FERC policy statement, the FERC claimed it had the authority to order dam decommissioning.<sup>100</sup> In the same statement, however, FERC commissioners stressed that such authority would only be exercised in rare cases.<sup>101</sup> True to their word, the FERC has decommissioned only one dam since the policy statement<sup>102</sup> and this pattern of decisions continues to antagonize environmental groups. Even if decommissioning is not authorized, there is a general feeling that environmental services—“nature”—still do not receive enough weight in determining operating conditions.<sup>103</sup> For many, the FERC, despite the increasing authorities of federal and state resource agencies, still inadequately reflects environmental concerns in decision-making and too frequently decides against the recommendations of environmental groups or federal and state agencies.<sup>104</sup>

---

<sup>96</sup> Clarke, *supra* note 89, at 9.

<sup>97</sup> See generally Hydropower Reform Coalition, *Policy on Hydropower Dam Decommissioning in the FERC Relicensing Process*, December 1999, at <http://amrivers.localweb.com/hrcdecom.html>; see also Trout Unlimited, *FERC Licensed Dams*, at <http://www.tu.org/watch/ferc.html>.

<sup>98</sup> See Hydropower Reform Coalition, *supra* note 97.

<sup>99</sup> See Bender, *supra* note 24, at 197.

<sup>100</sup> See FERC, Project Decommissioning at Relicensing: Policy Statement, 60 Fed. Reg. 339 (1995) (codified at 18 C.F.R. § 2.24 (1997)).

<sup>101</sup> See *id.*

<sup>102</sup> Edwards Mfg. Co., 81 Fed. Energy Reg. Comm’n Rep. (CCH) ¶ 61,255 (Nov. 25, 1997).

<sup>103</sup> See Sawyer, *supra* note 86, at 70. See generally Ted Williams, *Freeing the Kennebec River*, 95 AUDUBON 36 (1993); John Simpson, *Battle Looms Over Hydroelectric Dam Relicensing*, 8 PUB. UTIL. FORT. 50 (Apr. 15, 1993).

<sup>104</sup> A large number of licenses were processed in 1993. See Smith, *supra* note 1, at 9. The so-called class of ’93 projects resulted in only a one percent reduction in total annual

#### IV. SPECULATIONS ON THE FUTURE ROLE OF ANALYSIS AND NEGOTIATION IN THE FERC RELICENSING PROCESS

Given so much dissatisfaction with the relicensing process, it is not surprising that there have been calls of reform from all sides of the debate. Some suggested reforms call for different analytical approaches, others suggest a need for changes in the decision-making processes. What is ultimately being debated is how nature will be taken into account in the relicensing process of the future.

Some observers have proposed that the FERC needs to do a better "analysis,"<sup>105</sup> sometimes in the form of systematic benefit-cost analysis.<sup>106</sup> The implication is that the problem with the process is the analysis itself. The argument seems to be that if the FERC would do a more comprehensive benefit-cost analysis or do a better analysis, better decisions would be made. With respect to taking into account nature's services, the implication is that if analysts did a better job at quantifying the benefits of environmental services, more interests (particularly environmental ones) would be accounted for and better decisions made. In short, nature would be better taken into account by analysis that monetizes nature's services.<sup>107</sup>

---

electricity generation from the previous licenses. *See id.* Grimm argues that FERC commonly adopts the agency recommendation, but would delay implementation indefinitely. *See Grimm, supra* note 21, at 946. For example, the FERC may require submission of design drawings (often granting extensions) but places no requirements on the date of completion.

<sup>105</sup> *See generally* John R. Mohn, *Baseline and Cumulative Impacts: FERC in Conflict*, Paper presented at the conference Hydro's Future: Technology, Markets, and Policy, Hydropower '99 (June 6-9, 1999); *see also* Hydropower Reform Coalition, *Hydropower Reform Coalition Platform, Part II*, at <http://amrivers.localweb.com/platform.html>; Marcus, *supra* note 77.

<sup>106</sup> *See generally* Marcus, *supra* note 77.

