
Electric Utilities— Next Stop for Deregulators?

Irwin M. Stelzer

THE DEREGULATORS are homing in on a new target: the electric utility industry. Indeed, they have already enlisted the interest of the Federal Energy Regulatory Commission or FERC (which is seeking industry volunteers for “experiments” in deregulation), the Department of Energy (which is busy dishing out contracts to students of the problem), the academic community (which is looking for new industries to conquer) and, most significant, at least one major electric utility (Virginia Electric & Power Company).

This interest in deregulating the industry has three sources. First, airline deregulation has been fabulously successful, the complaints of the re-cartelists notwithstanding. It has resulted in lower and more varied fares, entry by small innovative newcomers, improved service even for small communities, more efficient utilization of capacity, and a declining number of passenger complaints. (See David Graham and Daniel Kaplan, “Airline Deregulation Is Working,” *Regulation*, May/June 1982, page 26.) This success spurred efforts to ease regulatory controls over railroad rates, interstate trucking, and telecommunications. Despite some recent backsliding by the supposedly pro-competitive Reagan administration, the political climate seems to favor deregulation, viewed by the public as part of a program to “get the government off the backs of the people.”

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Second, increasing doubt has arisen about the validity of the basis for regulating electric utilities. Is this industry, in other words, still characterized (if it ever was) by such substantial economies of scale and coordination that competition is infeasible and vertical integration essential? The notion that small is not only beautiful, but efficient, is now more widely (wildly?) held than ever, giving credence to the view that competition can replace regulation as the public’s protector against exploitation.

Third, and in my view most important, a feeling has developed that regulation of the electric utility business is not working. Some utilities continue to burn oil when a shift to coal would be in the nation’s and the customers’ interests; and some cannot get permits to build needed plants, while others have the permits but cannot afford to build the plants. The industry’s critics argue that the regulators protect inefficient, slovenly managed electric companies with cost-plus regulation that provides no incentive to efficiency. The regulators, in turn, feel impotent in the face of perceived political opposition to adequate rates and would like somehow to get off the hook on which they feel impaled. And the industry itself agrees that regulation is not working—but for a different reason—because it keeps rates so low that earnings on equity are below interest rates on debt and stocks sell far below book value. It is not unfair to say that *if* utilities were earning their cost of capital, *if* stocks were

selling at book, *if* debt coverages were adequate and debt capital salable on reasonable terms, much of the interest in deregulation would evaporate, at least on the part of the industry and its regulators.

The reasons underlying the support for deregulation tell us what the objectives, or benefits, of deregulation are thought to be. For the industry's critics, the chief goal is improved efficiency in the planning, construction, and operation of power plants and systems, along with the resulting lower rates. The industry itself, satisfied that its planning is already close to optimal, is mainly interested in higher earnings, while the regulators seek relief from responsibility. And all three parties would like to see a situation in which new entrants to the power production business, or perhaps existing utilities, could attract (otherwise unavailable) capital to the industry.

The Deregulation Scenario

In order to understand how these benefits are to be achieved, we must first try to understand how the scheme would work. This is not easy, as there are almost as many deregulation scenarios as there are deregulators.¹ (None of these scenarios, incidentally, includes one in which the regulators simply ride off into a CAB-type sunset, leaving managements free to exploit their monopoly power.) But it is not unfair to synthesize and summarize the various deregulation proposals as follows:

The distribution of electrical power is a natural monopoly and therefore should continue to be regulated. But the functions of generating, transmitting and distributing electricity, which are combined in today's utility companies, should be separated. Distributors should buy their power from a host of independent generating companies, at competitive prices—which power would be transmitted over the lines of independent transmission companies, perhaps operating as regulated common carriers or perhaps government-owned.

This system's attractiveness is not to be underestimated. It promises, in one fell swoop, to:

- Replace regulation with competition at the generating level, putting pressure on power producers to build the most efficient possible plants and operate them at lowest cost;

- Give distributors and their customers an opportunity to buy power from the cheapest source, either by changing sources easily or, at a minimum, by benefiting from competitive offerings of long-term contracts;

- Encourage entry into the generating business by investors who think they can make money offering power at competitive rates;

- Discourage the construction of unneeded plants, because no one would have an assured outlet for his power; and

- Eliminate the costs and delays associated with regulation.

