Dammed Deregulation

How Deregulation of the Electric Power Industry
Could Affect the Nation's Rivers

by Charlie Higley

June 1999

Public Citizen's Critical Mass Energy Project

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Executive Summary

Over 2,300 hydroelectric dams are used in the United States to produce about 10 percent of the nation's electricity. In addition to providing cheap electricity, these dams inflict heavy damage to waterways and neighboring ecosystems. Dams also disrupt the lives of the many people that depend on healthy rivers.

The deregulation of the electric power industry, which is making its way across the country, is changing the rules of one of the most regulated businesses in the U.S. economy. Promoted by the false promises of lower electricity rates for *all* consumers, electricity deregulation is leading to higher electricity rates and poorer service for many residential customers while large industrial companies are getting lower electricity rates, and while large utilities are receiving a $200 billion ratepayer-funded bailout.

Long owned by regulated utilities, many hydroelectric dams are now being purchased by new, unregulated companies. However, since most hydro dams also support irrigation, flood control, recreation, and other public services, the fate inflicted by electricity deregulation on dams will affect dammed rivers and the people living near them for many years to come. Possible consequences include:

- A deregulated market for electricity will demand that electricity suppliers keep costs as low as possible.

- Deregulated power markets are placing a greater value on "peak hour" electricity, creating incentives that could harm rivers.

- Economically marginal dams will not be able to compete in deregulated markets, and many dam projects could be abandoned.

- Policies to support renewable energy sources could benefit already-competitive hydroelectric power, unless those policies address only non-hydro renewables.

- Marketing of all hydroelectric power as "green," regardless of how it is generated, misrepresents the harmful environmental impacts of dams on rivers, and could squelch the development of non-hydro renewables.

- The divestiture of dams throughout the country may lead to detrimental consequences for our rivers.

- Tens of thousands of acres of lands surrounding hydroelectric dam projects may be sold, much

of it to private development.

- Efforts to require disclosure of how electricity is produced may reward hydro dam owners, even for environmentally damaging projects.

- Deregulation may have the effect of encouraging the development of more hydro electricity in Canada, where environmental controls are significantly weaker.

- Pressure from dam owners may lead to changes in how the environmental impacts of dams are regulated.

To counter these negative consequences of electricity deregulation, lawmakers should embrace the following **recommendations:**

- Hydropower should not be designated as a renewable energy resource in deregulation legislation.

- Marketers of green electricity should be prohibited from selling hydropower as "green" electricity.

- A financing mechanism should be provided to ensure removal of dams abandoned due to the deregulation of electricity markets.

- Current laws and regulations designed to mitigate the environmental impacts of hydro projects should be preserved.

- Consumers should be informed regarding their electricity purchases through detailed electricity labels.

- Before utilities produce plans for either divesting or spinning off their hydro assets, public policies should be implemented to protect environmental resources, including instream habitats as well as surrounding lands.

- Legislation should protect against damage to Canada's rivers.

Dammed Deregulation

How Deregulation of the Electric Power Industry Could Affect the Nation's Rivers

Introduction

The deregulation of the electricity industry is a complex undertaking, with many serious economic, social, and environmental implications for the public. One impact that has received little scrutiny is how utility deregulation will affect our nation's waterways.

Few people are aware of the extent to which governments, utilities, and private developers have exploited the rivers of the U.S. for electricity production. There are 2,300 hydroelectric projects blocking streams and rivers throughout the country.[1] There are only a handful of our thousands of waterways that have not been dammed and are still in their natural, free-flowing condition. One estimate says that more than 30 percent of river-miles are directly or indirectly affected by dams alone.[2]

In contrast to the extensive exploitation of our water resources for power production, electricity produced from these projects totals less than 9 percent nationwide.[3] For such a small amount of power, the negative impacts on rivers are huge, and have cost taxpayers billions of dollars in attempts to improve environmental conditions, especially fish populations and water quality.[4]

Regarding electricity deregulation and hyrdo power, the questions that arise are:

- How will electricity deregulation affect the policies, economics, ownership and environmental impacts of hydroelectric dam operations; and

- What can activists do to influence policy making to ensure that more harm does not come to our rivers and the environment?

