Electric Utility Restructuring: Overview of Basic Policy Questions

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Summary

Proposals to increase competition in the electric utility industry involve segmenting electric functions (generation, transmission, distribution) that are currently integrated (or bundled) in most cases (both in terms of corporate and rate structures). This report identifies five basic issues this effort raises for the Congress to consider as the debate on restructuring proceeds. These are:

Who should determine the boundaries and pace of restructuring efforts? The restructuring debate is filled with potential state-federal jurisdictional disputes. An increasingly dynamic market situation challenges current regulatory demarcations and suggests a complete re-evaluation may be in order.

How should transitional issues be handled? Transitional issues, such as stranded costs (costs assumed under the existing system that may not be recoverable under a more competitive system), involve classic policy questions: How much stranded cost recovery is reasonable? and Who should pay?

How should the market be structured to ensure a smooth operating electric system in its hybrid competitive-regulated form? Reliability is crucial to any electric system. However, the system's need for careful coordination may conflict with the goal of a competitive generating sector to encourage market forces and consumer choice with respect to supply and demand.

How should the electric utility industry be structured or restructured to encourage and safeguard a more competitive system? In many ways, the existing regulatory structure is the outcome of the events of the 1930s where a less comprehensive regulatory system failed to maintain competitive forces against the threat of monopolistic practices, and financial solvency against the threat of unsound business practices. Also, the need to smoothly integrate competitive and regulated segments adds additional complexity to determining appropriate industry structures.

How should non-economic regulatory factors be integrated into the envisioned hybrid system? Over the past 25 years, electric utilities have acquired a number of important non-economic tasks, including environmental standards, consumer-oriented programs (demand-side management programs (DSM), conservation incentives), and encouraging alternative sources of energy. The status and future of these activities must be determined. In addition, competition may alter individual powerplant operations, creating new social conflicts or environmental concerns that may need to be addressed.

Overall, Congress may wish to consider whether the time is ripe for federal intervention in the continuing evolution of the electric utility industry or whether a "wait and see" attitude toward state proceedings is more appropriate. Separately, Congress may wish to consider whether certain impacts of restructuring, such as air pollution, should be addressed as part of the restructuring debate, or in the legislative context in which those concerns arise.

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Introduction: Segmenting an Integrated Industry

After many decades of operating in a comprehensive, regulated market structure, the electric utility industry is facing significant change, both from new generating and transmission technology and shifting policy perspectives with respect to competition and regulation.[1]tn#1[2] The continuing policy response to this change is likely to affect just about every consumer in the country. The industry is massive, with 1994 assets totaling $689 billion, retail sales of $203 billion, and wholesale sales (sales for resale) of $43 billion. It consists of 3,204 utilities — 250 investor-owned, 2005 publicly owned, 939 cooperatives, and 10 federal entities. It is difficult to overestimate the importance of electric service to the country's economy and individuals' quality of

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life. In 1994, the average residential customer paid $827 to buy 9,549 kilowatt-hours (796 Kwh monthly) of electricity.[3]

The policy shift underlying the changes occurring in the electric utility industry is a growing belief that the rationale for the current economic regulation of electric utilities at both the federal and state levels — that electric utilities are natural monopolies — is being overtaken by events, and that market forces can and should replace some of the current regulatory structure. Regulation and rate-of-return ratemaking arguably exist as a partial substitute for the marketplace. The emerging trend in the industry suggests that regulation is an imperfect substitute for the marketplace and that with emerging new generating and transmission technology, real self-regulating market forces are now able to replace government regulation in many instances. This substitution could result in a more efficient allocation of the country's resources, and provide consumers with more accurate price signals regarding the actual cost of electricity.

The restructuring effort attempts to reduce and alter the role of government in electric utility regulation by identifying transactions, industry segments, regions, or specific activities that might no longer be the subject of economic regulation. In those areas where the marketplace cannot supplant regulation, existing regulation could remain as it is or be modified to be more performance-based. Thus, the government's role in regulation of electricity would play a more limited role in identified areas, such as antitrust enforcement. The current focus of the restructuring effort is the electric generating sector where experience under the Public Utility Regulatory Policies Act of 1978 (PURPA) and the Energy Policy Act of 1992 (EPACT) suggests that competition is possible.