<sup>107</sup> Environmental advocates sometimes conclude that monetization is necessary for environmental services to compete on equal footing with market-oriented services. For example, one highly publicized work that monetizes the value of the world's ecosystem justifies the effort by stating: "Because ecosystem services are not fully 'captured' in commercial markets or adequately quantified in terms comparable with economic services and manufactured capital, they are often given too little weight in policy decisions." Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 NATURE 253, 253 (1997). Similarly, one recent study asserted "failure to quantify ecosystem values in commensurate terms with opportunity costs often results in an implicit value of zero being placed on ecosystem services." *See* Loomis et al., *supra* note 47, at 104.

This reform fits squarely within the spirit of the independent commission and the rational analytic approach. To date, this is a reform that has not been embraced by the FERC.<sup>108</sup> While its authority has been limited, the FERC has not significantly changed its approach to evaluating alternatives.<sup>109</sup> The FERC still, as a general rule, fails to quantify environmental changes in terms of dollars and continues to use knee-of-the-curve logic to evaluate mitigation alternatives to an operating facility.<sup>110</sup>

Rather than altering its methods of analysis, the reform the FERC has adopted is related to the process of *how* decisions are made. The FERC recently announced rules for an alternative relicensing process based on more negotiation between decision participants.<sup>111</sup> The licensee now has the option to pursue a new license under an alternative licensing

---

<sup>108</sup> In 1998, the FERC established an inter-agency task force to improve relationships and coordination with federal resource agencies. The task force focused on a number of issues including improving alternative licensing procedures, improving coordination, and identifying options on how to analyze economic issues. While other areas of the task force have made specific recommendations, the draft report on economic analysis contains only a list of practices and analytical tools used by the agencies. No changes in FERC analytical approach have occurred. See FERC, *Joint Statement Commitment for an Improved Hydropower Licensing Process* (May 22, 2000), at <http://www.ferc.fed.us/news1/agree.pdf>.

<sup>109</sup> This discussion focuses on whether the *analytical approach* to evaluation will change rather than specific *analytical techniques*. For example, commitments to monetize environmental services or a move to implement social benefit-cost analysis represent significant departures from the FERC's current knee-of-the-curve approach and would represent a change in analytical approach. This is contrasted with using different *analytical techniques within* a knee-of-the-curve framework. For example, as power markets develop, the FERC staff could rely on market power rates rather than engineering cost estimates to calculate the costs of foregone power. In this case different analytical techniques (market prices versus engineering costs) can be used within the same analytical approach (knee-of-the-curve). This discussion should not imply that changes in techniques would not have an impact on the outcomes of licensing decisions. Deregulation of the power markets may indirectly place more weight "on nature" in relicensing decisions by lowering the price of power. For example, competition is likely to drive down the cost of producing power from all sources. The costs of forgone power may be much lower when calculating lost power benefits using market rates compared to the cost of constructing replacement power. Ironically, it may be better power cost analysis, and not introduction of benefit analysis, that increases the attractiveness of environmental mitigation alternatives and dam decommissioning.

<sup>110</sup> See Moore, *supra* note 77, at 6-9.

<sup>111</sup> See FERC Alternative Procedures, 18 C.F.R. § 4.34(i) (2000). For a summary of the two relicensing processes, see National Hydropower Association, *Relicensing Hydroelectric Power Projects: A Handbook for People Involved In Relicensing Hydropower Projects* (Apr. 1999), at <http://www.hydro.org/nha2.pdf>.

process, rather than the conventional FERC licensing process. The alternative process involves negotiation with agency and environmental interests and the dam operator over terms of the license. The presumption is that if all interested parties to the negotiation can agree on a mutually satisfactory license, the FERC will write these conditions in the license. The dam operator is encouraged to work with this selected group of stakeholders to identify relevant studies, mitigation alternatives, and operating conditions, and ultimately to develop a mutually agreed-to license application.<sup>112</sup> Conceptually, it is the participants who must develop common understandings about what is at stake, what issues are most important to them, and which ones they will put on the table to reach an agreement. As a practical matter, the alternative process seeks to downplay the role of the FERC staff and analysis in judging whether a mitigation alternative is "worth it." More of the responsibility of this decision is now in the hands of the participants in the negotiation process.