In shifting to a deregulated electric power industry, policy makers and agencies most likely will not anticipate and address all the related consequences. Therefore, activists must put the pieces together, and bring pressure upon policy makers to address concerns that they would otherwise overlook.

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[1] Federal Energy Regulatory Commission, *Hydroelectric Power Resources of the United States*, 1992, at xi (hereinafter cited as FERC).
[2] American Rivers, *Climate Change and Hydropower: Fact vs. Fiction*, Washington, DC, May 1998.
[3] David M. Gillilan and Thomas C. Brown, *Instream Flow Protection: Seeking a Balance in Western Water Use*, Washington, DC: Island Press, 1997 at 65 (hereinafter cited as Gillilan and Brown)
[4] Natural Resources Council Fund, *Restoring the Lower Snake River: Saving Snake River Salmon and Saving Money*, Portland, OR, 1997. In the Columbia Basin $1.7 billion has been spent to restore salmon populations.

Hydroelectric Power in the United States

The power of falling water is one of the oldest and most easily accessible energy sources. The geography and climate of a region determine the nature of that region's rivers, and in turn determine the suitability of the waterways for hydroelectric development. Hydroelectric dams may be either **run-of-river**, in which the amount of electricity generated is determined by the volume of water flowing in the stream, or a **storage** facility, in which large reservoirs of water allow operators to control the time and quantity of electricity production depending on the impounded volume of water. On the East Coast, where rivers have a steady, year-round flow, both run-of-river and storage facilities dams have been built since the Colonial period, with the first hydroelectric systems appearing around 1880.

In more arid regions like Arizona and California, storage dams have been favored. Up until World War II, hydroelectric projects supplied 83 percent of California's electricity. Now the figure is roughly 16 percent.[5] Most of California's hydropower is generated from Sierra Nevada rivers, dammed to regulate and store the springtime surge of snow melt from the high peaks. In the rainy Pacific Northwest, large storage dams are widespread, designed to capture massive flow volumes from the Columbia River basin to produce electricity as well as to provide irrigation supplies. Most of the dams in the United States were built between 1900 and 1950, though a surge of small dam construction occurred in the 1980s.

Historically, the environmental impacts of dams were of concern to only a handful of conservationists, and they focused on the economic benefits and efficiency of using "free fuel" and the renewable aspect of the hydrologic cycle. Additionally, before the advent of environmental and public-interest laws like the National Environmental Policy Act, citizens had minimal access to technical information about dams and little influence in decision-making processes. Private utilities and government agencies continued to build dams at a fast rate through the 1980s, with minimal comprehensive oversight to river development and environmental impacts.[6]

Currently, hydropower provides about 91,600 megawatts[7] to the nation's energy mix, or about 9 percent of all electricity produced.[8] Of the 2,300 hyrdo projects in operation, 157 of them have nameplate capacities of 100 megawatts or more.[9] Investor-owned utilities own 746 hydro projects nationwide and are responsible for 27 percent of all hydro electricity produced in the United States.[10] Federally-owned projects, such as those operated by the Bonneville Power Administration on the

[5] Gillilan and Brown, note 3, at 66.
[6] John D. Echeverria, Pope Barrow, and Richard Roos-Collins, *Rivers at Risk: The Concerned Citizens' Guide to Hydropower*, Washington, DC: Island Press, 1989 at 1(hereinafter cited as Echeverria, Barrow, and Roos-Collins)
[7] FERC, note 1, at xi.
[8] Gillilan and Brown, note 3, at 65.
[9] FERC, note 1, at xii.
[10] Federal ownership, 172 plants, 44 percent of all hydroelectricity produced in U.S.; Investor-owned utility, 746 plants, 27 percent; Private non-utility, 596 plants, 2 percent; Municipal, 550 plants, 26 percent; Industrial, 227 plants, 1 percent; Cooperatives, 33 plants, less than one percent. FERC, note 1, at xiv.