The purpose of restructuring the electric utility industry is to promote economic efficiency, not simply to create competitive markets. As noted by former Federal Energy Regulatory Commission (FERC) Commissioner Charles G. Stalon: "Competitive markets are not ends in themselves."[4] Competitive markets are a

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vehicle to increase economic efficiency by relating costs and prices. Proponents argues that the events of the last 15-20 years demonstrate the regulatory system has not provided consumers with the proper price signal regarding the current relationship between costs and prices.[5] Restructuring those segments of the electric system that can sustain viable competitive markets would at least partially restore the necessary price signal to consumers and suppliers.

With enactment of PURPA, the federal government unwittingly opened up the restructuring debate by lifting barriers in the electric generating market to non-utility entrants; by 1994, non-utility generating capacity was about 8% of the U.S. total. Introducing competition in the wholesale generation market was formalized by Congress with the passage of EPACT. This process continues with FERC Orders 888 and 889, which provide for open access to the transmission grid at the wholesale level for all generators, and for recovery of costs incurred under the existing regulatory regime that may not be recoverable in a more competitive market (i.e., "stranded cost" recovery). Concurrently with these actions at the federal level, some states have began addressing restructuring issues at the retail level, with some states moving aggressively toward retail competition (also known as retail wheeling) and other choosing not to actively pursue such a course.

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Background: How We Got Where We Are

The Federal Power Act (FPA) and the Public Utility Holding Company Act of 1935 (PUHCA) established a regime of regulating electric utilities that gives specific and separate powers to the states and the federal government. State regulatory commissions address intrastate utility activities, including wholesale and retail rate-making. State authority currently tends to be as broad and as varied as the states are diverse. At the least, a state public utility commission will have authority over retail rates, and often over investment and debt. Some state regulatory bodies also oversee many facets of utility operation. Despite this diversity, the essential mission of the state regulator is the establishment of retail electric prices. This is accomplished through an adversarial hearing process. The central issues in such cases are the total amount of money the utility will be permitted to collect and how the burden of the revenue requirement will be distributed among the various customer classes (residential, commercial, and industrial).

Under the Federal Power Act, federal economic regulation addresses wholesale transactions and rates for electric power flowing in interstate commerce. Federal regulation followed state regulation and is premised on the need to fill the regulatory vacuum resulting from the constitutional inability of states to regulate interstate commerce. In this bifurcation of regulatory jurisdiction, federal regulation is limited and conceived to supplement state regulation. The Federal Energy Regulatory Commission (FERC) has the principal functions at the federal level for the economic regulation of the electricity utility industry, including financial transactions, wholesale rate regulation, interconnection and wheeling of wholesale electricity, and ensuring adequate and reliable service. In addition, to prevent a recurrence of the abusive practices of the 1920s (e.g., cross-subsidization, self-dealing, pyramiding, etc.), the Securities and Exchange Commission (SEC) regulates utilities' corporate structure and business ventures under the Public Utility Holding Company Act (PUHCA, Title 1 of the Federal Power Act).

This regulatory regime changed little between 1935 and 1978. Beginning in 1978, primarily in response to the energy crisis, laws were passed to encourage the development of alternative sources of power. The Public Utility Regulatory Policies Act of 1978 (PURPA) was enacted in part to augment electric utility generation with more efficiently produced electricity and to provide equitable rates to electric consumers. Specifically, PURPA encouraged the development of small power production and cogeneration of electricity and steam (called qualifying facilities or QFs). In addition to PURPA, the Fuel Use Act of 1978 (FUA) helped QFs become established. Under FUA, utilities were not permitted to use natural gas to fuel new generating technology. QFs, which are by definition not utilities, were able to combine the availability of natural gas and new, more efficient generating technology, such as combined-cycle, with a regulatory system (specifically, section 210 of PURPA) that provided them with a captive market that priced their product at their local utility's "avoided cost."[6] The introduction of new generating technologies

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lowered the financial threshold for entrance into the electricity generation business as well as shortened the lead time for constructing new plants. FUA was repealed in 1987, but by this time QFs and small power producers had already gained a portion of the total electric generating capacity.