Whether the FERC's alternative negotiation process has substantially changed licensing outcomes or increased satisfaction with licensing outcomes is still an open question. Experience with the alternative process is still too recent and evolving.<sup>113</sup> The relative position of "nature" in the outcome of this alternative process *vis-à-vis* the outcomes of the conventional process is unclear at this point. Furthermore, how current and future legal challenges will alter the relative power of the participants and alter the outcomes of the process is also unknown.

However, the patterns that are emerging in the FERC relicensing process, as well as broader patterns in the evaluation of water projects in general, lead me to some tentative predictions. While the decision process is changing toward more open and inclusive forms of bargaining and negotiation, I do not believe the types of analysis generated will change appreciably in these more open forums. I believe the alternative process will continue to request and require cost analysis of lost power and

---

<sup>112</sup> See Bonham, *supra* note 95, at 122-25.

<sup>113</sup> At least some initial experiences have been positive. See Larry LaBolle, *Collaborative Relicensing: Can It Work?*, WATER POWER & DAM CONSTRUCTION, June 25, 1999, at 25; Steve Groves & Gary Liimatainen, *Collaborative Relicensing: What's In It For Me, The Hydro Owner?*, Paper presented at the WaterPower '99 Conference, Las Vegas, July 6-9, 1999; David J. Schwall, *Science Based Approach to Outstanding Resource Issues PacifiCorp's North Umpqua Project—Watershed Analysis Settlement Process*, Paper presented at the WaterPower '99 Conference (July 6-9, 1999); Bender, *supra* note 24, at 218 n.159; Powell, *supra* note 79, at 406-10.

mitigation alternatives and defensible environmental response analysis.<sup>114</sup> It is my belief that these two types of analyses are the most useful for participants to understand the choices and options available to them. In other words, I do not anticipate that benefit estimation procedures that monetize the changes in nature's aquatic services—like nonmarket valuation techniques—will be frequently requested or be pivotal information during relicensing negotiations.

What is changing is who is getting to decide whether the additional 100 cfs and 1,000 salmon are worth sacrificing \$100,000 in lost power. I do not know how a more open process will change the relative importance placed on nature in relicensing, but it is unlikely that the analytical approach used to discover what is at stake will change appreciably. Comprehensive benefit analysis presumes to weigh the environmental consequences *for* the participants. Yet the decision participants will retain their authority to weigh the environmental gains against the opportunity costs and make the judgment of worth rather than rely on an analysis to make the decision. Benefit analysis also makes an implicit assumption that people require or need assistance in making choices in situations where outcomes are measured in different units (increased power costs versus more salmon and whooping cranes). The decision participants are able to express the values they hold for particular environmental outcomes in the alternative process and they do not necessarily need an analysis to measure what their preferences are.<sup>115</sup> When making decisions about what to do with scarce analytical resources, participants most likely will continue to use analysis to discover and illuminate what is at stake (both in terms of fish numbers, acres of habitat, lost power benefits) and convince others that the analysis of changes in the ecosystem services is credible and scientifically sound. This may include spending additional resources reducing uncertainty surrounding environmental response analysis or doing additional environmental response analysis. Economic studies may be conducted to the extent that the changes in service flow are readily reflected in observable market activities (recreational spending on a fishery). If benefits are ever estimated for nonmarket services, it is likely to be used as a legitimating function to support a preconceived position rather than facilitating the negotiation through the discovery of

---

<sup>114</sup> Environmental response analysis relates changes in management options (instream flow, fish passage) to ecosystem responses (acres of new habitat, numbers of returning fish, etc.).