Columbia River basin and by the Tennessee Valley Authority on the Tennessee River basin, account for 50 percent of all hydro electricity produced.[11]

Throughout the West, hydropower makes up a much greater percentage of the electricity base than in the East. Dam projects in Washington, Oregon, and California alone account for 50 percent of U.S. hydroelectricity production.[12]

PURPA's Influence on Small-dam Construction

Many of the smaller hydroelectric dams now in operation resulted from policies in the 1970s that were enacted in response to the energy crisis. In 1978, President Carter signed into law the Public Utility Regulatory Policies Act[13] (PURPA), a significant precursor to utility deregulation.[14]

In addition to providing states with conservation and efficiency guidelines, PURPA required that utilities purchase electricity from private suppliers, especially from owners of hydroelectric, wind, geothermal, and co-generation facilities. Intended to decentralize energy production, PURPA encouraged the entry of non-utilities into wholesale power markets. Since PURPA contracts were based on energy-price forecasts that predicted high prices for electricity, hydro project owners wanted these legally-required contracts with big utilities. For more than a decade, these small operators have been receiving above-market prices for power from their hydro facilities.[15] In addition, PURPA provided exemptions for these facilities from a range of state and federal environmental regulations.

Environmental activists blame PURPA as being the "single most important force driving the hydropower gold rush of the 1980s."[16] The number of new hydro facilities grew at a disproportionately high rate; between 1979 and 1991, 955 plants came on line, with 711 entering service between 1982 and 1988 inclusive.

Regulation of Hydropower

Rivers are public resources and cannot be owned by private companies. Nevertheless, a utility or a private developer may obtain water rights and a license to dam a river for electricity purposes. The extent of environmental protection measures associated with hydro dams owned by entities other than the federal government is determined through the licensing process overseen by the Federal Energy Regulatory Commission (FERC).

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[11] Ibid., at xxxiii.
[12] Ibid., at 66.
[13] Generally, 16 U.S.C § 824a-3; 43 § 2011
[14] FERC, note 1, at 200.
[15] Nancy Rader and William P. Short III, "Competitive Retail Markets: Tenuous Ground for Renewable Energy," *The Electricity Journal*, April 1998, at 73 (hereinafter cited as Rader and Short).
[16] Echeverria, Barrow, and Roos-Collins, note 6, at 24.

FERC is an independent commission in the Department of Energy.[17] The Federal Water Power Act of 1920[18] gave FERC's predecessor, the Federal Power Commission, jurisdiction over all hydropower dams located on federal lands or reservations, or constructed on navigable streams, unless the dams were owned by agencies of the federal government. The Federal Power Act of 1935[19] expanded the jurisdiction of the Federal Power Commission (now FERC) to include dams located on non-navigable streams affecting interstate commerce. FERC also regulates dams that use surplus water from a federal government dam.

FERC grants 30-50 year licenses that stipulate how the dams are operated, and what environmental protection measures are needed. At the end of the license term, the dam's operating conditions must be reviewed before the license is renewed. This relicensing process provides an opportunity to evaluate the environmental impacts of dams and to require that conditions be improved according to the best available scientific information.

FERC has great discretion in balancing the power (electricity) and non-power (that is, environmental, scenic, and recreational) values of rivers before making a licensing determination. Although construction of a dam permanently alters a river system, the dam's negative impacts can be reduced by changing how the dam is operated. Much of the damage can be reduced through increasing river flows, creating adequate fish passage (when needed), and providing for stream-side land protection. These measures cost money for a utility, either in capital investments or in lost revenues due to decreased power production. Environmentalists have long criticized FERC for weighing too heavily in favor of power benefits. PURPA's passage in 1978 strengthened FERC's pro-development stance because of the Act's intent to encourage renewable energy facilities.[20]

Growing criticism of the agency finally reached a sympathetic Congress. In 1985, the legislature held hearings on proposed changes to PURPA and the Federal Power Act, which led to the passage of the Electric Consumers Protection Act of 1986 (ECPA),[21] clarifying FERC's "balancing" mandate. Under ECPA, FERC must "give equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife …, the protection of recreational opportunities, and the preservation of other aspects of environmental quality." The law requires FERC to consult with federal, state and local resource agencies, including fish, wildlife, recreation, and land management agencies, to determine a given dam's impacts on the environment.[22]

ECPA has led to improvements in the levels of environmental protections that FERC requires in issuing new dam project licenses, and has played an important role in the renewal of old licenses for dams

