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ELECTRIC AVENUES

Why "Open Access" Can't Compete

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Executive Summary

The regulation of electricity markets is changing rapidly. So far, the changes affect only the generation of electricity. The deregulation of transmission and distribution is not under serious consideration because conventional wisdom says that transmission and distribution are natural monopolies that must be regulated. However, the source of monopoly power in the utility industry is the local exclusive franchise currently held by electric utilities rather than any natural characteristics of transmission and distribution.

The centerpiece of the regulatory changes is called mandatory open access, under which electricity producers have the right to sell to whomever they choose at the retail level across the wires of the incumbent utility. Although the requirement that utilities open their lines is seemingly expedient, the true free-market alternative would eliminate today's exclusive territorial franchises and allow competitors to develop parallel distribution, provide on-site power, and negotiate voluntary agreements for access to the existing transmission and distribution system. If legal entry barriers are eliminated and economic barriers to entry are low, utilities' attempts to charge "unfair" prices will attract new competitors, including smaller generators on customers' premises.

The principles that should guide the restructuring of the electricity industry are the sanctity of the property rights of both producers and consumers and the integrity of the market that emerges from those property rights. Producers should have an unfettered right to sell to anyone, and consumers should have the right to buy from anyone, but neither has the right to use the resources of others without consent.

Introduction

Present regulation of the electric utility industry is built on the belief that economies of scale render the power generation business naturally monopolistic. Thus, in the name of economic efficiency, state laws generally allow only one firm to supply power to most residents, and state public utility commissions were established to ensure that consumers are not victimized by the monopoly power of those firms. But rapid advances in generation technology, the increasing costs of utility regulation, the emergence of a national grid of interconnected power lines, and bad business decisions by a number of major electric utility companies have convinced virtually all industry observers that the business of generating electricity is largely competitive and that major reforms are now necessary.[1]

The idea that customers should be able to choose among a large number of competing power companies--instead of being forced to buy electricity from their existing electric utility monopoly--is powerful and morally compelling. One study estimates that a competitive electricity marketplace could save consumers between $22 billion and $108 billion annually.[2] Yet as Phillip Cross, a contributing legal editor to Public Utilities Fortnightly, has noted, "Whether you call it 'deregulation' or 're-regulation,' the promised move to competition does not mean less regulation . . . at least any time soon."[3] Indeed, while reformers envision a world in which a multiplicity of power generators competes for business, they fear that the business of transmitting and distributing that power is still naturally monopolistic and a potential obstacle to a competitive market.

Accordingly, the most popular reform idea is to force the utility companies to turn their wires into something akin to public streets. Any power generator would have a right to use the utilities' wires (known in the trade as the "grid") to deliver electricity to its consumers. Public utilities would, for the most part, be confined to the role of delivering power produced by someone else. To ensure that utilities don't use their authority over the electricity delivery system to discourage or inhibit competition, reformers propose to strictly regulate the prices utilities can charge for access to their wires, the types of services utilities can offer, and the routine operation of the grid itself.

That idea, variously termed "mandatory open access," "customer choice," or "retail wheeling," has become synonymous with electricity deregulation. The Federal Energy Regulatory Commission (FERC) has embraced mandatory open access as the central component of the still-in-progress restructuring of wholesale (utility-to-utility) electricity sales as mandated by the Energy Policy Act of 1992.[4] California and other states have adopted mandatory open access as the centerpiece of their reform of retail electricity markets.[5]

The intentions of those who embrace mandatory open access to the electric grid are good; the concept, however, is flawed. The source of monopoly power in the utility

industry is neither the electricity grid nor the vertical integration of utilities. Rather, the real source of monopoly power is the local exclusive franchises currently held by electric utilities, which prevents sellers and customers from cutting their own power deals to bypass the monopolies.

While the requirement that utilities open their wires to all comers is seemingly expedient, a better alternative is to allow market forces, not government agents, to dictate how the electricity market is structured. Mandatory open access presupposes a great deal about what is and what is not economically efficient and attempts to legally force those suppositions on the economy. That kind of economic hubris on the part of government was what caused the industry to get into the present inefficient mess to begin with.

Simply eliminating today's exclusive territorial franchises would allow market forces to sort out the best form of industry organization. Nonutility power companies might then opt to build their own transmission and distribution systems on private rights-of-way, provide on-site power, negotiate voluntary agreements with the utilities for access to the existing grid, target customers on the fringes of the grid, or do some or all of those things. Access to public rights-of-way could be auctioned off as well. As long as legal barriers to entry are eliminated and economic barriers to entry are low, utilities' attempts to charge "unfair" prices will attract new competitors.

Moreover, relying on market forces rather than bureaucratic edicts to restructure the industry has the virtue of respecting private property rights. Mandatory open access undermines the property rights of utilities by forcing them to transform their privately owned grid into a public highway with the tolls, services, and maintenance operations subject to government, not private, control. Not only is that bad economics; it is constitutionally questionable as well, since no compensation is offered to utilities for the taking of several sticks from the bundle of rights associated with private property.[6] Producers should have an unfettered right to sell to anyone, and consumers should have the right to buy from anyone, but neither has the right to use the resources of others without consent.

In a world without legal barriers to entry, the grid as currently designed (connecting very few central generators with numerous customers) may or may not survive. The partial deregulation envisioned in all federal and state proposals, however, assumes that the current organization of the electricity industry is economically efficient except for the lack of competition in generation. But as economist Douglas Houston has noted, "To succeed with deregulation, the first step cannot be average--we must hurdle a heap of bad ideas, especially the natural monopoly myth."[7]

This study examines the problems inherent in mandatory open access and proposes an alternative way to deregulate the electricity industry. The first section describes how the existing organization of the electric industry is the result of conscious political design rather than the logical result of economies of scale. The second describes the likely effects

of competition on the electricity industry if the current monopoly franchise restrictions on competition are eliminated. The final section describes the disadvantages of grafting mandatory open access onto the current monopoly franchise system.

Electric Natural Monopolies Are Not Very Natural

According to mainstream economic theory, natural monopolies emerge when the costs of producing additional output decrease as the quantity of output increases.[8] Under such cost conditions, two firms have higher costs than one firm, three firms have higher costs than two firms, and so on. The result of competition between firms facing such cost conditions is the survival of one firm and the bankruptcy of the others. Genuine natural monopolies do not require government protection; no competitors enter the market because, if they charge the same prices as the incumbent monopolist but split the market in half, they will not make a profit.