This influx of QF power challenged the cost-based rates that previously guided wholesale transactions. Before implementation of PURPA, FERC approved wholesale interstate electricity transactions based on the seller's costs to generate and transmit the power. As more nonutility generators entered the market in the 1980s, these cost-based rates were challenged. Since nonutility generators typically do not have enough market power to influence the rates they charge, FERC began approving certain wholesale transactions whose rates were a result of a competitive bidding process. These rates are called market-based rates.

Most recently, the Energy Policy Act of 1992 removed several regulatory barriers to entry into electricity generation to further competition of wholesale electricity supply. Specifically, EPACT provides for the creation of new entities, called "exempt wholesale generators" (EWGs), that can generate and sell electricity at wholesale without being regulated as utilities under PUHCA. Under EPACT, these EWGs are also provided with regulatory support to assure transmission of their wholesale power to a wholesale purchaser. However, EPACT does not permit FERC to mandate that utilities transmit EWG power to retail consumers (commonly called "retail wheeling"), an activity that remains under the jurisdiction of state public utility commissions.

In line with EPACT, FERC issued a Notice of Proposed Rulemaking, since called the Mega-NOPR, that proposed ending the utilities' transmission dominance to allow more wholesale competition in the generation sector. On April 24, 1996, FERC issued two final rules on transmission access — Orders 888 and 889. In issuing its final rules, FERC concluded that these Orders would "remedy undue discrimination in transmission services in interstate commerce and provide an orderly and fair transition to competitive bulk power markets." Under Order 888, the Open Access Rule, transmission owners are required to offer both point-to-point and network transmission services under terms and conditions comparable to those they provide for themselves. The Rule provides a single tariff providing minimum

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conditions for both network and point-to-point services and the non-price terms and conditions for providing these services and ancillary services.

This Rule also allows for full recovery of so-called stranded costs. Stranded costs can be viewed as a transition problem resulting from the movement from a comprehensive regulatory regime to a more competitively based electric generating sector. The utilities' current investments in electric generating facilities are based on a "regulatory bargain" between regulated utilities and their regulators,[7] a situation upset by the emergence of competitive forces in the electric generating system. As a result, some utilities have costs that were prudently incurred under the current system that are uneconomic or "stranded" by the transition to a more competitive electric generation market. FERC Order 888 provides for utilities to recovery these wholesale stranded costs with those costs being paid by wholesale customers wishing to leave their current supply arrangements.

Order 889, the Open Access Same-time Information System (OASIS) rule, establishes standards of conduct to ensure a level playing field. The Rule requires utilities to separate their wholesale power marketing and transmission operation functions, but does not require corporate unbundling or divestiture of assets.

Retail competition (also called retail wheeling) refers to the ability of retail consumers to obtain their electric services from any one they choose. Currently, retail competition involves a competitive generation market, but a transmission and distribution system that is regulated so as to provide customers access to that competitively based generation on a reasonable and nondiscriminatory basis.[8] FERC

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Orders 888 and 889 represents FERC's attempt to achieve this competition on a wholesale level. However, FERC does not have jurisdiction over retail competition, as explicitly stated in EPACT. Currently, that is under the jurisdiction of the states. Several states, including California, Rhode Island, and Pennsylvania, have moved aggressively toward retail wheeling; other states, such as Idaho and Virginia, have decided not to move in this direction at this time. During 1995-96, 47 states conducted formal or informal procedures considering electric industry restructuring, illustrating that the issue is a dynamic one with momentum at the state level that is not dependent on congressional action. However, the diversity of responses coming from those differing processes may be an impetus for some to consider a uniform, national response to the issue.

Basic Policy Questions

The questions now are whether further legislative action is desirable to encourage competition in the electric utility sector and how a transition between a comprehensive regulatory regime to a more competitive electric utility sector could be made with the least amount of economic and service disruption. Determining those segments of the electric system amendable to competitive forces and who should make those determinations is the crux of the restructuring debate. The task falls into five categories that are discussed below.