[17] The Federal Energy Regulatory Commission was created in 1977 by the Department of Energy Organization Act (Public Law 95-91), replacing the Federal Power Commission.
[18] 16 U.S.C. 791 et seq.
[19] 16 U.S.C. 824 et seq.
[20] Echeverria, Barrow, and Roos-Collins, note 6, at 8.
[21] Public Law 99-495.
[22] Hydropower Reform Coalition, *Relicensing Tool Kit: Guidelines for Effective Participation in the FERC Relicensing Process*, Washington, DC, July 1997, at 3.

throughout the country. Dam owners, however, have argued successfully against increasing environmental standards on the basis that their projects will be rendered unprofitable. Even though economic considerations alone do not prevent FERC from imposing environmental conditions, dam owners have been able to sway the commission and other agencies not to require these conditions. This argument is heard more frequently as states across the country are preparing for a deregulated electricity market.

Since the early 1990s, dam relicensing proceedings have adopted collaborative frameworks, in which resource agencies, dam owners, and environmental and citizens groups negotiate license terms and conditions to submit to FERC for approval.[23] The commission has officially endorsed the collaborative framework for hydro project relicensing, recognizing it as an efficient and effective approach to a process that often takes more than 5 years to complete and frequently results in litigation from one or more parties.[24]

Environmental Effects of Hydroelectric Dams

While other human activities have contributed to the degradation of the nation's freshwater resources, dams have been a major culprit.[25] The effects of hydroelectric dams on rivers are far-reaching and ecologically complex. Dams--concrete and impenetrable--are the antithesis of a river's nature, in which dynamism and fluidity are defining characteristics.

For example, plants and fish depend on flows that supply nutrients and minerals. Riverine species have evolved to rely on a river's seasonal changes in flow volumes and temperatures. Migrating fish such as salmon and striped bass depend on open waterways to reach spawning beds kept healthy by river flows. Floodplains, which historically provided rich farmlands, owe their soil fertility to flooding rivers, which deposit minerals and nutrients carried from their mountain origins.

Dams change all that, by turning rivers into quiet, stagnant reservoirs, or otherwise reducing and regulating flows while changing natural temperature levels that wildlife have evolved to depend on. Additionally, dams trap sediments and minerals, emptying the water of these life-giving nutrients. These drastic, physical changes effectively take the life out of a river, and wreak havoc on the river's biological life, from insects and plankton, to fish, birds, and mammals.

Through diversion for power production, dams block water needed for healthy river systems. Stretches below dams are often left without any water at all. By withholding and then releasing water to generate power for peak demand periods, dams cause downstream stretches to alternate between no water and powerful surges that erode soil and vegetation, and flood or strand wildlife.

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[23] Margaret Bowman, American Rivers, in testimony before the U.S. Senate Energy and Natural Resources Committee, Water and Power Subcommittee, October 30, 1997.

[24] James Hoecker, Federal Energy Regulatory Commission, in testimony before the U.S. Senate Energy and Natural Resources Committee, Water and Power Subcommittee, October 30, 1997.

[25] For descriptions and quantification of environmental damage caused by hydroelectric projects, see Gillilan and Brown, note 3; and Echeverria, Barrow, and Roos-Collins, note 6.

Perhaps the most widely recognized environmental effects of dams are their deadly impacts on fish. Dams are primarily responsible for pushing the famed East Coast and Pacific Northwest salmon runs to the brink of extinction. Not only are fish physically blocked by dams from making their upstream migrations, young salmon and other species are killed by the thousands trying to make their way downstream to the ocean when they are drawn into and cut up by power turbines.

Warmer water temperatures both in streams and in reservoirs can lead to fish population declines. Cold water fisheries, especially native trout populations, have been decimated on streams warmed by decreased instream flows. Higher-temperature water tends to favor non-native fish that eat or out-compete native fish like salmon and trout. In addition, dams decrease oxygen levels in reservoir waters. Periodically, this can lead to large fish kills in impoundments as well as when the oxygen-deprived water is released from the dam.

Electricity Deregulation And Dams

Out of many important economic, social, political and environmental issues raised in debates about electricity deregulation, most of the attention has been focused on the many fallacious benefits of retail deregulation, the fate of expensive nuclear power plants, and whether consumers have to bail out bad investments by utilities (so-called stranded costs). Hydropower has received little attention by either regulators or environmental and consumer groups. Nevertheless, electricity deregulation will affect hydro, which may lead to serious consequences for the environment. Many of these anticipated consequences are outlined below.

