ELECTRIC UTILITY REGUI NATIONAI POLICY

Peter Navarro

BEFORE THE 1973 Arab oil embargo, electric utility regulation was primarily a distributional affair. Rate-setting disputes reflected a basic conflict over relative income shares between utility shareholders and electrical consumers, with the state public utility commissions (PUCs) acting as arbiters—sometimes impartial, sometimes not. While the quality and distributional results of PUC regulation were notoriously uneven from state to state, there was little spillover into national policy goals. Hence, the federal government found little reason to intrude in a regulatory area traditionally regarded as state turf.

Today, in an era of insecure and expensive energy supplies, unsettled capital markets, and soaring inflation, the stakes in "fair and reasonable" PUC regulation have taken on a new dimension. Such regulation is at the center of this nation's glacial response to reducing the oil import dependence that is draining our real incomes and endangering national security. It is also a ticking time bomb that threatens to explode into rolling brown-outs and power outages in the coming decades. Thus the issue of state PUC regulation—what needs to be done, and how?—is one of increasing importance. In an effort to shed light on that issue, this article examines PUC regulatory failure and its effects on the financial health of the electric utility industry and on the nation's ability to achieve its energy goals.

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Ranking the Regulators

The critical link between state PUC regulation and national energy policy is the impact of "regulatory climate" on the cost and availability of capital to the electric utility industry.

On Wall Street, the concept of regulatory climate has been formalized by a number of investment firms. While there are minor differences among the twenty or so firms that rank the PUCs, each employs a quite similar method to identify the "very favorable," the "favorable," and the "unfavorable" commissions from the viewpoint of the investor. The rankings are based on six objective financial criteria; (1) the allowed rate of return on common stock, (2) the average "regulatory lag" (the time it takes for a PUC to process a rate case), (3) whether a historical or future test year is used, (4) whether construction work-in-progress is allowed in the rate base or, alternatively, whether an allowance for funds used during construction is computed, (5) whether the tax benefits from accelerated depreciation and investment tax credits are "normalized," so that they produce some benefit to the firm, or "flowed through" to the ratepayer, and (6) whether an automatic adjustment clause is in effect.

In general, the higher the rate of return a PUC allows on common stock, the higher a

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utility's profits. However, if the regulatory lag between the time a utility files for a rate increase and the time a PUC rules on that request is long, inflation may have time to erode those profits. In addition, if rates are based on a historical rather than a future test year, inflation is completely ignored. Because of regulatory lag and the more common practice of using a historical test year, very few utilities actually realize their allowed return in today's inflationary times. For example, in 1978, the average allowed return was 13.3 percent, but the average realized return was only 11.5 percent. For a utility with $1 billion rate base, that shortfall amounts to $18 million annually.

Besides the level of earnings, the "quality of earnings" and the related cash flow are important to investors. The quality of earnings is primarily determined by criterion four above. If construction work-in-progress (CWIP) is allowed in the rate base, the firm can earn an immediate return on the project. If, however, the accounting procedure is to compute an allowance for funds used during construction (AFUDC), cash payments on construction are deferred until the plant is operational. While this distinction is somewhat complex, the point is that whereas CWIP provides immediate cash flow, AFUDC is a noncash item that shows up on the balance sheet as "paper earnings"—to be realized in the future and therefore less desirable to investors.

Similarly, if tax benefits from accelerated depreciation and investment credits are normalized, the utility's cash flow is larger during the early years of an investment. In contrast, if the tax benefits are flowed through, they do not benefit investors but rather are passed on to consumers in the form of lower rates. Lastly, the use of automatic adjustment clauses (for example, a fuel adjustment clause) allows the utility to pass on cost increases without the delay and expense of a rate hearing—a form of inflation insurance for the utility.

In a quasi-technical manner—no explicit weighting scheme is used by any of the Wall Street rankers—the six objective criteria are combined into a ranking for each PUC. A composite of the 1978 rankings for state PUCs by five investment firms—Goldman Sachs, Salomon Brothers, Valueline, Merrill Lynch, and Duff and Phelps—is presented in the accompanying table.