Who should determine the boundaries and pace of restructuring efforts?[9]

The restructuring of the industry challenges the current state-federal division of regulatory responsibilities because of the magnitude of potential impacts and the

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dynamic nature of events. About 56% of total investor-owned electric utility plant assets are involved in generating electricity (the remainder supports transmission and distribution activities).[10] Any change in the manner in which those assets are valued would have a major effect on the rates that consumers would pay. Moving from a traditional embedded-cost valuation scheme to a market valuation would increase the value of some generating capacity and decrease the value of other generating capacity. Competition would tend to move the value of generating capacity to the marginal cost of constructing new capacity, generally represented at the current time by a new natural gas-fired, combined-cycle facility. In general, older facilities that have been fully depreciated would tend to have market values greater than their current book value under regulation; whereas, newer, capital intensive facilities (such as some nuclear plants) would have market values less than their current book value. Case-by-case valuation would be affected by location, availability of alternatives, and electricity demand. Thus, at least in the short-term, a specific locale could have higher or lower electric rates resulting from a more competitive system, if its current generating capacity is particularly expensive or inexpensive because of age, fuel source, or other cost-related variable.

Currently, 80% to 90% of generating assets are under state jurisdiction. Given the stakes involved, it is not surprising that state regulatory bodies believe they are the most qualified to oversee any transition to a more competitive generating sector. Transitional issues vary among states, and states believe that they should have the flexibility to resolve those issues within their own context. Indeed, some states have determined that the best transition for them is no transition, while other states have moved aggressively to further restructuring.[11]

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Proponents of comprehensive generating competition argue that maximum economic efficiency requires a national market and that a piecemeal approach is inefficient. For them, federal legislation is necessary to preempt the state role in regulation, if states are unwilling to move on their own. So the first decision point for restructuring is "Who is going to take the lead?" FERC's Order 888 uses an expansive interpretation of existing authority to justify its wholesale open access and stranded cost provisions.[12] With FERC prohibited by the Energy Policy Act of 1992 (EPACT) from ordering retail competition, new legislation would appear necessary for FERC to expand its role in retail issues. Arguably, to the extent that individual states continue to work out their own solutions to restructuring challenges, broad federal legislation arguably becomes either less draconian or less necessary.

The challenge is made more complex because the jurisdictional situation is not static. The "bright line" between federal and state responsibilities is becoming increasingly blurred by events. With increased competition, interstate transactions are expected to increase, potentially increasing the amount of electric transactions under the purview of FERC. On a more fundamental level, the basic concept of a contract path — the transmission lines that power is contracted to flow over — has always been a legal fiction, as electrons follow the path of least resistance and do not respect political boundaries.[13] With an increasingly dynamic market situation, it is not clear

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that regulatory jurisdictions can be based on the assumption that they do. Thus, the issue of who is going to control the transition is not a simple either-or; indeed, the "bright line" between the two may have to be completely re-evaluated and redrawn. Judging by state reactions to FERC's attempt to clarify the bright line in FERC Order 888, this could be a difficult and contentious task.[14]

How should "stranded costs" and other transitional issues be handled?[15]

Changing the economic and regulatory conditions under which electricity has been priced and provided for the last 60 years raises several transitional issues. Perhaps the most contentious issue facing the policy community is the recovery of so-called "stranded costs." Stranded costs are defined by recovery proponents as those costs that were legitimately and prudently incurred under the "old" regulatory regime

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that are not economically recoverable under the "new" competitive regime that the industry is entering. They view the utility as blameless, having made good faith investment decisions to construct generating capacity and to make other commitments the cost of which is now "stranded" by customers suddenly seeking to avoid the cost of that capacity by demanding that the utility wheel them lower cost power supplied by an outside competitor. In contrast, opponents of stranded cost recovery believe that such costs are not "stranded" by customers seeking a better deal on power rates, but rather represent poor foresight and business decisions on the part of some utilities for which customers should not be held responsible. The magnitude of stranded costs is disputed; FERC cites stranded cost estimates that range from "billions" to $200 billion.

FERC Order 888 agrees with the proponents of full stranded cost recovery, and requires that those costs be recovered directly from the customers whose decision to leave the utility system is stranding the costs; this calculation is based on a "revenues lost" formula. However, FERC Order 888 focuses on wholesale stranded costs and leaves retail stranded costs to state regulatory bodies (except for municipalization). Wholesale stranded costs may comprise only a few percent of the total amount.

