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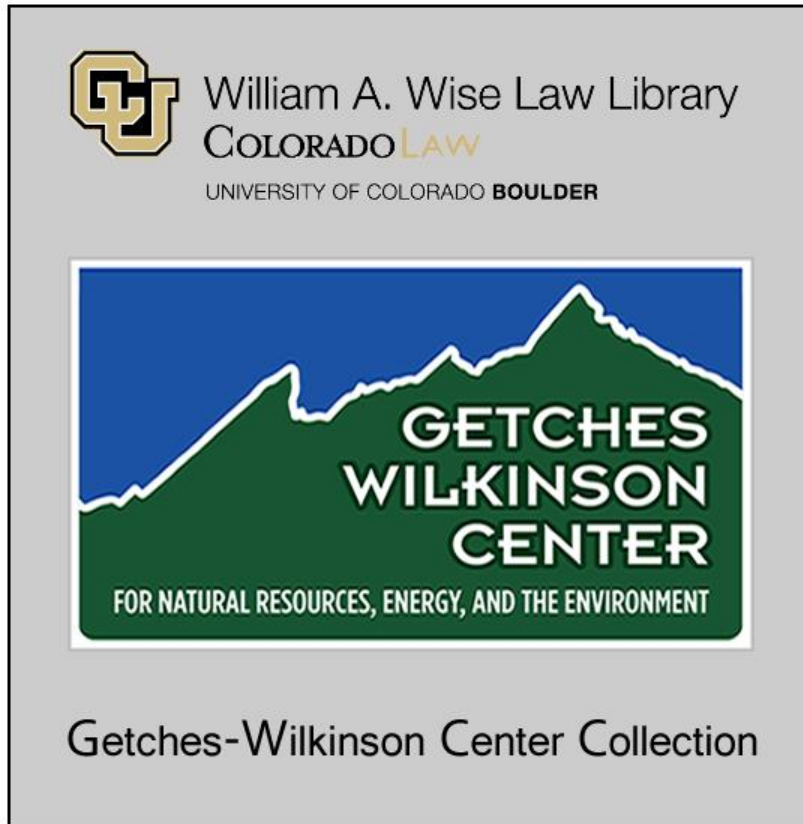


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Restructuring of the Electric Utility Industry:
Free Markets and Environmental Protection

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DAMS: Water and Power in the New West

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**Restructuring of the Electric Utility Industry:
*Free Markets and Environmental Protection***

I. **Summary**

The investor-owned electric industry has been characterized for over 70 years by for-profit vertically integrated utilities that provide power to an exclusive, monopoly franchise service territory. In return for these monopoly rights, utilities were and are subject to both Federal and state regulation. Utilities in the West rely on coal, nuclear and hydroelectricity to meet nearly all electric power needs. Hydropower, as a very inexpensive resource, is utilized during peak periods to maximize economic benefits. Thus, the flow of many Western rivers is tied to the roller-coaster electrical demands of the populations that inhabit the West. Under the present system, the associated environmental impacts can be addressed through regulatory and statutory processes.

Utility economics have changed over the last twenty-five years, particularly with respect to generation. Inexpensive non-utility energy resources now represent a credible alternative to traditional monopoly utility electric service. The utility response to this competitive threat has been to adopt a very short-term planning horizon, and use their market power to protect or enhance their competitive position. This may come at the expense of long-term customer and public interests. I submit that the vertically integrated structure is either causing or exacerbating many of the major regulatory problems of the day.

In the last few years, a number of states have adopted proposals that would allow electric customers to select their own supplier in the same way that consumers can now choose between AT&T, MCI, and Sprint for long-distance phone service. Within this new market-oriented industry structure, there is likely to be significantly fewer regulatory options available to manage the adverse environmental impacts associated with the electric industry. At the same time, a new electric industry is being created that can be structured to fund and protect a variety of environmental

mitigation efforts. New industry models on the table range from those that incorporate incentive and other creative mechanisms, to divestiture models which directly address the underlying structural problems. In addition, many players argue that Federal hydropower should be part of this equation. On balance, we believe that the opportunities arising from electric industry restructuring greatly outweigh the risks.

II. Context: The Electric Utility Industry

A. The Utilities: The present industry is based upon economics, reliability, and franchised service territories. Investor-owned utilities are usually vertically-integrated, i.e. both manufacture (generate) and deliver (distribute) the product. Publicly-owned utilities are most often delivery companies, owning just the wires. However, these entities sometimes collectively acquire generation resources.

1. An existing integrated utility has been historically able to provide many energy related services more efficiently than new entrants to the market.
2. Single regulated entities usually can develop a more reliable system, especially transmission and distribution, than many competing entities, particularly in the same service area.
3. Economies of scale allowed larger entities, or joint ventures, to build new energy supplies and reduce the average cost.