The policy mix of a PUC such as Indiana's, which has attained a "very favorable" investors' ranking, would typically include most or all of the following: a relatively higher allowed rate of return, CWIP in the rate base, minimal regulatory lag, normalized accounting, use of a future test year, and an automatic fuel adjustment clause. In contrast, the policy mix of a PUC that has attained an "unfavorable" investors' ranking, such as Alabama's, would typically include lower allowed rates of return, AFUDC treatment of construction expenditures, lengthy regulatory lag, flow through accounting, the use of a historical test year, and a partial automatic fuel adjustment clause that

REGULATORY CLIMATE RANKINGS OF STATE PUBLIC UTILITY COMMISSIONS, 1978

Very Favorable	Favorable	Unfavorable
Arizona	Arkansas	Alabama
Florida	Colorado	California
Hawaii	District of Columbia	Connecticut
Indiana	Idaho	Georgia
New Mexico	Illinois	Iowa
North Carolina	Kansas	Louisiana
Texas	Maryland	Maine
Utah	Michigan	Massachusetts
Wisconsin	Minnesota	Mississippi
	Nevada	Missouri
	New Hampshire	Montana
	New Jersey	North Dakota
	New York	Rhode Island
	Ohio	South Dakota
	Oklahoma	West Virginia
	Oregon	
	Pennsylvania	
	South Carolina	
	Vermont	
	Virginia	
	Washington	
	Wyoming	

only recouped a fraction of the increase in fuel bills.

Regulatory Climate and the Cost of Capital

Recent academic studies have confirmed what the financial community has long known: the more unfavorable the regulatory climate, the higher a utility's cost of capital. The link between regulatory climate and the cost of debt capital is the most direct. Electric utilities typically borrow debt capital in the long-term bond market, and the relative cost of that capital is determined by their bond ratings.

The highest bond ratings are Moody's Aaa and Standard & Poor's AAA, indicating an almost zero probability of default; lower ratings such as Moody's Baa and Standard & Poor's BBB indicate that the utility is developing poor risk and speculative characteristics which make repayment of the debt less certain. In December 1980, the interest rate was 13-3/4 percent on a Aaa bond and 16 on a Baa bond, a difference of over two percentage points. Thus, for the same power plant, a Baa-rated utility like Boston Edison issuing $500 million in bonds to finance a new coal plant would have had to pay interest charges that were over $10 million a year higher than an Aaa-rated utility like Louisville Gas and Electric—charges that would be passed on to the consumer in the form of higher rates over the thirty-year life of the bonds!

Low bond ratings not only imply a higher cost of capital but also reduce the availability of capital. For example, the "prudent man" rule of the Securities and Exchange Commission prohibits many large institutional investors—commercial banks, local pension funds, life insurance companies—from investing in bonds rated below Baa or BBB. That severely shrinks the pool of potential utility investors, and the resultant drop in demand depresses bond prices and forces up interest rates.

In an econometric study, George Pinches, Clay Singleton, and Ali Jahankhani (1978) found that an unfavorable regulatory climate was a major factor explaining low bond ratings. Similarly, Stephen Archer and George Atkinson (1979) examined the link between bond prices and regulatory climate and concluded that the more unfavorable or "rate suppressive a state commission is, the higher the capital costs are to electric utilities operating in that state." Casual empiricism confirms this statistical finding. At present, 90 percent of the utilities with Standard & Poor's ratings of A to BBB are in jurisdictions with an "unfavorable" or "favorable" regulatory climate, while only 13 percent of the utilities with higher quality AAA or AA ratings are regulated by PUCs ranked "unfavorable."

Regulatory climate also appears to influence the cost and availability of equity capital, which is raised through the sale of new common stock. One measure of the cost of equity capital is the utility's M/B ratio, the ratio of the market price of a utility's common stock to its book value (where book value equals the total equity shown on the company's books divided by total shares of common stock outstanding). In general, the lower the M/B ratio, the higher the cost of equity capital.

To illustrate this relationship and the effect of regulatory climate on M/B ratios, Robert Trout (1979) used a composite of the regulatory rankings from four investment and re-

search groups in a regression model and found that the ratio falls as regulatory climate becomes less favorable. According to Trout, the change from a very favorable to an unfavorable PUC ranking causes the cost of equity capital to rise by almost two percentage points, roughly equal to the effect of regulatory climate on the cost of debt capital. Again, casual empiricism supports these findings. For example, the average M/B ratio for electric utilities in PUC jurisdictions ranked very favorable was .95 in 1978, thirteen percentage points above the average ratio for utilities in unfavorable jurisdictions.

In addition to raising its cost, a low M/B ratio can also reduce the availability of equity capital. In particular, when the ratio falls below one, any new issue of common stock implies a devaluing or "dilution" of the shares of existing shareholders. Dilution occurs because the returns on the investment undertaken with the proceeds from the sale of new stock are not sufficient to maintain the utility's earnings per share at the level before issuance of the new stock. It is therefore not surprising that, when M/B ratios are low, one major source of opposition to raising equity capital is management, for it has the responsibility of protecting the interests of existing shareholders. In his 1979 annual report to shareholders, Northeast Utility's Chairman and Chief Executive Officer Lelan F. Sillin described how a low M/B ratio had affected his company's expansion plans.