Thus, unless federal legislation pre-empts current state authority, the primary regulatory body responsible for potential stranded cost recovery would be state regulatory commissions. The states are proposing alternatives for stranded cost recovery that range from full recovery paid for by all consumers (California) to recovery limited by regional electricity cost considerations (New Hampshire). In addition, states are proposing different bases for valuating stranded costs than FERC's "lost revenue" approach; for example, California defines stranded cost as the net book value of uneconomic generation resources.

Although much of the debate on stranded costs revolves around uneconomic generation plants, utilities have incurred other commitments or expenses in the delivery of service to customers. Utility balance sheets contain a variety of "regulatory assets," such as nuclear decommissioning assessments; "liabilities," such as PURPA section 210 contracts, and "social costs," such as low-income assistance programs.[16] The ability to recover costs for these categories of stranded costs are potentially

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endangered by the transition to a more competitive system, particularly if competition is extended to the retail level.

In addition, utilities are not the only participants in the restructuring effort that may face transition costs because of the revaluation of generating assets. Because of the guaranteed pass-through of taxes, regulated utilities made good tax collectors for state and local governments. Powerplants can also represent a sizeable source of property taxes for some communities, taxes generally based on the plant's book value. In addition, some utilities have gross-receipts taxes. Competition would change the assumption of automatic pass-through in the case of the generating sector, a powerplant's value, and a utility's gross receipts. State and local government will have to decide how to respond.

How should the market be structured to ensure a smooth operating electric system in its hybrid competitive-regulated form?

Fundamental to the new more competitive electricity system is the notion that electricity can be treated as a commodity that is transported to consumers, and not as a service provided consumers through an integrated generation-transmission-distribution system.[17] This approach presumes that the product can be distinguished from the service network, even though the physics of the network intertwines the commodity and its delivery system into a fully integrated and indistinguishable whole. In addition, this approach presumes it can deliver electricity more efficiently than the regulated "natural monopoly" that it would replace. In short, electricity would enter the world of markets and contracts and exit the world of integrated service and natural monopolies.

Treating electricity as a commodity has several difficulties, primarily resulting from the control requirements necessary to operate the system successfully. Electricity is difficult to store for any period of time, requiring precise supply-demand coordination; electricity is heavily dependent on a network infrastructure that must be maintained within acceptable operating parameters to avoid overheating and sagging of lines (thermal limits), loss of voltage stability from inadequate supply of reactive power (voltage stability limits), and loss of system synchronization (power stability limits); electricity does not follow contracted paths, but flows through the

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path of least resistance, causing unintended loop flows; and, electricity is sent instantaneously to market.[18] These operational limitations are made more acute in a more dynamic market situation because the system's infrastructure is designed to maintain reliability on a local level, not to promote large scale transfers between different parties.

Thus, the need for system coordination tempers the desire for direct, bilateral competition in the electricity debate, resulting in the proposed segmented industry of competitive generation, but regulated, natural monopoly transmission and distribution. The question is what balance between competition and control the new market should embody. Under a hybrid system, the necessary control requirements to operate the system successfully falls to the transmission entity to maintain. Several proposals have been suggested for this entity, called by a variety of names, including "PoolCo," Independent System Operators (ISO), and "Gridco."[19] Some proposals focus on a mandatory spot market that all generators must sell to and all consumers buy from. Others focus on bilateral transactions between generators and consumers along with intermediaries, such as brokers. Transmission entities would also have the responsibility and authority to ensure reliability (involving services such as spinning reserves and coordinating transmission capacity expansions), and coordinating grid operation (to manage congestion and avoid system overloads). Such control under any proposal places a stress on insulating the "regulated" transmission entity from the

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"competitive" generators. Thus, the physical control issues that must be addressed by a hybrid system have implications for the industry structure issues that it must also address.

This need for coordination and reliability is complicated by the current system's somewhat informal means of addressing the issue. There are an estimated 30 voluntary utility groups designed to improve reliability, promote coordinated planning and development, and encourage economic dispatch. These groups range from informal pools based on simple cooperation to fully integrated tight power pools. These groups are supplemented by the North American Electric Reliability Council (NERC), an organization formed by the electric utility industry to help coordinate planning and assess system reliability. Whether this system is adequate for a new, more fragmented industry is unclear.