B. The Regulation: Federal regulators have authority over wholesale and interstate transactions, while state regulators control retail (end-use) electricity and generation siting decisions.

1. Regulation acts as a proxy for the competitive marketplace, avoiding duplication of facilities, such as the wires.
2. Franchised service territories are provided to utilities in exchange for a utility obligation to serve all customers requesting service in that territory.

3. The regulators assure economic fairness to large and small customers, and to suppliers, in terms of rates, and terms and conditions for services.
 4. Regulation also assures that the public interest obligations of utilities are fulfilled.
- C. Energy Supply: The types of supply include those requiring combustion, nuclear, and renewable resources. Traditionally owned by a single or a group of utilities, fossil-fuel fired energy supplies have depended on economies of scale to minimize costs. The majority of hydroelectric in the West are owned by the Federal government and marketed through a number of different power marketing agencies.
1. Fossil: In the West, the vast majority of energy is produced by burning coal. The initial capital cost is relatively high, but the variable fuel cost is very low. Conversely, the natural gas commodity is far more expensive, but the plant costs are low, thus it is primarily used for peaking purposes.
 2. Nuclear: Excluding California, there is only one operating nuclear power plant in the West. Nuclear power turned out to be far more expensive than anyone thought 20-30 years ago.
 3. Hydropower: These facilities are owned both privately and publicly. The lion's share (about 90% in the Rocky Mountains and Desert Southwest) is owned by the Federal government, operated by the Bureau of Reclamation, and marketed by power marketing agencies such as the Western Area Power Administration (WAPA). The beneficiaries of this very low cost power are "preference customers," i.e. usually rural cooperatives and municipals.
 4. Renewables: The so-called "dry" renewables, wind and solar, exist in abundance in the West. The Desert Southwest offers perhaps the best solar energy resource in the country, if not the world. Parts of California, Idaho, Montana, Colorado, and Wyoming have very

attractive wind regimes. Wind energy is fast approaching cost-competitive levels, while solar energy continues to be three to four times more expensive than fossil-fueled alternatives.

III. Hydropower Resources: The Status Quo

- A. Economics: Originally constructed for irrigation, river regulation and flood control, and recreation, hydroelectricity was seen as an incidental benefit, generating revenue to help pay the capital costs of these facilities. With most, if not all, of the capital costs paid off, and extremely low operating costs, the energy generated is inexpensive and helps to keep the overall cost of electricity reasonable in rural areas.
- B. Environmental Impacts: The good news: None of the impacts associated with fossil-fuel acquisition and combustion result from hydropower, such as mining and drilling activities, air quality effects, or hazardous or toxic material releases. The not-so-good news: Hydroelectric development and operation does have environmental impacts. The flow of the rivers is tied inextricably to the electrical demands of the populations that inhabit the West. When the Desert Southwest turns on its air conditioning, there's a flood in the Grand Canyon. The existence and present operations of the dams has three important impacts:
 - 1. The river's natural flow patterns fluctuate between a trickle and a flood, disrupting the regimen to which native species have adapted.
 - 2. Silts and nutrients, vital to downstream life both in the river and along its floodplain, are kept behind the dam and settle to the bottom of the reservoir.
 - 3. The temperature of the water, both behind the dam and downstream from it, is altered in ways that affect fish and biological activity.
- C. Operations: As a result of a Department of Interior Environmental Impact Statement and more recently, the Grand Canyon Protection Act, the operations of Glen Canyon dam have been changed to address these environmental

impacts. While the total energy generated will remain about the same, the change will diminish the amount available at any one time by spreading the generation more evenly throughout the day and year.

IV. Competition: The advent of competition has affected virtually every corner of the electric utility industry.

A. Economics of Energy Supply: Statutory changes and technological advances have significantly changed the economics. Encouragement of the development of non-utility power production, and a requirement for utilities to allow open access to their transmission systems stimulated both the demand for customer choice from alternative energy suppliers and the ability of suppliers to reach new markets. At the same time the historic economies of scale for generation resources changed markedly, resulting in lower marginal costs for new energy resources than the average cost of existing utility generation.

B. Regulation: The regulatory processes, and in many cases legislatures, are adapting to and promoting competitive changes, while at the same time establishing policies which retain the fairness, equity, and reliability of the electrical systems.

1. FERC Order 888: Established a nation-wide open access policy for transmission systems. Commissioner Hoecker commented "Restructuring the electric power industry is a matter of national interest and priority."

2. Several bills have been introduced at the Federal level.

3. Virtually every state is actively examining competition and restructuring.

a. Several states have already adopted restructuring rules, policies, and procedures, while many other states had bills in legislatures this past session.