> Since late 1974, Northeast has had to sell 16 million shares through public offerings at an average of 34 percent below book value. As a result, we have drastically curtailed our construction program and have not publicly offered any common shares since 1976.

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In summary, recent studies have established a strong link between the worsening financial condition of many electric utilities and the regulatory climate in the jurisdictions in which they operate. The cost of both debt and equity capital appears to rise and its availability to fall as regulatory climate grows more unfavorable.

The Effects of PUC Regulation on National Energy Policy and Ratepayers

What are the implications of such consequences? First, for national energy policy, efforts to reduce foreign petroleum dependence and encourage the use of abundant domestic energy resources are seriously impaired. Second, while the policies that create an unfavorable climate may benefit the ratepayer in the short run, they will force rates to higher levels in the long run and cause service to be less reliable.

National Energy Policy. The electric utility industry currently consumes the energy equivalent of 3 million barrels per day of petroleum.[1] That represents roughly one-third of total U.S. petroleum imports. According to analyses prepared within and for the Department of Energy (DOE), there are two major ways to cut that consumption by over half in this decade.

First, the reconversion of 107 previously coal-capable oil-burning power plants to coal would displace 400,000 barrels of oil a day at a cost of $6 billion. Second, the early retirement of existing petroleum power plants and their replacement by new coal, nuclear, hydro, and other types of plants would further reduce petroleum use by 600,000 barrels a day at a cost of $33 billion. (While retiring usable plants may seem extravagant, DOE analyses indicate that at a world oil price of $30 a barrel over half of present oil- and gas-fired base-load capacity—as distinguished from intermediate and peak-load capacity—is economically obsolete. That is, the combined capital and fuel costs of a new coal or nuclear plant are less than the cost of operating an existing petroleum-fired plant.) Thus, the total capital costs of

[1] Some of this consumption is natural gas rather than oil, but the two can be considered import substitutes because natural gas that is displaced from utility boilers can serve to displace oil from other sectors, thus indirectly reducing imports.

displacing 1 million barrels of foreign oil a day adds roughly $39 billion to the $533 billion the utility sector must spend just to meet increased electricity demand over the next decade. Should an increase in the cost of capital and a reduction in its availability prevent a portion of this massive sum from being raised, the supplemental investments in petroleum displacement would no doubt be cut back first, despite their favorable economics. Scheduled coal conversions would probably be cancelled and new plant construction would be deferred rather than accelerated.

Because of its weak financial position, the industry seems to be charting precisely such a course. Despite intense federal pressure, less than one-third of feasible capacity has been converted to coal since the 1973 oil embargo. To a certain extent, this dismal track record is traceable to federal and state regulations that have reduced conversion incentives. The primary villain has been federal price controls on oil and natural gas, which substantially reduced coal's competitiveness through most of the 1970s. Today, however, with phased price decontrol under way and oil costing over $30 a barrel and with many PUCs restructuring their fuel adjustment clauses to allow only partial recovery of price hikes, the economics of coal conversion are unquestionably favorable. Nonetheless, the financially strapped utilities remain reluctant to convert and the reason they most commonly cite is that they cannot afford to allocate scarce capital to investment "not essential to keeping the lights on."

The record on the displacement of foreign oil through accelerated construction of new plants is equally dismal. According to the National Electric Reliability Council, over half of the coal and nuclear plant capacity scheduled for 1979 through 1988 was delayed in 1979. Depending on numerous assumptions related to future demand growth, these delays could translate into an increase of up to 2.2 billion barrels of petroleum consumed during that period.

Effects on Ratepayers. National energy policy is not, however, the only victim of an unfavorable regulatory climate. Indeed, while PUC policies that seem to favor consumers do indeed reduce rates in the short run, the longer-run effects are equally clear.

First, as noted, electric utilities face a higher cost of capital in PUC jurisdictions where the regulatory climate is unfavorable. Thus, new construction undertaken in these jurisdictions is more expensive than it otherwise would be and these higher capital costs are reflected in higher long-run rates. For example, if a typical class A utility (say, Commonwealth Edison) is financing $1 billion in new plant capacity, a two percentage point increase in its cost of capital will amount to a rate increase of $20 million a year for the next thirty years—well into the next century.