A deregulated market for electricity will demand that electricity suppliers keep costs as low as possible. Deregulation will take away the assurances of recovery of utility costs and investments, including the costs of environmental protection measures. Therefore, electricity suppliers will want to minimize costs as never before. In the case of hydropower operators, they will resist financing fish passage facilities, increased river flows, and habitat improvements, all of which directly affect their costs of producing electricity. Furthermore, since the relicensing of hydro dams involves a balancing judgment by FERC that expressly involves economics, a shift to a market economy may encourage FERC to lessen environmental protections to minimize the cost of power produced.

Deregulated power markets are placing a greater value on "peak hour" electricity, creating incentives that could harm rivers. For example, California's open market is providing increased incentives for dam owners to operate their projects to provide valuable peak power, by storing large volumes of water for generation during periods of highest demand. Hydro plants have the prized advantage of stopping or starting generation in a matter of minutes, so they allow operators to respond quickly to sudden increases in demand.[26] This peaking power operation creates many more environmental impacts than run-of-river operations. Flows downstream of peak-power dams are held back during periods of low demand, and then surge to very high levels during peak demand hours, regardless of the needs of the river.

Economically marginal dams will not be able to compete in deregulated markets, and many dam projects could be abandoned. Hundreds of smaller dam projects, especially those that receive special subsidies or above-market PURPA contracts may be too expensive to operate if these protections are removed. In addition, as the 30 to 50-year licenses of these marginal dams are renewed under the Federal Power Act, environmental controls will be required where few or none had previously existed, and safety upgrades may be required, making some dams more expensive to operate.

Abandoned dams present great environmental and safety hazards. The negative impacts on rivers continue, including blocking downstream flow of nutrients, alteration of water temperatures and oxygen levels, and impeding fish migration. Most dams that are likely to be abandoned are older dams that need safety upgrades. Without ongoing investment of funds to maintain them, the dams will fall into disrepair, creating threats to public safety as well as damage to river ecosystems.

[26] Gillilan and Brown, note 3, at 68.

Policies to support renewable energy sources could benefit already-competitive hydroelectric power, unless those policies address only non-hydro renewables. Hydropower is an established technology requiring no market protection. Wind, solar, biomass, and geothermal technologies, on the other hand, need support to compete against fossil fuel and nuclear power, which have received billions of dollars in subsidies.

Marketing of all hydroelectric power as "green," regardless of how it is generated, misrepresents the harmful environmental impacts of dams on rivers, and could squelch the development of non-hydro renewables. The general public perception is that hydropower has minimal environmental impacts because it uses renewable water and does not produce air emissions.[27] In many instances, hydro is also significantly cheaper than other renewables, potentially providing a larger profit margin for green marketers. There is also a relatively large amount of hydropower; it provides 9 percent of the nation's power mix versus only about two percent total for all non-hydro renewables.[28] Thus, there is a great incentive for green power marketers to describe all hydropower as green.

American Rivers, a non-profit environmental organization, and GreenMountain.com (formerly Green Mountain Energy Resources), a for-profit electricity marketer, have recently released for comment a "low impact hydropower certification program," the goal of which is to reduce the environmental impacts of hydropower generation by creating a set of standards for consumers to use in evaluating the environmental impacts of specific dams.[29] Hydro dams that meet specific criteria regarding river flows, water quality, impacts on animals and the watershed, protection of cultural resources, and other criteria will receive a seal-of-approval that the dam in question has less of an environmental impact than other dams. Owners of hydro facilities that receive the seal-of-approval can use it in their marketing campaigns to differentiate their power from other sources.

Although certification programs such as the one put forward by American Rivers and GreenMountain.com may help distinguish hydro dams, allowing electricity marketers to sell hydro power as green power could encourage further damage to rivers and related ecosystems. Also, allowing hydro power to be marketed as green power could flood the green market with cheap hydro power, making it difficult for environmentally preferable power sources such as wind and solar (as well as energy efficiency) to compete.