C. Public Interests: The mere threat of competition, gaining momentum over the last decade, has impacted integrated utility operations. Large and powerful

energy consumers are demanding the economic benefits of competition, and utilities are succumbing to this pressure. Thus, many utilities are already acting as if competition exists today.

1. Many utilities have established earnings sharing plans, reducing their competitive exposure by capturing large portions of the economic benefits of growth and cost-reduction efforts.
2. The threat of large customer bypass has motivated incumbent utilities to find creative ways to reduce costs assigned to these customers, and attempt to acquire long-term commitments through contractual arrangements.
3. Favorable consumer and environmental public interest programs developed under regulation are capped, reduced, or eliminated.
4. Reliability may be threatened by cost reductions not limited to the competitive portion of business. This contributed to the summer 1996 Western system power outages.

D. Effects on non-hydro energy resources: Competition seems likely to drive prices down, favoring the lowest cost resource.

1. Fossil fuel: Old, uncontrolled (pre-NSPS plants) coal plants are likely to run more due to their depreciated investment and low variable cost, adding to emission related effects such as visibility degradation and causing significant environmental impacts on the land. New competitive plants will likely be *combined-cycle* gas plants which have relatively low capital investment and much higher efficiencies.
2. Demand-side resources (energy efficiency and conservation) should be appealing to customer-oriented distribution companies. Renewable resources other than hydropower may find it tougher to compete on a pure cost basis, however new marketing programs targeting customers' environmental values may overcome the cost barrier.

E. Impact of Competition on Hydropower Facilities: Competition appears less likely to affect operations than environmental considerations. However,

players in a competitive industry may apply significant pressure to share the benefits among a wider group of constituencies.

1. Present contractual arrangements, i.e. preference power, benefits municipal and cooperative utilities. These parties would clearly like to retain these benefits, and are pressing for 20 year extensions of many contracts which expire in 2004.
2. Investor-owned utilities and independent power producers have made unsolicited buyout proposals for rights to this inexpensive resource.
3. Several Federal legislative initiatives have occurred in the last few years, proposing various plans to sell the power marketing agencies.
4. Renewable resources: Resources such as wind and solar are dependent on an intermittent energy source, not always available on demand. Thus, using a relatively small portion of the existing hydro resource to support these dry renewables would facilitate their development and accelerate cost reductions.

V. The Restructuring Opportunity: Shaping a workable restructured electric industry will require a balancing of many diverse interests. The promise of lower prices resulting from competition creates opportunities to address environmental issues. The same forces place at risk up to \$200 billion in electric utility industry investment nationally. To maximize recovery of this investment, the industry may be willing to compromise in areas that we, as environmentalists, care about. For example, the dams could be operated in a fashion similar to Glen Canyon, renewables portfolios standards can be introduced, and funding vehicles such as wires charges for public interests can be implemented.

- A. Balancing Diverse Interests: Small consumer and environmental interests are aligned in many ways as public interests. Large consumers and independent power producers are motivated by the economics of a competitive supply regime. Utilities are focused on increasing their competitiveness through cost minimization, and retaining customers through contractual commitments while

the generation monopoly lasts. A workable system must address the balance between customers and shareholders of utilities, among various customer groups, and among resource options.

- B. **Market Power:** Present utilities are vertically integrated, i.e. the same entity that controls the delivery system also owns generation, providing a potential for abuses including price discrimination and anti-competitive behaviors. Mergers and consolidation of generation assets can exacerbate these effects. Divestiture of competitive assets can help to eliminate them.

VI. **Competitive Models:** The process of shaping a competitive electric industry is underway throughout the country, and is evolving through regulatory and legislative initiatives. Other models have also been proposed.

- A. **Regulatory/Legislative Model:** The direction of many states is to phase-in competition in two or three steps over a period of years. A key component is to fairly allocate recovery of costs "stranded" by competition to protect utility shareholders and balance competing customer interests, while retaining funding for important public interest programs. Moreover, this model often includes a price cap or reduction for all customers. Further, open access to the competitive marketplace is assured to help mitigate the incumbent's market power.
- B. **Alternative Divestiture/Non-profit Model:** This model unbundles the vertically-integrated utilities into their competitive and monopoly business components. The benefits of segregating conflicting businesses include increasing overall shareholder value (the sum of the parts being greater than the integrated whole) and eliminating market power concerns. Taking the additional step of converting the monopoly business into a public utility district or non-profit cooperative aligns the interests of the owners and customers by making them one and the same. Additionally, it can reduce costs by eliminating Federal income tax expense and potentially providing access to less expensive financing.

1. Financial benefits are thus created for shareholders through a premium on the sale of monopoly assets, and ratepayers through reduced costs. Finally, the non-profit distribution company has the proper incentives to protect public interests because the customers are the owners.

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