However, many of the monopolies that exist today are not natural monopolies but politically created monopolies. In the electricity industry, for example, the conventional wisdom is that regulatory oversight was established by governments to protect customers from abuse at the hands of exploitative utility monopolies. An examination of the historical record, however, shows that government intervention was required to transform a competitive electric industry into a monopoly.[9] Competition thrived before the introduction of public regulation. As economist Burton Behling noted, "There is scarcely a city in the country that has not experienced competition in one or more of the utility industries. Six electric light companies were organized in the one year of 1887 in New York City. Forty-five electric light enterprises had the legal right to operate in Chicago in 1907. Prior to 1895, Duluth, Minnesota, was served by five electric lighting companies, and Scranton, Pennsylvania, had four in 1906."[10]

Economist Harold Demsetz notes that parallel or overlapping service, instead of being a waste of resources, appeared profitable: "In fact, producing competitors, not to mention unsuccessful bidders, were so plentiful that one begins to doubt that scale economies characterized the utility industry at the time when regulation replaced market competition."[11] That implies that, if there was an "externality" at all, it was not the natural monopoly characteristic of decreasing average cost over the relevant range of production. Instead, the primary externality was the failure to define property rights in street access.[12]

If electric utilities were natural monopolies and state regulation had curbed their economic power, electricity rates should have declined and the quantity of power supplied should have increased. However, University of Rochester professor Gregg Jarrell found that customers paid more for electricity after the arrival of rate-of-return regulation than they had under the prior competitive system.

Jarrell compared states that were regulated between 1912 and 1917 (early-regulated states) with those that were regulated after 1917 (later-regulated states). He found that "in 1912 [before state regulation], prices in early-regulated (ER) states were, on average, 46 per cent lower than prices in later-regulated (LR) states. . . . By 1917 prices in ER states were only 20 per cent lower, on average, than prices in LR states. Thus, between 1912 and 1917, ER states experienced a 26 per cent increase in prices relative to the price changes in LR states."[13] The return on assets in the early-regulated states also increased. Those outcomes are consistent with the conclusion that electricity regulation was a pro-producer rather than a pro-consumer undertaking.

Regulation did not fight monopoly; it fostered monopoly. As economist Vernon Smith notes, "It was the industry, whose profits suffered from open entry, that vigorously lobbied for entry restrictions and for state regulation of prices and profits."[14] The leader in that effort was early industry baron Samuel Insull, president of the National Electric Light Association, who urged and secured "fair profit" regulation and exclusive licensing of utilities.[15] Regulation raised prices, decreased output, and transferred wealth from consumers and efficient producers to politically connected producers.

Today's utility monopoly cannot be sustained without exclusive territorial franchises. Thus, Congress should abolish such artificial barriers and let nature take its course.

The Mirage of "Gridlock": Bypassing the Bottlenecks

The standard new view of the industrial organization of electricity is that competition in generation is possible but that transmission and distribution are still natural monopolies.[16] The natural monopoly conclusion flows from the physical difficulty of obtaining rights-of-way; the savings that result from one rather than several parallel grids; and the belief that cross-subsidies should be used to lower prices for rural customers, conservation projects, and renewable sources of power. The policy prescription that flows from that view is to treat the grid as a common carrier. Under such a regime, nonutility generators would be able to use a utility company's grid to transmit power at regulated rates.

That line of argument, however, is seriously flawed. First, the physical difficulty of obtaining rights-of-way is overemphasized. Second, new developments in engineering allow generators to actually control the movement of the electricity they put onto the transmission grid. Third, in an unregulated world, electricity users could organize to form user-owned transmission grids to counteract the market power of incumbent grid owners. Fourth, an exclusive focus on the transmission of electricity misses the role that natural-gas lines and gas turbines can play in the decentralized generation of electricity. Finally, mandatory open access to the grid is an uncompensated taking of private property.

Alternative Grids: An Antidote to Bottlenecks?

Proponents of mandatory access to the existing electricity grid do not believe that new transmission grids parallel to the existing one will emerge because of the physical barriers to entry as well as the existence of large economies of scale. Are alternative grids physically possible?

Would-be competitors to existing long-distance electricity transmitters could possibly use the rights-of-way of gas pipelines and railroads. In late 1996, for example, Amtrak announced that it was looking for an energy partner to develop electricity transmission capability on its right-of-way in the Northeast Corridor between Washington and Boston.[17] Would-be competitors with the existing local distribution network for residential customers can conceivably use existing cable, telephone, water, and sewer lines.

If the legal franchise prohibition on competition were eliminated, would actual competition occur? In the few areas in the United States where retail competition exists, two-firm duopolistic competition has been viable for quite some time.[18] Thus, if entry barriers to competition in distribution are removed, one likely development is the installation of competitive distribution lines by nonutilities into customers' homes and businesses at the fringes of the grid. Joint ventures among commercial and residential real estate developers, architects, power marketers, and power producers could emerge. If utilities can connect from substations to new homes, other providers can certainly do the same.

Innovations in telecommunications could help foster competition on the grid. "The same wires that carry power from the power plant to the house can carry data going the other way," much as radio waves of differing frequencies share the same airspace.[19] In other words, the same copper wires that carry AC power to the lights and appliances at 60 cycles per second can also carry phone calls and digitized messages to turn appliances on and off. "Suppliers at the top end of the grid make instantaneous offers to sell power; your thermostat, fridge, and dryer decide minute by minute whether or not to buy."[20]

Even if distribution lines happened to be too expensive for a single new electric firm to install, the fact that wires can perform "double duty" points to potential alliances and joint ventures between utilities and independent power suppliers with partners in the telecommunications industries. A high-price utility might find its customers buying distribution from an independent power producer engaged in a venture with a phone or cable company that monitored electricity use of appliances.

Network expansions in the telecommunications industry suggest that alternatives to the existing electric grid will be built if entry is permitted. Frontier Corp. and Qwest Communications are installing a $2 billion fiber optic network across the United States to connect nearly 100 cities.[21] Users of the network are supplying a large portion of the

funds for its construction in return for access rights to the network after completion, a model that could be emulated in a deregulated electricity industry.[22]

All such projects shed new and unflattering light on the unnecessary anti-market requirement accompanying FERC's wholesale open-access rule (Order 888, May 10, 1996). The order contains an "expansion obligation, under which a transmission company must expand its capacity, if necessary, to customers willing to pay their share of expansion costs."[23] According to the Energy Information Administration, "10,126.8 line miles of transmission additions are planned for the United States, Canada, and the northern portion of Baja California, Mexico, for 1995 through 2004."[24] But there is no reason that such expansion must be government directed or that only regulated firms should have access to customers.