The divestiture of dams throughout the country may lead to detrimental consequences for our rivers. In California, Monatana, and New England states, many large utilities have announced the sale of their dams.[30] Environmental activists, fish and wildlife agencies, dam-safety experts, and recreationists are concerned about the future management of the projects, specifically about how far the

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[27] American Rivers, *Climate Change and Hydropower: Fact vs. Fiction*, Washington, DC, May 27, 1998.
[28] Gillilan and Brown, note 3, at 66; Rader and Short, note 13, at 73.
[29] To download the low-impact criteria and supporting documents, visit American River's website at www.amrivers.org.
[30] "PG&E to Acquire 18 Generating Plants from New England Electric System," *Wall Street Journal*, Aug. 6, 1997.

new owners will go to provide environmental protection, funds for safety and maintenance, and access for recreation to the lands and waters of the projects.[31] The dams may be owned by out-of-state companies that have little stake in the regions in which the projects are located. These corporations may operate the dams solely for profit.

The sale of hydroelectric projects carries with it a public-interest price tag that is difficult to measure. Under a regulated system, the utility has more than just a fiscal responsibility to its customers. The state-regulated utility is using the state's natural resources to produce a good for the state's citizens. Under deregulation, out-of-state, sometimes international corporations may own the dam projects, and may operate them solely for profit.

Tens of thousands of acres of lands surrounding hydroelectric dam projects may be sold, much of it to private development. Big utilities like Pacific Gas & Electric Company in California, PacificCorp in Oregon, and the New England Electric System own and manage thousands of acres of open, undeveloped lands associated with their hydroelectric plants.[32] Due to public-interest requirements of utility regulation, the lands have been relatively well protected and managed. Now, to trim costs, utilities preparing for deregulation have sought to sell off lands that are not within hydro project boundaries.[33]

There are no policies established to protect these lands from development, and no government funding set aside for purchasing the lands. Ultimately, hundreds-of-thousands of acres of prime open space could be carved up for development, clear-cut for timber, or in other ways degraded over the next decade.

Efforts to require disclosure of how electricity is produced may reward hydro dam owners, even for environmentally damaging projects. Disclosure advocates contend that customers need to be fully informed about the environmental impacts of their electricity purchases. However, to date, most renewables disclosure policies have focused on listing air-quality impacts, and do not single out the environmental impacts of hydro projects.[34] While these disclosure policies are desirable and important for informed consumers, they need to be more comprehensive in nature. Otherwise, utilities with hydroelectric assets will appear to be environmentally responsible regardless of how their dam projects are operated.

Deregulation may have the effect of encouraging the development of more hydro electricity in Canada, where environmental controls are significantly weaker. Foreign electricity suppliers, with approval by FERC, are free to sell their power in the U.S. in a deregulated market.[35] Because

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[31] See "Dammed by Deregulation," *Vermont Times*, March 18, 1998.
[32] *Electrical World*, vol. 205, no. 12, Dec. 1991.
[33] Protest of the Office of Ratepayer Advocates, California Public Utilities Commission, concerning PG&E's Application A.98-05-022 concerning hydro divestiture, Oct. 26, 1998, at 5.
[34] American Rivers, *Ensuring River Protection in Federal Electric Industry Restructuring Legislation*, Washington, DC, July, 1998, at 2.
[35] Ibid., at 9-10.

Canada has an abundance of cheap hydro to sell in the U.S., open access to U.S. markets will enable ongoing damage to dammed rivers in Canada and even encourage the widespread construction of new dams, especially on rivers near to or crossing into the United States.

Pressure from dam owners may lead to changes in how the environmental impacts of dams are regulated. For several years, the National Hydropower Association, the lobby for the hydroelectric power industry, has been seeking changes in the Federal Power Act to facilitate dam relicensing. In 1997 and 1998, Congressional hearings were held to discuss these potential changes. The NHA argued that deregulation was threatening the hydro industry, and that resource agencies' mandatory licensing authority must be curtailed, due to the huge expense of environmental improvements in dam operations.[36]

Senator Larry Craig (R-Idaho) has introduced legislation (S. 740) that would give FERC more power in determining the level of environmental protections in dam licenses, taking away a great deal of resource agencies' conditioning authority. Since FERC's balancing authority expressly takes economics into consideration, there is little question that if this legislation was enacted, the ultimate result would be weaker environmental standards in dam licenses.