How should the electric utility industry be structured or restructured to encourage and safeguard a more competitive system?

In several ways, the existing regulatory structure is the outcome of a previously less regulated electric system's failure to maintain competitive forces against the threat of monopolistic practices, and to preserve financial solvency against the threat of unsound business practices. Arguably, the success of the current system for over 50 years is a testament to the Federal Power Act and the Public Utility Holding Company Act in structuring a system that regulators could effectively oversee. The current challenge is the maintain this success while transitioning to new industry structures.

Segmenting the industry into competitive and regulated components raises new issues with respect to industry structure and regulatory oversight. As identified above, substantial tension between the different functional components, which must coordinate their activities but not engage in anti-competitive practices, could exist under a segmented system. However, besides the issue of network control discussed above, this complex situation, involving unregulated, competitive generators and regulated transmitters and distributors, raises the question of what should be considered acceptable ownership patterns between the different entities. FERC has determined that "functional unbundling" of wholesale generation and transmission services, along with a code of conduct, is sufficient to protect non-discriminatory open access transmission.[20] Whether this arrangement would be sufficient under a

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more comprehensive retail competition scheme is arguable. More aggressive options to prevent market abuses through industry structure could include complete divestiture of generation or transmission/distribution assets or requiring separate corporate affiliates for each function.[21] The decisions depend on one's evaluation of the states' and federal government's ability to oversee financial transactions within each of the possible corporate structures that may evolve as the industry becomes more competitive. In one sense, unbundling raises the question of what kind of "PUHCA-like" legislation is necessary under the new system.

Using competition as the determinant of electric generating rates places a high premium on maintaining full and effective competition in that sector, and preventing anti-competitive interactions between it and the regulated segments. Thus a reappraisal of antitrust provisions and their implementation may also be appropriate in determining acceptable industry structures.[22] In particular, as noted by FERC: "The most likely route to market power in today's electric utility industry lies through

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ownership or control of transmission facilities."[23] Thus, part of the review of industry structure policy may involve a re-evaluation of merger and acquisition policy as embodied in PUHCA and FERC policy.[24]

Developing legislation to guide corporate structure raises the question of what to do with the old legislation — PUHCA. If new legislation adequately dealt with possible market abuses arising from corporate structures under the new segmented system, the existing PUHCA could arguably be eliminated with respect to electric utilities.[25] If a less aggressive approach is chosen, then decisions must be made on

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how much of the current PUHCA is appropriate to a more competitive environment, and whether conditions should be placed on its repeal.[26]

Likewise, a more competitive environment raises questions about the need for PURPA, particularly the mandatory purchase requirement (section 210). If the generation sector is structured competitively, any guaranteed access to generation markets must be questioned as to whether the benefits it provides outweigh the resulting distortion in the competitive market. Section 210 provides such access and thus raises the question whether it is needed any longer or under what conditions it might be modified or repealed.

The current structure of the electric industry includes investor-owned, customer-owned (co-ops), and publicly owned entities generating, transmitting, and distributing electricity. Among other things, the customer-owned and publicly owned entities receive preference to low-cost federal hydropower through the Power Marketing Administrations (PMAs). In addition, FERC has only limited authority over non-jurisdictional utilities such as municipal power authorities or PMAs. A new, more competitive market structure raises the question as to how much buyers of power should be on the same footing. In particular, increased competition in the generation section brings into focus public power's federal hydropower preference. Arguably, if the generation market is competitive, low-cost federal hydropower should not be reserved for publicly and customer-owned entities (all else being equal). Instead, like any other electric generator, the federal government should simply sell its power to the higher bidder regardless of that entity's ownership structure. Indeed, some public power entities might gain more from being able to competitively bid for their power supplies than to maintain their federal hydropower preference and current supply

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arrangements.[27] Any attempt to address the federal hydropower preference issue is likely to be very contentious.[28]

How should non-economic regulatory factors be integrated into the envisioned hybrid system?[29]

Over the past 25 years, electric utilities have acquired a number of important non-economic tasks, including environmental controls and programs, consumer-

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oriented programs (demand-side management, conservation incentives), and encouraging alternative sources of energy.[30] In addition, there are social welfare aspects of electric supply that are unavoidable when dealing with a service that affect people's livelihoods, such as uncollectible expenses from customers who are unable or unwilling to pay their bills.[31]