Some analysts argue that the physics of electricity make the grid ill suited for multiple ownership and that it must therefore be tightly regulated.[25] Arthur Fuldner of the Energy Information Administration notes,

> The total generation at any moment must be kept equal to total electricity consumption and losses on the system including transmission and distribution.
>
> The electricity is allowed to flow through the transmission system in accordance with physical laws and cannot be directed to flow through specific lines.
>
> The system must be designed with reserve capacity in generation and transmission to allow for uninterrupted service when contingencies occur.[26]

Newly available technologies, however, allow greater control of power flows on the grid and threaten to make monopoly regulation by FERC and state public utility commissions anachronistic. High-voltage silicon switches, called thyristors, allow engineers to "guide the flow of megawatts as rapidly and efficiently as integrated circuits in personal computers handle microwatts."[27] They allow the electrical grid to be controlled electronically rather than electromechanically, as is typical today. As Richard Balzhiser, president emeritus of the Electric Power Research Institute, notes, "Our ability to switch at the speed of light will allow us to operate much closer to the system's thermal limits, thus significantly enhancing the system's delivery capability without sacrificing reliability."[28]

Mandatory open access is likely to reduce the incentive to adopt new grid control technologies. If an independent system operator is used to manage power placed on the grid, no one will profit from improvements in the precision control of power flows. In the absence of mandatory access, entrepreneurs are more likely to adopt silicon switching technology to attract customers who need "perfect" transmission reliability.

User-Owned Transmission Grids: Taming the Monopolist

The widespread fear of monopoly behavior by the sellers of transmission services overlooks the fact that electricity buyers may organize to counter any market power possessed by sellers. Demsetz argues,

> If we are willing to consider the possibility that collusion or merger of all potential bidding rivals [sellers of power] is a reasonable prospect, then we must examine the other side of the coin. Why should collusion or merger of buyers be prohibitively costly? If we allow buyers access to the same technology of collusion, the market will be characterized by bilateral negotiations between organized buyers and organized sellers.[29]

Houston offers compelling arguments about how user ownership could become an important feature of the grid structure and eliminate harmful market power in transmission.[30] The market solution to transmission monopoly power and the alternative to regulatory management of the grid is what Houston envisions as the "user-ownership solution." Houston notes that "ownership of transmission by its heaviest users is perhaps the most effective means of reducing the possibility of hold-up problems related to these co-specialized assets. That more measured market response can deter opportunism because it causes owners to bear losses in their roles as customers."[31] Houston argues that "in the electricity marketplace, absent regulation, transmission's great value relative to alternatives makes transmission control virtually an imperative to those who are using or contemplating using the system frequently over a long time frame."[32]

The current transmission owners, the utilities, should not be compelled to sell their assets. But without government-protected exclusive franchises, utilities may find it very advantageous to spin off transmission assets to user-owned firms.[33] Electricity consumers, according to Houston, "clearly have sizable incentives to anticipate exchange problems and devise contracts or ownership structures that efficiently address them. At the least, that suggests that the existence of opportunistic market behavior is not a sufficient basis for imposing close regulation; we need to consider what market institutions can be devised to do much the same job."[34] As Houston notes, "Unlike a regulatory [mandated open access] solution to the access problem, the voluntary user-owned organization inhibits monopolization by putting authority in the hands of those with a direct self-interest in coordinating power transmission efficiently."[35]

Microturbines: Gas-Fired Monopoly Busters?

The conversion of the existing natural-gas system to an electricity transportation system requires only the addition of gas-turbine generators by users. Modular, quiet, small (less than one megawatt) microturbines may be the technology that turns the electric power grid into the future equivalent of 19th-century canals.[36] Power can be distributed on low-voltage lines or consumed on-site. Capstone Turbine Corp. of California produces 165-pound microturbines smaller than an office desk that run at 55 percent efficiency (compared to 35 percent efficiency for coal-fired plants) because high-pressure air bearings eliminate the pumps and filters that lubricated systems need.[37]

Those new smaller scale generators will take advantage of a grid that already exists "parallel" to the traditional electrical grid, the network of natural-gas lines. Under competition, choice will emerge automatically even if no new transmission and distribution lines are built: one can either burn source fuel (coal, gas, nuclear) far from the end user at a central power station and then transmit the electricity through wires, or one can transport natural gas through pipelines and use smaller turbines to convert that energy to electricity at (or near) the point of consumption.

Existing utility transmission and distribution monopolies need no longer dominate the market in such a scenario. Natural gas, not electricity, could be transported. Trigen Energy Corporation chairman Tom Casten argues that the heat waste of today's central station plants is too valuable to squander. Combined heat and power plants, such as the cogeneration units developed by his company, can convert up to 90 percent of their fuel to end-use energy, triple the efficiency of central plants.[38] For that reason and others, Casten believes that the current electric grid is living on borrowed time.

> Central station generation . . . is finished as an economically viable technology. In its place, widespread installation of smaller, more-efficient generation, close to heat loads, will come to predominate and will collapse

> the value of much of today's generation--and transmission--assets.[39]

Casten is not alone. Colin Besant of the Imperial College of London states,

> We think power generation will go very much like computers. In the past it was all mainframes, then the minis came along, and now we all have PCs on our desks, on a network. We think the same thing will happen with power generation. Everybody will have their own power generation running off the gas.[40]

Although widespread microgeneration and heat recapture have not fully arrived, the trend toward smaller scale appears to be irreversible.[41]

Access without Mandates

Much as free speech does not entail a right to a microphone, in a free market the fact that one spins magnets to generate flows of electrons through copper wire does not create a right to have someone transport that power against his will. Under full deregulation, a utility may prevent access to its lines and poles but may not forbid competition. Even if the prospect for parallel or bypass transmission is not good, wires, poles, plants, and stations belong to the utility and cannot be taken without compensation. At most, one could argue that the rights-of-way across which utility lines, poles, and other hardware run do possess a public character because they were originally granted through the power of eminent domain. They were, however, paid for, albeit at a discount. If competition proves to be impossible, intransigent utilities should not be allowed to impede progress or interfere with the rights of trade of others because of the accident of their role as gatekeepers for the residue of a monopoly right-of-way--but they must be compensated fairly. Still, universal access need not be imposed.

If incumbent utilities refuse transmission of electricity on their wires, competing transmission entities, if feasible, might be allowed to erect hardware along the right-of-way for a nominal access fee. Alternatively, should utilities fail to lower prices, competitors might attach new transmission or distribution lines directly to existing utility lines (with compensation perhaps based on the way utilities share their distribution capacity with phone companies). In allowing such attachments, the government is using its eminent domain power to promote public use and must compensate. Voluntary deals will likely be reached, however, before government intervention is necessary.

Isolated use of the "attachment" method has the advantage of not imposing on the utility any form of involuntary servitude, as open access would. The philosophical distinction between open access and occasional line attachment is clear. The first requires a utility to do work, the second merely that it duck out of the way. The new competitor

would finance its own hardware and might need to fund an upgrade of the transmission assets in question, because, for example, transmission towers have been designed to hold wire weight and ice buildup but they have obvious limitations with regard to weight and the ability to withstand crosswinds. Utilities may voluntarily undertake joint ventures to share costs of capacity expansion, or the "invading" utility may be required to finance tower reinforcement and lines.

So, as a last resort, residual rapaciousness can be tempered by the fact that rights-of-way were granted to serve the public rather than the utility. Others should be allowed to further develop those rights-of-way, if necessary. Even if access to utilities' rights-of-way is sometimes ordered, that approach is very different from mandatory open access as envisioned today: utilities still must be allowed to charge market rates or exclude use of their own wires. The attachment of new wires should be accompanied by a fee.