This is, it must be conceded, a formidable set of hypothetical advantages. In order to decide whether they are likely to flow from deregulation, we have to consider how a deregulated utility system might be structured and operated. As a starting point, let us take one of the more detailed deregulation proposals—that outlined in the MIT Energy Laboratory working paper.

The industry would be structured as follows: A regional transmission company, which would be regulated or government-owned, would purchase electricity from competing, separate generating companies and would sell it to all distributors in the region. The transmission company would not contract with generating companies for long-term capacity commitments. Instead, it would purchase on a spot basis at prices that changed every five minutes. Computers would allow continuously fluctuating price signals to be communicated to generating companies. Large customers and distributors, for whom sophisticated metering is economically feasible, would pay the varying spot prices of generation plus the necessary transmission markup.

How would spot prices be determined? The transmission system would establish a single price for each five minute period. It would set that price just high enough to induce the de-

¹For some examples, see Remarks of William W. Berry, before the 21st Annual Regulatory Conference, Iowa State University, Ames, Iowa, May 20, 1982; B. W. Golub et al., "Deregulating the Electric Utility Industry: Discussion and a Proposed Approach," MIT Energy Laboratory Working Paper, July 1981; David Hughes, "Is There Life after Deregulation?" paper at Institute for Study of Rate Design Problems of Regulated Industries, February 8, 1982; and J. D. Pace, "Deregulating Electric Generation: An Economist's Perspective," paper at International Association of Energy Economists, November 12, 1981.

sired amount of generation—equal to the marginal running cost of the marginal generating unit at the desired level of production. All else being equal, a profit-maximizing generating company would bring its unit on line any time the spot price rose above its incremental start-up and running costs. As a result, economic behavior by individual generating companies should mimic the central dispatch of electric power from generating units contained in regional power pools.

A generating unit failure would drive up the spot price almost instantaneously, thus calling forth higher-cost, hitherto idle, generating capacity. If consumer demand threatened to exceed supply at a price high enough to call forth all available capacity, the spot price would be raised to whatever level was required to depress demand to the acceptable level. Since generating companies and large electricity users would face the same spot price (aside from the transmission and distribution markup), the higher prices needed to discourage demand would mean higher prices, and thus higher profits, for generating companies. This means that, if capacity generally were tight and demand frequently pressed on available supply, the generation business would become very profitable and firms would be induced to build additional generating capacity. It is this profit lure that would ensure, over time, that adequate capacity would be built. Those entrepreneurs who guessed capacity needs correctly and built cost-effective units would earn high profits; those who guessed wrong might go bankrupt. Presumably, bankruptcies would not remove capacity from the market as the units would be operated by trustees or bought by other companies.

Under this plan, distributors and large industrial customers, faced with continually varying spot prices, would curtail less essential uses as the price rose. Prices would be much simpler than they are today. There would be no fixed monthly customer charge, no demand charges or backup charges,² and only two customer classes. (Because of high metering and communications costs, the varying spot prices would not apply to residential or small commercial customers.)

This MIT scenario also envisions various independent middlemen and brokers who would package energy entitlements for sale to

investors (as mutual funds package securities) and offer long-term contracts to customers wanting stable or predictable prices.

The unanswered questions that leap to mind are legion. I discuss five of them here.

How Is the Present Vertical Integration to Be Undone?

All serious deregulation proposals, even those emanating from the industry, call for some vertical disintegration—that is, some separation of generation, transmission, and distribution. This would create some serious problems, particularly if the goal is to set up effectively competitive markets within each region. For if we are to have competition, not only would generation have to be separated from transmission and distribution, but in each region a utility's generating plants would have to be spun off to a sufficient number of independent, competing firms to produce effective competition. It would do little to improve efficiency if the generating plants of a utility were sold to a single, new generating entity: the new entity's monopoly power would be substantial, especially in the short run, even if constrained somewhat by free access to its markets by suppliers from other regions.