[36] Julie Keil, National Hydropower Association, in testimony before the U.S. Senate Energy and Natural Resources Committee, Water and Power Subcommittee, Oct. 30, 1997 (hereinafter cited as Keil).

Recommendations

Many of the anticipated consequences described in the previous section may be prevented if activists and lawmakers become familiar with hydropower and deregulation issues. The following recommendations should be implemented to help address the foreseen impacts of deregulation on dam operations and river resources.

- **Hydropower should not be designated as a renewable energy resource in deregulation legislation.** While the flow of water in a river is renewable, river systems are not. The generation of hydropower imposes significant impacts on the river system, and thus should not be considered renewable. Designation of hydro as renewable improperly provides benefits to hydropower regardless of whether a dam has minimized environmental harm. Policies should promote emerging energy sources that have no or minimal impacts on the environment, such as wind, solar, biomass, and geothermal facilities. In addition, hydro is an established and relatively inexpensive technology that does not need help competing in an open market. Giving preference to hydropower would hurt all other renewables that have much smaller market share and that have less of an impact on the environment.

- **Marketers of green electricity should be prohibited from selling hydropower as "green" electricity.** Given the tremendous damage caused to rivers and the environment by hydroelectric facilities, hydro power should not be marketed as green electricity, implying that hydro has little or no impact on the environment.

- **A financing mechanism should be provided to ensure removal of dams abandoned due to the deregulation of electricity markets.** Electricity deregulation is expected to force some marginally economic hydropower dams to close operations. To ensure that these abandoned dams do not present ongoing environmental and safety hazards, deregulation legislation should provide for the financing of the costs to remove these dams. Financing for abandoned-dam removal could take the form of a public benefit charge (a charge paid by all consumers to provide funds for low-income programs, energy efficiency, and renewable energy programs).

- **Current laws and regulations designed to mitigate the environmental impacts of hydro projects should be preserved.** The relicensing process for dams is a critical undertaking for all stakeholders, allowing a full assessment of a given facility's impacts on a river's ecological, recreational, and scenic values. Prior license terms include few environmental protections. When a dam is ready for relicensing, dam owners should be required to pay for environmental mitigation for which, up until the present, they have paid little.

  The hydro industry argues that the dam relicensing process creates excessive economic burdens, and that the shift to deregulated markets requires a change in how dam relicensing is undertaken.[37] It has lobbied to take away authority from resource agencies and to give FERC even more

[37] Keil, note 36.

discretion in determining licensing conditions. If enacted, Senator Craig's legislation would do more than just streamline the relicensing process.

However, the need to improve the efficiency of the process does not justify a roll back of substantive environmental protections. The current provisions of the Federal Power Act must be protected.

- **Consumers should be informed regarding their electricity purchases through detailed electricity labels.** To make informed decisions, consumers must have credible and understandable information about their electricity choices. Disclosure of the energy sources used to supply power—and their environmental impacts—will allow consumers to shop for electricity with the least environmental impact. Such a disclosure requirement must include impacts to rivers caused by hydropower dams.

- **Before utilities produce plans for either divesting or spinning off their hydro assets, public policies should be implemented to protect environmental resources, including instream habitats as well as surrounding lands.** The electric utility industry controls an enormous range of natural resources. Thousands of river-miles and associated habitats nationwide are directly affected by the industry's hydro facilities. Furthermore, utilities are one of the country's largest landowners, controlling an estimated three percent of U.S. land area.[38] During debates over deregulation, the public must be involved in determining how to ensure that these resources are not further degraded due to new economic pressures on utilities. Particularly in the case of land sales and project divestitures, it is critical that policies be implemented that restrict resource development and hydro project operation.

- **Legislation should protect against damage to Canada's rivers.** With the deregulation of the electric industry in the United States, Canadian electricity generators will likely sell more power into the U.S. market and may even seek to build new dams. Legislation should be enacted that prohibits sales of electricity across international borders unless environmental standards at least as stringent as those in the U.S. exist for electricity generation in other countries.

[38] "Hydro relicensing could start a battle over utility landholdings," *Electrical World*, vol. 205, no. 12, December 1991, at 9. Electric utility industry owns 2 to 4 percent of all landholdings in the United States.