Contestability: The Ghost in the Monopoly Machine

Traditionally, economists believed that the existence of actual competition was necessary for consumers to receive the benefits of lower prices and better quality service. Recent developments in economic theory, however, suggest that potential competition alone may be sufficient.[42] The mere threat of competition, under the right circumstances, will induce incumbent firms to price as if competition actually exists. The effectiveness of potential competition varies with the ease of entry and the specificity of assets used in the industry.[43] Costly entry or exit and assets that are difficult to switch to alternative uses make potential competition less effective in disciplining the pricing behavior of an incumbent monopolist.

The existence of alternative rights-of-way makes entry into electricity transmission possible. If bankruptcy occurs, however, exit from electricity transmission is very difficult because of the specificity and immovability of the assets. Poles and wires are difficult to use for other purposes and cannot be moved easily. In electricity transmission, potential competition is not a perfect substitute for actual competition, but the former would constrain to some degree the pricing behavior of incumbent utilities.[44] Any utility that restricts access to its wires in a nonfranchise marketplace will likely face retaliation if it attempts to expand geographically. Such dynamics will induce competition without either forced access or parallel wire construction.

Full Deregulation and the Myth of Consumer Vulnerability

Some critics fear that the removal of all special regulatory controls over the delivery and sale of electricity (essentially treating electric power companies no differently than, say, shoe stores) would hurt consumers. Without rate regulation, they argue, prices

would skyrocket for rural users. While businesses probably would benefit, residential users would remain vulnerable to the market power of their local utilities.

Fortunately, those fears are overblown and misguided. Consumers are not well served in the long run by regulations that interfere in the bargaining process between buyer and seller. Not only are the remedies worse than the diseases, but the diseases in question are nowhere near as threatening as consumer groups would have us believe.

Rural Customers Do Not Require Subsidy

Analysts often favor regulated monopoly franchises because the restrictions on entry allow the firm to overcharge some customers and use the revenues to subsidize other, frequently rural, customers. Under normal market conditions, if private firms "tax" one class of customers to help another class of customers, competitors enter the market to serve the "taxed" class of customers at lower prices.

In general, so-called cross-subsidies are not viable in competitive markets and, thus, monopolies in basic services needed by all consumers--such as first-class mail, electricity, and phone service--are justified by their ability to permit the cross-subsidy of high-cost (often rural) service as well as pay for the "guarantee" of universal service.[45] Yet the need for rural cross-subsidies is overstated. First, the "boonies" seem to get most other basic goods and services, such as milk and oil changes, without state-mandated subsidies. Second, recent research on the costs of rural telephone companies suggests that rural service may not be as high cost as most analysts assume.[46] Third, decentralized generation technologies are advancing so rapidly that traditional expensive copper wire transmission may not be necessary in isolated areas in the future.

Even if rural electricity service costs more than urban electricity service, why should urban and suburban residents have an obligation to provide a subsidy? The advantages and disadvantages associated with particular land sites are embedded in their prices. Urban areas have advantages, but they are not free. The economies that come from urban density manifest themselves in higher urban land prices. Urban residents pay for advantages, like lower utility costs, through higher land prices. Similarly, rural residents are compensated for the disadvantages that are associated with low-density living by lower land prices. To subsidize rural services is to double compensate residents.

In general, penalties imposed on sellers and consumers in the electric industry should be avoided as ways of paying for remote access. Such transitional problems are an argument, not for continued regulation, but for limited welfare relief at most.

Price Gouging: Competition's Best Friend

Let's assume for the sake of argument that neither alternative power grids nor natural-gas turbines will develop sufficiently to challenge incumbent electric power monopolies. Simple elimination of all existing federal and state economic regulation of existing electric utilities in that case might allow incumbent utilities to use their market power to raise prices and produce excess profits. While that is not good news in the short run, it probably is good news in the long run because the existence of excess profits is an important source of microeconomic change.

High prices encourage both consumers and potential competitors to search for cheaper alternatives. For example, the drive toward microgeneration would become all the more urgent if utilities charged excessively for grid access. The more utilities charged unreasonable rates for grid access, the more use of the alternative natural-gas grid and microturbines would occur. In that sense, "monopolistic" behavior by utilities would ultimately be good for consumers. Mass production, unleashed by proper deregulation, will work its magic here as it did with innovations like automobiles and cellular phones. "Look at a 1988 Radio Shack catalog. A cellular phone cost $1,500. Now they're free," points out Dallas Federal Reserve Bank economist W. Michael Cox.[47]

Finally, it is not altogether clear that an unregulated utility monopolist would raise rates on captive consumers because the rates it charges currently may not be constrained very much by public utility regulation.[48]

The Unintended Consequences of Mandatory Open Access

Mandatory open access is unnecessary because competition with the existing electricity grid is both possible and likely. It is costly as well. The problems are several. First, the efficient mix of generation and transmission capacity as well as the existence of rewards for innovation will arise only if transmission and distribution are priced efficiently. Efficient pricing will result only from private unregulated ownership. Mandatory open access at regulated rates will dull the effect of important price signals. Second, mandatory open access will lead to endless legal disputes over whether allowing particular generators access will compromise grid reliability, and over the boundary between federal and state authority. Finally, publicly ordered mandatory access creates an unnecessary debate about stranded costs that can be avoided by simply eliminating the franchise monopoly.

Incentives for Innovation Are Lost

Electricity monopolies should not be protected by public guarantees because monopolies delay innovation. Until Federal Express came along, for example, the U.S. Postal Service did not offer overnight delivery of letters, or any other substitutes for traditional first-class mail. The imposition of mandatory access, rate regulation, and independent system operators on electricity transmission will stifle new market innovations in transmission and distribution because the regulatory regime will stifle the pricing system

from which innovations flow.

In an unregulated market, bottlenecks and congestion result in high prices that ration demand to a limited supply. The high prices and excess profits then stimulate both consumers and firms to innovate. Regulations that prevent owners from using prices to signal supply-demand imbalance or from retaining the profits that result from such prices eliminate the motivation to alter present practices.

Instead, under regulation, innovations come from regulators.[49] And the problem with regulator-initiated innovation is its inability to mimic the results of competition. For example, before airline deregulation, no one anticipated the hub-and-spoke airline system that developed.[50] Similarly, because policymakers cannot know in advance how an electricity grid would develop under competitive entry, their regulatory orders are unlikely to replicate the outcome of competitive entry.

If we look to past regulatory orders for indications of the likely course of mandatory retail wheeling, we need look no further than the 1978 Public Utilities Regulatory and Policy Act (PURPA). Supporters were convinced that the solution to high-cost electricity was independent generators. The result was long-term contracts with generators at above-market prices.