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The transition task, then, would be vertical disintegration *and* deconcentration. The spun-off facilities would, most probably, have to be sold to these numerous new firms for cash and at book value, so that bondholders could be paid off as the indenture instruments provide. And the buyer would most probably have to raise the needed cash by selling equity, since (for reasons discussed later) the venture would, at least initially, be too risky for the tastes of bondholders. Keep in mind that what

²Demand charges are fees paid by larger customers based on their highest monthly usage and designed to cover the fixed cost of serving them; backup charges are fees for utility capacity held available should a customer's own facilities be unavailable or inadequate.

we are talking about is a very large bundle of capital—between \$100 and \$150 billion.

Of course, *any* transition from regulation to competition involves difficult problems: in trucking, the writing down of values assigned to operating certificates was a knotty, multi-million dollar problem, and in airlines, the question of who “owned” routes and slots acquired in the CAB’s heyday proved a difficult one to resolve. But problems of this sort are worth overcoming if their cost is exceeded by the benefits reasonably to be anticipated from the new order. Would this be the case with electric utility deregulation?

Who Would Invest in Generating Stations?

Perhaps the most important question is whether vertical disintegration and deregulation would open the way to investment in new generating stations (I leave aside the question of who would buy the existing plants) and, if they do, whether such radical restructuring would be the most efficient way to attract new capital. Any potential entrepreneur considering entering this capital-intensive industry would have to face three kinds of risks:

Normal business risks. Will markets develop? Can the plant be brought in at close to its projected cost? Will environmental rules change? Entrepreneurs in most industries face these risks; potential investors in power plants might face them to an even greater degree.

Government competition. The electric generating business is characterized by a large government-owned and subsidized segment: a third of the capacity now being built is owned by government bodies. So, anyone who enters a competitive generating market would be vying for business with subsidized competitors both here and abroad (Canada). This is a problem that potential entrants in most other capital-intensive industries do not have.

A strange combination of maturity and novelty. Any investor would have to face the fact that markets for power from large central stations are, or at least seem to be, mature. Growth in electricity usage has slowed, while competition from small power producers, which are favored by government tax benefits, is increasing. Moreover, demand elasticity is no longer insignificant (if ever it was), reducing the scope for real increases in price. Final-

ly, the possibility of significant profit improvement through cost-saving innovation now seems small or at least highly uncertain. At the same time, the entrepreneur would be engaging in an enormous experiment. He would be attempting to sell a product (electricity) in a manner in which it had never been sold before, through a mechanism not now in existence (would it be brokers? transmission companies?), and at prices (replacement cost) never tested for market acceptance.

This recitation of ordinary and extraordinary risk should not be taken to mean that entrepreneurs could not, in any circumstances, obtain capital to build new generating stations. Rather, it means that one of two things would have to happen. Either devices would have to be developed to reduce risk (long-term take-or-pay contracts, of which more later), or risk premiums would have to be paid for the capital. The latter would take the form of increasing the portion of equity relative to debt capital. Since interest payments are deductible expenses, while equity earnings are taxable income, rate payers would find themselves paying about 20 percent more for electricity than they now do (remember that electricity is currently priced below cost). A portion of this post-deregulation increase—about half—would be simply a transfer payment to the government (taxes on equity earnings); another portion would represent the termination of the subsidy to consumers from a base rate that is economically low; and the final portion would represent payment for real increases in risk.

Two conclusions seem obvious. First, consumers—who are indifferent to economists’ distinctions between real and artificial cost increases—should not be expected to be as enthusiastic about deregulation of electric utilities as they have been about deregulation of, say, trucking. Second, the rate increases would probably not be big enough for us summarily to reject deregulation as either politically infeasible or economically undesirable: the savings from efficiency resulting from the pressure of competition might offset the higher cost of capital. But we should certainly attempt some rough calculations of this type to see, if only approximately, how great the efficiency improvements would have to be to offset the costs of increased risk. And if it should turn out that deregulation would result in higher rates, even

in the short run, we must question whether the political support for it would evaporate—remember, airline deregulation was popular because rates came *down*—and whether all the restructuring would be worthwhile. After all,

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regulated rates, if they could be set at economic rather than politically dictated levels, would solve almost as many problems.

How Would the Economies of Coordination Be Obtained?