<sup>115</sup> Obviously, negotiation processes rely on participants to reflect the multitude of interests at stake. This simple observation in turn requires that negotiations are open and capable of accommodating a wide range of affected interests.

alternatives, the consequences of alternatives, or the evaluation of alternatives.<sup>116</sup> In short, the decision process is changing but the analysis (understood as a general approach) is not.<sup>117</sup>

Finally, the move towards a more open negotiation is not a temporary change or experiment. While specific changes in the relicensing process cannot be predicted, the move to more collaborative or open negotiated deal making is unlikely to be reversed. This move toward more acceptance and emphasis on open negotiation is a broad based change in attitude and approach that transcends the relicensing process and the FERC. Reflecting on a century of changes in the nation's water program, Leonard Shabman argues that this shift from formal analytic process to more negotiation-based ones is a dominant theme across most water programs—water project planning, water allocation, and water pollution regulations.<sup>118</sup> Shabman states:

In the past watershed deal making was disguised by a pretense that decisions were directed by the objective calculations and comparisons of costs with benefits. Today, in a radical shift from the past, watershed management programs openly call for collaborative

---

<sup>116</sup> See generally Leonard Shabman, *Bargaining, Analysis and Water Management*, 116 WATER RESOURCES UPDATE, Mar. 2000, at 71. Morlan states that "until these methods can produce more credible results, they will likely have little influence on policy, even though the values people place on healthy environments may be very high." Morlan, *supra* note 15, at 14.

<sup>117</sup> An example may be illustrative. Currently, North Carolina Power is using the alternative process in seeking new licenses at Roanoke Rapids power plant. The initial applicant prepared environmental assessment did not include any economic studies that monetized nonmarket environmental services. See North Carolina Power, *FERC No. 2009 Roanoke Rapids and Gaston Hydropower Project* Transmittal of Draft License Application and Preliminary Draft Applicant Prepared Environmental Assessment (May 1998), at <http://rimsweb1.ferc.fed.us/rims.q?rp2~getimagepages~1853603~28~465~1-50>. The stakeholders and North Carolina Power have negotiated a series of supplemental studies to be undertaken in addition to those contained in the applicant prepared EA (the licensee pays for the studies). See *id.* Currently, studies that will be undertaken include hydrologic modeling and biological response studies. See *id.* No studies that propose to calculate the monetary values of these environmental outcomes have been proposed. See *id.* For a list of studies, see NC Power's website, at <http://www.ncpower.com/hydrohome/FHRelicensing/RelicensingDocuments.htm>. See generally Schwall, *supra* note 113.

<sup>118</sup> See Shabman, *supra* note 116.



decision making (bargaining and negotiation) to guide watershed restoration decisions.<sup>119</sup>

Debate will continue about how this negotiation should be structured and about the relative power and position of participants in the process, but the broad acceptance of negotiation as a way to reach decisions is unlikely to change in the near future.

Finally, much of the current tension in the relicensing process is caused by fundamentally different value systems about the way rivers should be used. Negotiation and bargaining—regardless of whether it ends in a consensus or with the exercise of power—will be the process used to sort out conflicting values and ends. Analysis may help illuminate, but cannot resolve, this debate.<sup>120</sup>

It would be incorrect, however, to imply that the current alternative relicensing process is capable of sorting out these conflicting values and ends in all relicensing cases. A significant underlying source of tension underlying the dam relicensing decision is the dam decommissioning/dam removal issue. Given current legal circumstances, I believe the potential of the alternative relicensing process is quite limited in cases where dam decommissioning (dam removal) is a serious alternative under consideration.

A consensus negotiation process, like the alternative process, is able to reach a decision if there are well-understood and accepted rules that govern the process and define the rights and duties of the participants in that process. All participants must have something to gain or lose in the process, otherwise there is nothing to discuss. Finally, the process should be inclusive in the sense that all parties with an interest in the outcome should be represented. While decision participants may chafe under the current legal and judicial rules, conditions for effective negotiations can exist in many relicensing cases where there is a general agreement that the license will be reissued. In the context of deciding whether a dam should be decommissioned or removed, however, conditions necessary for the collaborative process do not currently exist. In fact, it will be difficult for any *FERC-level* decision process (the conventional analytic process or the alternative process) to resolve the issue of dam decommissioning and removal given the existing legal environment.