A current example of the unintended consequences of mandatory open access is found in the market for smaller scale generators. A Public Utilities Fortnightly article describing the pros and cons of small- and large-scale generation notes that "economic factors will determine the route of new generation. . . . These factors include stranded-cost recovery, exit fees, and wholesale and retail access to electricity."[51] One energy consultant, convinced that "retail access, particularly for industrial users, is coming fast," said that he is advising his industrial clients, "Don't build cogen[eration] now. There is no reason to build cogen right now."[52] Another company's "gas-turbine and cogen equipment work has been flat because customers are waiting to see how deregulation falls out."[53]

Nonregulated market pricing of transmission and distribution is necessary to determine whether new transmission capacity is preferable because thyristor technologies reduce its costs, or whether microgeneration technologies are cheaper and, thus, eliminate the need for additional transmission. The answer likely lies somewhere in-between. Only the market, not regulatory commissions, can provide the answers.

The Invitation to Litigation

Utilities are notorious for opposing competitive forces. They have mounted legal challenges against reforms at both the state level, where they argue that states do not have the authority to order retail wheeling,[54] and at the federal level, where they argue that

deregulation is a matter for states to handle.[55]

If mandated open access becomes law, utilities will use legal challenges to delay the new system, and those challenges will often have merit. Consider how telecommunications reform, which requires local providers to open their lines to long-distance phone companies wishing to compete in their local area, has proceeded. Recently GTE Corp., the nation's largest local phone company, sued to prevent implementation of the telecommunications reform bill unless or until the company is properly compensated by customers and competitions who use its network.[56] The act has been challenged on the grounds that its "order constitutes an uncompensated taking under the Fifth Amendment by requiring the sale of services below actual costs."[57]

Electric utilities will make similar arguments if open access is imposed on them. Disputes will occur over whether any government has the power to require access without compensation, the reduction in system reliability created by the need to accommodate numerous independent generators, and the role of states' rights in limiting federal authority to order access.

The elimination of monopoly franchise protection, on the other hand, rests on a stronger constitutional foundation because the federal government may prevent states from blocking interstate commerce. That stronger foundation might speed deregulation. The regulatory thicket necessitated by open access lies at the root of all hesitation; abandoning forced access in favor of a more defensible crusade against illegitimate exclusive franchises could mean faster deregulation.

Independent System Operators: Socializing the Grid?

Mandatory open access is an impediment to rather than a facilitator of reliability because it blurs the connection between ownership and control. An independent system operator (ISO) will be responsible for scheduling the use of generators to meet demand but will not receive any market-driven profits for performing well. Reliability problems that arise will become political footballs as the ISOs and the utilities try to shift blame to each other.

Optimal reliability of the grid will arise only from an appropriate definition of property rights and, hence, responsibility. Utilities should retain control over their transmission assets but face the constant threat of competition from alternative networks and decentralized power systems. The end of monopoly franchises will avoid the need for the invasive and technical regulatory planning necessary to maintain reliability in an open-access system.

A fortunate side effect of deregulating by simply eliminating franchises is that it

will prevent utilities from blaming future blackouts and brownouts on open access. Advocates of mandatory open access claim, "The ISO will help get us beyond the 'yours and mine' category to the 'ours' category."[58] But it is precisely the notion of yours and mine--property rights--that underlies incentives to invest and maintain customer service. To the extent a third party, an ISO, can be plausibly scapegoated for any failures, reliability may suffer, and innovation certainly will. Only the immediate feedback provided by property rights in the grid can preserve pricing signals and eliminate the impulse to assume or claim that reliability is someone else's problem. Precision price signaling and reliability guarantees cannot be maintained under a regime the primary motive for which is ensuring "nondiscriminatory" access. Houston summarizes the problem:

> Regulation necessarily keeps private property rights in the transmission grid weak at best, and this, in turn, causes a common pool resource problem that also must be addressed by regulators. Given the incentives for overuse of common pool transmission assets and the disincentive of property holders (with weak residual claims) to invest efficiently, the role of the regulator expands in both operations and investment.[59]

The elimination of monopoly franchises rather than the use of mandatory access will force utilities to compete to retain customers on the basis of their reliability and other characteristics. Customers who wish to bypass utilities will make their own decisions about the degree of reliability they prefer. Since utilities retain full property rights in their own wires, those that choose to open their lines to avoid being undercut have every incentive to ensure reliability or lose customers. New competitors, presumably, must ensure reliability to attract customers, but reliability and interruptability will vary across firms as will the prices they charge.

State vs. Federal Jurisdiction

Does the federal government possess the authority to order open access? Many answer no. Edison Electric Institute president Thomas Kuhn, for example, told the Electricity Daily that Rep. Dan Schaefer's (R-Colo.) restructuring bill was "a disappointment. The legislation runs roughshod over states already pursuing this issue."[60] Citizens for State Power and the Small Business Survival Committee oppose federal restructuring legislation as well. In colorful full-page advertisements in many Washington-based publications, including the Washington Times and the Weekly Standard, SBSC argues that federal legislation would preempt dozens of state deregulatory initiatives; it also argues that small businesses and consumers will face higher costs because retail deregulation will favor large industrial customers.[61]

The belief that Washington should leave the states alone has merit, in general, but the argument that "some states may even resist deregulation [because] that's what our

federal system is all about"[62] ignores the question of individual rights. The exclusive franchises granted to utilities by states violate the individual rights of Americans. Exclusive franchises preventing free trade among willing customers and willing providers clearly deserve scrutiny at the federal level. States serve neither justice nor economic efficiency when they prevent firms and consumers from voluntarily buying and selling low-cost power across state lines.

Conservative groups are correct to oppose legislation that would mandate access for any electricity producer to existing utility transmission lines and regulate the grid as a monopoly. Mandatory open access to transmission, however well intended, is not the proper approach to retail deregulation. Instead, Congress should accomplish the same competitive goal, if states do not do so first, by eliminating state-created exclusive utility franchises that frustrate competition and have interfered with interstate commerce. Congress can also open federal highway, railroad, and other rights-of-way to competitive transmission.

As important as federalism for the protection of liberty is the government's duty to protect individual rights against the all-too-common efforts of state officials and utility commissioners to create and perpetuate monopolies within their borders. The Constitution's commerce clause was written primarily to ensure the free flow of goods and services among the states and hence to protect the right of U.S. citizens to engage freely in commerce with out-of-state agents. If states may legitimately prohibit citizens from purchasing electricity from out-of-state power generators, then the basic purpose of the commerce clause is subverted, state officials have triumphed, and the rights of the people have been extinguished.[63]

Ironically, despite their full-page ads and appeals to federalism, utilities aren't actually opposed to federal restructuring. Utility lobbyists have for years vigorously urged Congress to unilaterally repeal the Public Utilities Holding Company Act of 1935 and PURPA.[64] Repeal of PUHCA and PURPA would bring some consumer benefits, and the simultaneous elimination of franchises would be even better.