The status and future of these activities would have to be reassessed under a more competitive system. Several alternatives exist to address these tasks, depending on the specific function.[32] For some functions, such as demand-side management, the

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still-regulated transmission or distribution entity could be required to take the lead, with possible financial assistance from local or state governments. Another possibility would be to develop new programs that work with the new competitive markets to provide appropriate incentives for the desired result. For example, in order to encourage renewable energy generation, H.R. 3790 (introduced in the 104th Congress) provided for a set-aside program with tradeable credits to ensure that a small percentage of U.S. generation came from such sources. Finally, a review could indicate that a particular function should be redefined as a government function (such as uncollectible expenses) or eliminated as unnecessary. Some would put section 210 of PURPA in the latter category.

In addition to affecting the above social goals, deregulation is creating new social concerns as its direct impacts on other values, such as clean air, are evaluated. As noted previously, a competitive market would introduce new considerations in powerplant operations. That older, fully depreciated powerplants, could be more fully utilized under a more competitive generating sector would affect emissions of certain air pollutants. In general, the Clean Air Act imposes its most stringent pollution controls on new powerplant construction, permitting existing capacity to meet less stringent and less costly standards. This decision may give some older facilities a competitive operating cost advantage to compliment its low, depreciated, cost basis. It also draws into further question an implied assumption of the Clean Air Act that existing capacity would be retired after a fixed number of years (usually 30 years) and replaced with new, less polluting, equipment. However, this is not definite, because the economic and environmental advantages of new technology, such as natural-gas-fired, combined-cycle technology (a very clean technology) may be sufficient in some cases to overcome the existing plant's advantages identified above.

Analyses suggesting that emissions of nitrogen oxides (NOx), a precursor to ozone formation, could increase under FERC Order 888 resulted in substantial controversy and to proposed legislation that would prevent implementation of the Order until the environmental problem was addressed.[33] The controversy is likely to become more contentious as the debate expands into the area of retail competition,

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and whether the issue should be addressed in the context of electricity restructuring or in the context of Clean Air Act reauthorization.

Final Observations

Over its 100-plus-year history, the electric utility industry has evolved as technology, economics, and regulatory policies have converged to force a re-examination of the industry. These forces are at work again, creating a dynamism that is changing the way in which the industry is structured and operated. The re-examination is already underway. At the federal level, the passage of EPACT and the promulgation of FERC Order 888 are moving to open up the wholesale generation sector to market forces. At the state level, most states are reviewing their electricity policies, with each state determining for itself the most appropriate response for its utilities and their ratepayers.

At the federal level, this phenomenon raises two fundamental issues. First, who will determine the pace and boundaries of any response to these forces? Electric service is a vital component of a modern economy; national interests are at stake in what direction restructuring takes. Concerns about economic efficiency and the treatment of various participants (such as electric utilities) may suggest to some that the federal government provide direction to current state initiatives. In contrast, others argue that states, who have traditionally had responsibility over retail electricity issues, have more of the expertise and experience necessary to handle the situation, and that the national interest in electricity supply is neither threatened by state initiatives nor a justification for federal pre-exemption of states' rights. Congress may wish to consider whether the time is ripe for federal intervention in the continuing evolution of the electric utility industry or whether a "wait and see" attitude toward state proceedings is more appropriate at this point.

Second, are there any national values threatened by the restructuring, that Congress may want to address? Restructuring the electric utility industry may affect environmental efforts, research and development and other energy-related programs, and the quality of life for lower-income individuals. Electricity is more than a commodity, it is a necessity of modern life. The system of environmental, energy, and low income assistance programs are premised on electric utilities providing a service, not just a commodity. Regardless of whether the federal government decides to take a leading role in the restructuring efforts, it may have to examine many of its programs to determine their appropriateness under a more competitive system and decide whether those programs or the structure of the new electric system needs to be altered to accomplish stated goals. As a corollary to this decision, Congress may wish to consider whether these examinations should occur as part of the restructuring debate, or in the legislative context in which those concerns arise (e.g., Clean Air Act, Low-Income Home Energy Assistance program (LIHEAP), etc.).