Much of the discussion of deregulation draws on two separate empirical observations. First, economies of scale in individual generating *plants* appear to be such that every region of the country can (and does) support many plants of minimum efficient scale. This empirical observation has led some to conclude that many separate firms could *generate* electricity efficiently in any region.

Second, there appear to be substantial *system* economies that can only be fully exploited by coordinating the dispatch of electricity from all the plants in a region, the construction of new plants, and the planning of transmission lines. While there is sharp disagreement about the extent of these coordination economies, they probably extend at least to the regional level. Individual utilities have found it desirable to participate in state or regional power pools in order fully to exploit economies of coordination. The observation that there are substantial coordination economies at the system level has led some observers to suggest that there be more power pooling, or even more horizontal integration of those individual utilities that are not large enough to achieve all coordination economies.

Those who propose deregulation argue that it is possible both to have numerous independent generating entities and to exploit fully the

coordination economies at the system level. They suggest that we separate the transmission, load dispatch, and system planning functions from the existing utilities and *integrate* them into a single large transmission/coordination entity. The notion is that this entity would play the primary role in coordinating the economic generation and transmission of electric power in both the short and long run. It would merge the load dispatch and system planning efforts of many utilities into a single utility and replace existing power pools. It would use price signals to dispatch the most economic generating plants in a region to meet loads at each point in time, and it would ask existing firms or new entrants to submit bids to build new capacity (peak, cycling, or base load) and choose the lowest bidders. The transmission/coordination entity would then resell the power to local distribution companies.

This vision assumes that the price system can efficiently coordinate existing generating capacity in order to provide power reliably at least cost for a region. Under the existing system, utilities in each region form power pools, more or less formal entities designed to see to it that power is generated at, and dispatched from, the most efficient plants first. There are many complicated technical problems associated with dispatching a large set of dispersed generating plants economically and reliably.

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Whether the price system can efficiently decentralize the short-run coordination of generating plants remains an open question. Further information about coordination within existing power pools could help to apply some real world observations on what is still a theoretical possibility.

But deregulators always face the “what if” and “who will coordinate things” questions. Their answer: it is assumed that the market will solve these problems and, further, that if it does not do so efficiently, we can always introduce regulation to meet such specific problems as emerge. Whether this would be the case in

the electric utility industry I do not know. Nor, it is fair to say, does either side of the debate. Unfortunately, we all have beliefs, but little knowledge. My own view is that *if* we can satisfy ourselves that entry into generation would be on a sufficient scale to permit effective competition, and *if* we can have some assurance of sensible regulation at the transmission and distribution levels, we market economists should follow our beliefs and assume that the coordination problem will solve itself.

Would Effective Competition Emerge?

The premise of all deregulatory proposals is that effective competition is possible and will evolve as the consumer's protector when regulation is ended. We can never, of course, be absolutely certain that a proposed change will produce the desired result: to put such a burden of proof on the proponents of change would only ensure perpetuation of the status quo. But neither should the reformers blindly assume that a particular effect will follow: we must weigh, as best we can, the odds of achieving the stated objective.

What are the odds that deregulation will result in truly competitive markets for electric power? Members of the financial community—and this includes people who claim they can raise capital for independently owned generating stations—uniformly say that financing of those stations would be possible only with take-or-pay contracts from utilities providing full payout of the facility over its estimated life. (Why such a contract would be more “bankable” than the utility's bonds is difficult to understand, unless it contained dollar-for-dollar cost escalators.) If such contracts are a sine qua non of financing, precisely what kind of competition are we hoping for? Several generating companies would be selling to a monopsonist—the transmission company. The latter would resell the power at cost-plus regulated rates to tied distributors, themselves regulated monopolists. Much of the electricity passing through this generator-to-transmitter-to-distributor-to-customer chain would originate under long-term, life-of-facility contracts. Whether this would lead to improvements in efficiency, as compared with the present system, is not at all clear.

Would the Regulators Let Competition Work?