The elimination of franchises avoids the state vs. federal authority debate over open access that otherwise threatens to hamper deregulation. In addition, franchise elimination protects the property rights of all parties and does not force states to accept congressional and FERC dictates regarding common carrier access. Nor would states be forced to accept federal decisions regarding stranded costs, since no such costs would emerge as a consequence of mandated access to lines.

Stranded Costs: The Offspring of Mandatory Access

The construction of nuclear power plants and high fossil-fuel prices during the

"energy crisis" of the 1970s have had the net effect of placing high-cost obligations on many traditional monopoly electric utilities relative to the current market prices of electricity generated by natural-gas turbines.[65] In unregulated markets, falling energy prices would have resulted in the bankruptcy of the high-cost generation technologies used by the traditional utilities. Or the projects would not have been undertaken in the first place. In the regulated electricity market, however, those increasingly uneconomic plants and independent power contracts are termed "stranded costs" (costs that utilities will not be able to recover if they are forced to compete for business). The frequently staggering nature of those uneconomic assets and contracts has produced demands for compensation on the part of traditional utilities in return for their acceptance of mandatory retail wheeling of power produced by low-cost alternative generators to traditional utility customers.

The idea that utilities should recover stranded costs that were not demonstrably forced on them is flawed on its face. No seller is entitled to customers; no seller may punish customers who simply no longer wish to buy that seller's products. But utilities are demanding stranded-cost recovery, not simply because they are losing customers to competitive generation, but because they are losing control over their most valuable asset--their transmission lines.[66] Instead, if utilities are deregulated (lose their monopoly franchise protection) and are allowed to charge what the market will bear (with the proviso that other producers are free to make inroads through the many mechanisms described in this paper), utilities' rationale for stranded-cost recovery will be eliminated because mandatory access will not be required.

The open-access approach constitutes a taking because utilities lose exclusive control over their transmission assets and must transport power between other sellers and buyers at less than market rates. According to testimony filed by Granite State Electric Company, "While the generation will be priced at market, the wires or distribution rates will be capped at the embedded cost of the wires themselves--a price lower than their true value in a competitive marketplace."[67]

Open access also entails involuntary accommodation of inflows and outflows of electricity on the grid, which will require extensive planning, scheduling, and switching efforts. With present technology, the electricity injected into the grid flows where resistance is lowest, not necessarily along the particular path one might prefer that it follow. Large influxes of power will bleed over into neighboring utilities' lines, and some will return as "loop flows." Advocates of open access would need to determine how to compensate fairly incumbent utilities for dealing with burdens imposed by others, as well as how to compensate the incumbent for upgrading the grid.

The elimination of monopoly franchise protection would not prevent utilities from recovering stranded costs through appropriate pricing of transmission, but their recovery attempts would be disciplined by the risk of high charges inducing entry. "If wires as well

as generation were priced at market, Granite State conceivably could price its wires to recover its costs incurred in the past to serve customers."[68] But they would be constrained by market entry. Rather than set arbitrary levels of stranded-cost recovery, policymakers should let firms attempt to recover by pricing their wires at levels they believe will not induce entry.[69]

Stranded-cost recovery also should be avoided because it establishes a very bad precedent for future market turmoil in the electricity industry. A likely consequence of new electric generation technologies sited at or near customer premises is reduced demand for transmission and distribution services. The reduced demand will affect utilities' bottom line. The distribution portion of the industry collects about $50 billion in revenues annually and accounts for one-third of utility assets and half of utility employment.[70] If utilities succeed in extracting stranded costs for nonproductive coal and nuclear assets today, they will no doubt ask for bailouts again when decentralized generation technologies reduce the value of transmission and distribution assets.

Conclusion

Electricity has been called the "last and biggest of the country's regulated monopolies."[71] While that's debatable, given the size of the U.S Postal Service and the nation's public education infrastructure, electricity certainly plays a central role in our industrial society. Unfortunately, electricity would remain a major regulated monopoly under most proposed models of deregulation.

Government's proper role in deregulation of the electricity industry is not to retool and redirect the regulatory apparatus toward managing competition on the grid. The common carrier, open-access model should be aggressively rejected. Rather than entrust the care and feeding of the electric power grid and distribution system to the planners at FERC and the various state commissions, policymakers should free the electric power grid in a manner that eliminates all temptation to call for meddlesome regulatory oversight. Deregulation can be principled and permanent rather than expedient.

Monopoly regulation got the electric industry into the $200 billion stranded-cost mess it now faces. Now that reformers seem committed to deregulation, it makes no sense to concede that the grid is special and that somehow, some way, government, this time, despite an unblemished history of distorting markets through economic intervention, will get monopoly regulation right. A national grid overseen by a few FERC employees, or a state grid overseen by a few state public utility commission regulatory specialists, is not going to improve upon market outcomes. Instead, it will cost the economy dearly in lost dollars and innovation. Consequently, Congress, in the year 2005 or so, will need to remedy its decisions of 1998. The fact that we will have paid stranded costs in exchange for very little market liberalization will make the situation all the more unfortunate.

The superior deregulatory option is to get rid of the exclusive franchises that are the actual source of today's utility monopoly power and allow competition to emerge spontaneously. If no franchises exist, competition will appear in the form of alternative transmission and distribution, distributed generation and microgeneration, strategic business alliances spurred by newly available technologies that make it possible to control electron flows on the grid, sale of federal grid assets, and user ownership of the grid. The essence of reform is straightforward: give others every right to set up shop, but let them worry about how they get their juice to the customer.

By avoiding open-access deregulation, Americans avoid the political failures of maintaining a regulatory structure, the losses that will emerge from the conceit that regulation prices output better than an "imperfect" market, inevitable legal challenges, the debate over maintaining reliability, the state-federal jurisdictional conflict, and the stranded-cost debate.

We are far better off taking our chances with the occasional exercise of potential monopoly power in transmission than submitting to a guaranteed monopoly in the form of an ISO doing the bidding of regulators. The monopoly effects would have to be very large to make regulation a rational approach. To the extent both the regulatory community and trade groups disband after restructuring, this reform effort will have succeeded.

Notes

1. Peter VanDoren, "The Deregulation of the Electricity Industry: A Primer," Cato Institute Policy Analysis, forthcoming.

2. Michael Maloney and Robert McCormick, "Customer Choice, Consumer Value: An Analysis of Retail Competition in America's Electricity Industry," Citizens for a Sound Economy Foundation, Washington, 1996, p. 10.

3. Phillip Cross, "PUCs in 1997: Managing the Competition?" Public Utilities Fortnightly, January 1, 1998, p. 50.

4. For an overview, see Congressional Research Service, Energy and Natural Resources Policy Division, "Electricity: The Road toward Restructuring," updated February 21, 1996.