---

<sup>119</sup> *Id.* at 72.

<sup>120</sup> See generally Ingram & Schneider, *supra* note 65.

Currently, the FERC claims to have the authority to authorize decommissioning and make the licensee pay the costs of dam removal.<sup>121</sup> The legality of this claim is hotly challenged by the hydropower industry and has not been clarified in the courts or in statutes.<sup>122</sup> While the FERC claims this authority, it also claims that it will exercise it in only rare cases.<sup>123</sup> In the midst of a fierce debate over whether the FERC can and should order decommissioning, the question of who pays remains an unanswered question. Environmental groups assert that the licensee or industry should pay for removal.<sup>124</sup> Industry argues that the FERC does not have the authority to order and make the licensee pay for dam removal.<sup>125</sup> Given these conditions, there is no reason for a dam operator to enter into a negotiation over the removal of a dam because there is nothing to gain from such a decision. The now famous Edwards Dam in Maine was the only involuntary decommissioning the FERC has ever ordered.<sup>126</sup> The two dams on the Elwha River in Washington State are also being removed due, in part, to FERC leanings in that direction.<sup>127</sup> In both the Elwha and Edwards cases, the licensee only conceded to dam removal when someone else—the general taxpayer or another party who was not a party to the negotiation—paid the costs for removal.<sup>128</sup>

---

<sup>121</sup> See FERC Project Decommissioning at Relicensing, 18 C.F.R. § 2.24 (2000).

<sup>122</sup> See generally Michael A. Swiger et al., *Paying for the Change: Can the FERC Force Dam Decommissioning at Relicensing?*, 17 ENERGY L.J. 164 (1996); Bryant, *supra* note 68, at 106.

<sup>123</sup> See FERC Project Decommissioning at Relicensing, 18 C.F.R. § 2.24 (2000).

<sup>124</sup> See Hydropower Reform Coalition, *supra* note 97.

<sup>125</sup> See Swiger, *supra* note 122, at 166-168; Tina Davis, *FERC Reiterates Authority to Order Dam Removal*, 28 ENERGY DAILY, June 1, 2000.

<sup>126</sup> See Blaine Harden, *U.S. Orders Maine Dam Destroyed*, WASH. POST, Nov. 26, 1997, at A1; Sensiba, *supra* note 71, at 606.

<sup>127</sup> See generally Bender, *supra* note 24, at 219-31.

<sup>128</sup> In the Edwards case, after threatening legal action, the licensee transferred ownership of the facility to the State of Maine. The \$7 million dam removal is being paid for by the Bath Iron Works (shipbuilder) and Kennebec Hydro Developers Group (a coalition of dam operators). In exchange for their contribution to the dam removal, Bath Iron Works received permission to expand its shipyard by fifteen acres into the Kennebec River and the dam operators received postponements for up to fifteen years for installation of upstream fish passage requirements. See Bryant, *supra* note 68, at 109-12; see also John McPhee, *Farewell to the Nineteenth Century*, THE NEW YORKER, Sept. 27, 1999 at 44, 48. In the Elwha case, the licensee agreed to give up legal challenges when Congress passed the Elwha River Ecosystem and Fisheries Restoration Act, Pub. L. No. 102-495, 106 Stat. 3173 (1992). The law allowed the federal government to purchase the dams for \$29.5 million from the licensee. See *id.*

Until the extreme uncertainty over legal rules and financial obligations is reduced, it will be impossible to fashion a workable day-to-day decision process of any kind with respect to dam removal. Political negotiations of another kind and at a higher policy level than FERC (statutory or judicial) will be necessary to fashion a workable decision process capable of addressing dam decommissioning and removal. If this is not forthcoming, expect more protracted legal battles and cost shifting to parties not involved in the relicensing process to make dam removal happen.