In all scenarios for electric utility deregulation, it is assumed that distribution remains a natural monopoly, in need of continued local regulation. The regulators would have two choices. One would be to permit distributors to pass through the costs of purchased power, on the theory that (1) competition at the generation level was effective enough to protect distributors and their customers from extortion and (2) distributors purchased efficiently. But this would leave distributors with what regulators would almost certainly view as inadequate incentives to purchase at minimum cost. So regulators would face an irresistible temptation to opt for their second choice—to extend their reach and review the prudence and propriety of the distributors' purchases. What would they find? That competing independent generators had an appallingly high target rate of return on equity, that their debt/equity ratios seemed far too low, and that perhaps the distributor could have somehow acquired power—or built generating capacity (!)—more cheaply. Is it reasonable to assume that the same regulators who have brought the electric utility industry to its present condition of penury would simply allow the distributors to pass along such higher purchase costs, especially if those higher costs included what would seem like very substantial profits to the generating companies?

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My own suspicion is that regulators would reach back into the supply chain and attempt to regulate prices paid by distributors.

Conclusion

So, where are we? Clearly, the case for deregulation has not yet been made, even in the view of an economist who favors market-determined solutions over the decisions of the wis-

est regulators. But, equally clearly, regulation is not working. What should be done?

First, although we now lack a detailed, workable prescription for a deregulation scheme that has a high probability of providing both effective competition and efficient coordination of operating and investment decisions, it may, indeed, be possible to write one. The stakes involved make it well worth a try.

Second, it is entirely possible that we already have at hand a less radical solution to some of the problems created by regulation—in particular, the purported lack of incentive to efficiency. If we were to allow free entry into the field of electric power generation, with utilities required to purchase from anyone who can sell power cheaper than the utility itself can produce it, we would get both the most efficient technologies and plants, and avoid such excessive construction as may be made possible only by the integrated structure of the industry. Moreover, if industrial and other large customers were free to shop for power and had assured access to a sufficiently large number of suppliers and to transmission facilities for any bargains they found, we could deregulate sales to those customers. Here, FERC could play an important role. It can test its authority to improve the efficiency of resource allocation by deregulating sales to wholesale buyers in situations where competition for such sales is likely to be effective. Or, it can continue to regulate, but insist on marginal-cost pricing.

Third, while we are thinking about and testing new ideas for some deregulation, we must continue efforts to make the existing system work better, to persuade regulators that the public interest is not served by keeping rates so low that an economic supply of power is threatened.

The issue of electric utility deregulation is clearly not so simple as that of airline deregulation. In the airline industry, potential entrants were queued up, assets were easily transferable from market to market, and entry lead times were short. Not so in the electric power business, where existing firms are trying to diversify out of the business, where assets don't have wings, and where entry times are as long as twelve years. But the status quo is so unacceptable to all parties at interest—regulators, consumers, and the utilities—that deregulation must be fully explored. ■

Biting the Hand that Cures Them

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tions can do that. At a recent international conference in London on economic development, the Pakistani director of the Third World Institute, Altaf Gauhar, compared the need for WHO to regulate international drug products with an adult's need to force a child to bathe.

The institutional infancy to which Gauhar refers can hardly consist of an inability to enforce drug restrictions. In areas where compliance cannot be ensured by drug companies' voluntary observance of the law (which there is no reason to believe is any less forthcoming in the undeveloped countries), the developed countries themselves are not notably proficient in enforcement. There may be more illegal drugs on the streets of Chicago than Istanbul. It is difficult, of course, for many third world countries to do their own testing to identify harmful drugs, although some—Singapore, for example—do have quite sophisticated drug approval agencies. But any underdeveloped country can adopt the drug approval decisions of some other nation—say, of Great Britain, France, or Switzerland—just as easily as it could adopt some newly created international approval mechanism. In fact, some have already done so. Even more to the point, there can hardly be any justification for an international scheme that will tell Germany and Italy what they must do, in addition to doing for Uganda what it cannot do for itself.

WHEN ALL IS SAID AND DONE, however, the fundamental point is that drug approval is neither (1) an exact medical science, nor (2) directed to the same medical conditions and necessities in all countries of the world, nor even (3) free from value judgments that are political and have nothing to do with science at all. With thousands of products to consider, it is no surprise at all to find the experts differing sharply, within the United States, among the various developed countries, and between developing and developed states. The drug industry is already one of the most strictly regulated industries in the world; international regulation would add another, and quite damaging, layer. Indeed, if there is any area that does not recommend itself to uniform international treatment, this one is it. ■