5. See, for example, Robert Michaels, "Stranded in Sacramento," Regulation, Spring 1997, pp. 52-64. Along with California, Rhode Island and New Hampshire will implement open access in 1998. Pennsylvania and Maine will have direct access in 1999. Peter Kendall and Christi Parsons,

"Power Plan Has Juice," Chicago Tribune, October 31, 1997. Virtually all states, however, are looking into restructuring. See "Governor's Group Reports on State Restructuring Progress," Electricity Daily, August 6, 1997, pp. 1-2.

6. "The rejection of both stranded cost recovery and mandatory access is the only rule consistent with the current property rights of both [utilities and customers]--the only fair rule." William Niskanen, "A Case against Both Stranded Cost Recovery and Mandatory Access," Regulation, no. 1 (1996): 17.

7. Douglas Houston, "Schaefer Bill Insupportable," Regulation, no. 4 (1996): 5.

8. The reduction in costs must occur at levels of output that approximately equal the quantities demanded by consumers.

9. Robert Bradley, "The Origins of Political Electricity: Market Failure or Political Opportunism?" Energy Law Journal 17, no. 1 (1996): 59-102.

10. Cited in Harold Demsetz, "Why Regulate Utilities?" Journal of Law and Economics 11, no. 1 (April 1968): 59.

11. Ibid.

12. "Complaints were common that the streets were too frequently in a state of disrepair for the purpose of accommodating competing companies." Ibid.

13. See Gregg Jarrell, "The Demand for State Regulation of the Electric Utility Industry," Journal of Law and Economics 21 (1978): 286-87. Emphasis in original.

14. Vernon Smith, "Regulatory Reform in the Electric Power Industry," Issue Analysis Report no. 3, Goldwater Institute, Phoenix, March 1995, p. 2.

15. Ibid. See also Marvin Olasky, Corporate Public Relations: A New Historical Perspective (Hillsdale, N.J.: Lawrence Erlbaum Associates, 1987), pp. 33-43.

16. Peter Fox-Penner, Electric Utility Restructuring: A Guide to the Competitive Era (Vienna, Va.: Public Utilities Reports, 1997), p. 88.

17. "Amtrak to Expand Transmission Capacity along Northeast Corridor," Electric Power Alert, December 4, 1996, p. 8.

18. See John Kwoka Jr. Power Structure (Boston: Kluwer, 1996), pp. 43-49.

19. Matt Walsh, "Gatekeeper," Forbes, May 22, 1995, p. 252.

20. Peter Huber, "Smart Toasters," Forbes, June 5, 1995, p. 166.

21. "Frontier Plans $2 Billion Network," CNNfn, Financial Network, Cable News Network, Inc., October 21, 1996.

22. Another unappreciated potential source of local grid competition is today's pressing need to upgrade Internet bandwidth. Distribution line installation could piggyback on installation of cable modem wiring, Integrated Services Digital Network lines, and other home-wiring options, regardless of whether copper wires are the medium for both power and data transport.

23. Timothy Brennan et al., A Shock to the System: Restructuring America's Electricity Industry (Washington: Resources for the Future, 1996), p. 62.

24. Arthur Fuldner, "Upgrading Transmission Capacity for Wholesale Electric Power Trade," Energy Information Administration Electric Power Monthly, June 1996, p. xi.

25. Deputy Energy Secretary Charles Curtis, in discussing the tug of war over deregulation by state and federal authorities, notes that "electricity markets do not behave according to political boundaries" and that "electrons don't respect borders." Quoted in Margaret Kriz, "Power Brokers," National Journal 28, no. 48 (November 30, 1996): 2596.

26. Fuldner, p. xii.

27. Narain Hingorani and Karl Stahlkopf, "High Power Electronics," Scientific American, November 1993, p. 78.

28. Richard Balzhiser, "Technology: It's Only Begun to Make a Difference," Electricity Journal, May 1996, p. 32.

29. Demsetz, p. 58.

30. For a brief summary of this approach, see Douglas Houston, "User-Ownership of Electric Transmission Grids: Toward Resolving the Access Issue," Regulation, Winter 1992, pp. 48-57.

31. Douglas Houston, "The Case for Deregulating Electric Transmission: The Virtues of Self-Governance," Paper presented at the Cato Institute-Institute for Energy Research Conference, "New Horizons in Electric Power Deregulation," Washington, March 2, 1995, p. 9.

Hold-up problems arise in investment situations in which marginal costs are larger than average costs and thus marginal-cost pricing will lead to bankruptcy. Electric transmission assets have such characteristics. An electric utility will not build transmission assets unless electricity users agree to pay for fixed costs above the actual marginal costs of operating the transmission line. Once the line is built, however, the electricity user has incentive only to pay marginal costs and the utility has incentive to agree to the change because such fees are better than no fees at all. In such situations investment may not occur unless the ex post "hold up" of investors by consumers can be prevented. Long-term contracts and vertical integration are common solutions to "hold-up" situations.

32. Houston, "The Case for Deregulating Electric Transmission," p. 8.

33. User ownership is a common solution in other industries faced with market-power bottleneck issues--for example, taxi dispatch services cooperatively organized by independent taxi operators, oil pipelines, natural-gas pipelines, and large jointly owned shipping vessels. Jerry Taylor, "Electric Utility Reform: Shock Therapy or Managed Competition?" Regulation, Fall 1996, p. 68. For example, the New England Electric System plans a $200 million, 25-mile, 500-megawatt cable beneath Long Island Sound, and will enlist the support of expected users to aid in the permitting approval process. Potential users who support the project will have preferential rights to claim access to the new capacity, as would be expected. Under a deregulatory regime not myopically focused on open access and payment of stranded costs, it is likely that numerous independent power producers and their customers would jointly finance many such projects. "What Natural Monopoly? NEES Unveils ITP to Serve Long Island," Electricity Daily, December 13, 1996, p. 1.

34. Houston, "The Case for Deregulating Electric Transmission," p. 6.

35. Douglas Houston, "Toward Resolving the Access Issue: User Ownership of Electric Transmission Grids," Reason Foundation Policy Insight no. 129, August 1991, p. 16.

36. Microgeneration is generally considered to encompass those units below one megawatt in size designed to provide power for a single structure.

37. See Stuart Brown, "Here Come the Pint-Size Power Plants," Fortune, April 29, 1996, p. 64C. Microgenerators are not yet economical. Capital costs are currently $1,000 per kilowatt of capacity. According to the Electric Power Research Institute, reliable, low-maintenance commercial applications could be available for under $300 per kW within three to five years. Preston and Rastler, p. 15. At $300 per kW, a 24-kW microturbine, large enough to power a central air-conditioning system for a large house, would cost $7,200.

38. Thomas Casten, "Thinking about Energy," Presentation to New England-Canada Business Council, November 8, 1996, p. 4.

39. Thomas Casten, "Electricity Generation: Smaller Is Better," Electricity Journal, December 1995, p. 65.

40. Colin Besant, "Gas Turbines in Your Home?" Electricity Daily, September 9, 1996, p. 2.

41. See, for example, George Preston and Dan Rastler, "Distributed Generation: Competitive Threat or Opportunity?" Public Utilities Fortnightly, August 1996, pp. 13-17; and Joseph Schuler Jr., "Generation: Big or Small?" Public Utilities Fortnightly, September 15, 1996, p. 31. Though multipurpose microgenerators are not yet characterized by the "zero maintenance" often found in household appliances, entrepreneurs who furnish that ease of use will surely make large profits. Skepticism about the use of microturbine technology flows not from an analysis of the costs and benefits of the turbines themselves but from lack of incentive to adopt them until the franchise monopolies are eliminated. For differing views on the likelihood of adoption, see David Pescovitz, "Reality Check: The Future of Electricity," Wired, October 1996, p. 80.

42. See William Baumol, "Contestable Markets: An Uprising in the Theory of Industrial Structure," American Economic Review 72 (March 1982): 1-15; and William Baumol and John Panzer, Contestable Markets and the Theory of Industrial Structure (New York: Harcourt Brace Jovanovich, 1982).

43. Specificity refers to the fungibility of investment for purposes other than the original if bankruptcy occurs. A grocery store, for example, can be converted to other retail uses if the original purpose of the investment, selling food, is not profitable. An electricity grid and a railroad line, on the other hand, are very difficult to use for purposes other than transmitting electricity or operating a railroad.

44. For a discussion of potential versus actual competition in the airline industry, see Severin Borenstein, "The Evolution of U.S. Airline Competition," Journal of Economic Perspectives 6 (Spring 1992): 53-54.

45. Cross-subsidies are also used in electricity service to fund high-cost renewable (wind and solar) sources of power and so-called demand management programs. For a discussion of the defects of those uses of cross-subsidies, see Robert Bradley, "Renewable Energy: Not Cheap, Not 'Green,'" Cato Institute Policy Analysis no. 280, August 27, 1997. If such programs are mandated by the public sector, their funding should come from normal appropriations rather than be hidden in electricity charges sheltered by monopoly franchises.

46. Subsidies are provided to smaller rural telephone companies on the erroneous assumption that costs are higher. They are not. See Joseph Fuhr Jr., "Should the U.S. Subsidize Rural Telephone Companies?" Journal of Policy Analysis and Management 12 (Summer 1993): 582-88.

47. Quoted in Kevin Kelly, "Wealth If You Want It," Wired, November 1996, p. 268.

48. See George Stigler and Claire Friedland, "What Can Regulators Regulate? The Case of Electricity," Journal of Law and Economics 5 (October 1962): 1-16; and Jarrell and Kwoka, p. 51.

49. Houston, "The Case for Deregulating Electric Transmission," p. 12.

50. Taylor, p. 74.

51. Schuler, p. 30.

52. Ibid., p. 32.

53. Ibid.

54. See Jonathan Weisman, "Drive to Open Power Industry to Competition Gains Steam," Congressional Quarterly, October 12, 1996, pp. 2911-17.

55. See comment by Tom Kuhn of the Edison Electric Institute in "The Schaefer Legislation: Where the Stakeholders Stand," Electricity Daily, July 15, 1996, p. 2.

56. Mike Mills, "Holding the Line on Phone Rivalry: GTE Keeps Potential Competitors, Regulators' Price Guidelines at Bay," Washington Post, October 13, 1996, p. C14.

57. John DiIulio Jr., "How Bureaucrats Rewrite Laws," Wall Street Journal, October 2, 1996.

58. "Will an ISO Bring the West Reliability?" Electricity Daily, August 22, 1996, p. 1.

59. Houston, "The Case for Deregulating Electric Transmission," p. 5.

60. Quoted in "The Schaefer Legislation: Where the Stakeholders Stand," Electricity Daily, July 15, 1996, p. 2.

61. See, for example, the SBSC advertisement titled "Beware of Dog" on the back cover of the Weekly Standard, October 27, 1997.

62. David Keene et al., "Conservatives Warn Federal Government: Don't Short Circuit the States," Washington Times, September 17, 1996, p. 21.

63. Roger Pilon, "Freedom, Responsibility, and the Constitution: On Recovering Our Founding Principles," Notre Dame Law Review 68, no. 3 (1993): 533-38.

64. Further evidence that some large utilities have no philosophical objection to federal preemption of the states may be found in the Edison Electric Institute's comments to the Federal Energy Regulatory Commission, in which the trade group urges FERC to "serve as a 'backstop to the states' should states fail to force customers to pay so-called

stranded costs." Edison Electric Institute, "Initial Comments of the Edison Electric Institute before the Federal Energy Regulatory Commission," Docket no. RM94-7-000, Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, December 9, 1994, pp. 5-6.

65. For information about the economic costs of nuclear power, see Matthew Wald, "Nuclear Plant Drain Put at $100 Billion for U.S.," New York Times, February 1, 1988, p. D1; and Caleb Solomon, "As Competition Roils Electric Utilities, They Look to New Mexico," Wall Street Journal, May 9, 1994, p. A1. For information about the high costs of regulatory mandates to address the "energy crisis," see Jeff Bailey, "Carter-Era Law Keeps Price of Electricity Up in Spite of a Surplus", Wall Street Journal, May 17, 1995, p. A1. Also see generally Lea Beth Ward, "Utilities Brace for a Buyer's Market in Electricity," New York Times, May 9, 1993, p. F10; Fox-Penner, pp. 121-23; Salpukas, p. D1; Thomas Casten, "Smaller Is Better," Electricity Journal, December 1995, pp. 70-71; Michael Block and Thomas Lenard, "Creating Competitive Markets in Electric Energy," Progress and Freedom Foundation, Washington, 1997, p. 1; and J. Alan Beamon and Steven Wade, "Energy Equipment Choices: Fuel Costs and Other Determinants," Monthly Energy Review, April 1996.

66. See John Rowe, "Cost Recovery before Competition," Regulation, no. 3 (1996): 6.

67. Granite State Electric Company, "Retail Competition Pilot Program--Legal Commentary: Legal and Constitutional Issues Presented by Retail Competition Pilot Program," Submitted to New Hampshire Public Utilities Commission, Docket DC 95-250, October 30, 1995, p. 19.

68. Ibid.

69. Reformers should act fast. Under California's retail competition policy, stranded costs (euphemistically called a "competitive transition charge") must be paid even by consumers who leave the electric network because they install microturbines of one megawatt or smaller. Arthur O'Donnell, "Exceptions to the Rule: Bypassing the California Transition Charge," Public Utilities Fortnightly, November 15, 1996, p. 35.

70. Corey Stone, "Whither Distribution?" Public Utilities Fortnightly, December 1996, p. 20.

71. Peter Kaplan, "Stage Set for Power Politics: Deregulation Is Charged Issue," Washington Times, September 22, 1996, p. C11.