Second, the deferral of new power-plant construction and coal-conversion investment also has unfavorable consumer effects. For one thing, it means that existing petroleum plants will continue to be operated at high capacity levels. And, since it is now generally more expensive to operate petroleum plants than to build new coal plants or convert, this means in turn that the consumer's electricity rates are not being minimized. In addition, construction deferrals raise the specter of power outages and rolling brown-outs. Consumers will either suffer a reduction in the electrical system's reliability or, more likely, if power shortages emerge there will be a rush to construct less capital-intensive but ultimately more expensive oil-fired combustion turbines, which can be built in under two years. (This would, of course, extend U.S. dependence on foreign oil further into the future.) Lastly, the failure to complete coal and nuclear plants now under construction without delay exposes ratepayers (as well as the nation) to an unnecessary risk: if another Arab oil embargo occurs, if war in the Middle East (for example, the Iranian-Iraqui conflict) closes the Strait of Hormuz, or if some natural or man-made disaster sharply reduces the importation of petroleum into the United States, the utilities will not have the backup capacity to use other fuels. The result will be power outages, reduced industrial activity, unemployment, and hardship.

What Determines the Regulatory Climate?

If both ratepayers and national energy policy goals would benefit from a better regulatory climate, the obvious next question is how to achieve that result. To find the answer, I un-

dertook an econometric investigation for the Department of Energy in which I attempted to identify and measure the major factors accounting for the marked differences in regulatory climate among the states.[2] On the basis of a review of the literature on regulatory agencies and extensive interviews with PUC staff and commissioners, utility executives, state legislators, and federal energy officials, I identified three groups of variables—political, institutional, and ideological—that could be tested as determinants of regulatory climate.

The *political* variables selected measure the degree of political pressure to which a PUC is exposed. The underlying hypothesis, rooted in the capture theories of regulation of George Stigler (1971) and Sam Peltzman (1976), is that the more exposed a PUC is to political pressure, the less likely it is to adopt the judicial role of arbitrating between consumer and utility interests and, in today's "era of the consumer," the more likely it is to adopt the prosecutorial role of championing ratepayer interests. Political pressure was assumed to increase (and the regulatory climate to deteriorate) when commissioners are elected rather than appointed, when commissioners' terms are relatively short, when PUCs are funded by tax dollars from general revenue funds rather than through assessments on utilities, and as the percentage of oil used by a utility to generate power increases. (In states with heavy oil use and a fuel adjustment clause, ratepayers have been subjected to rapid and highly visible rate increases in the form of "fuel surcharges." This was assumed to heighten both ratepayer response and political pressure.)

The *institutional* variables measure the degree of administrative and professional competence that a PUC is likely to exhibit. The underlying hypothesis, grounded in the behavioral models of regulatory agencies of William Niskanen (1971), Paul Joskow (1974), and Roger Noll (1975), is that a well-staffed, well-trained, and well-equipped PUC is more likely to process rate-of-return requests in a timely and equitable fashion than an understaffed, poorly organized, or poorly equipped PUC. Regulatory climate was expected to improve with higher salaries, higher expenditure levels (up to a point), and a statute requiring that commissioners be professionally competent to perform their jobs. Salary level reflects the ability of a PUC to compete for qualified staff and commissioners, while expenditures are a proxy for the resources available for the prompt processing of rate cases.

The *ideological* variable measures the influence of liberal, "pro-consumer" ideology versus conservative "pro-business" ideology on the policies adopted by PUCs. The underlying hypothesis, rooted in the ideological models of policy formulation developed by Edward Mitchell (1977) and Joseph Kalt (1978), is that a "liberal" state is more likely than a conservative state to use a PUC to effect income redistribution for the benefit of traditionally favored groups such as consumers. It was assumed that a Democratic party affiliation indicates a more liberal ideology and that the regulatory climate would worsen as the percentage of Democratic commissioners on a PUC increased.

Using the PUC rankings in the table as the dependent variable, a procedure similar to regression analysis (a multinomial logit statistical procedure) was used to test the impact of these political, institutional, and ideological variables on regulatory climate. The results were overwhelmingly conclusive. PUCs with directly elected commissions were found to be the most likely to have an unfavorable regulatory climate, holding all other variables constant. Specifically, for an "otherwise average PUC" (based on the sample mean), a shift from an appointed to an elected commission increased the probability of an unfavorable rank by forty-eight points (from .14 to .62). Similarly, a shift to a salary level 15 percent below the mean caused the probability of an unfavorable rank to jump twenty-five points. PUCs with be-

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[2] For details, see Discussion Paper E-80-05, "Public Utility Commission Regulation: Performance, Determinants, and Energy Policy Impacts," Harvard University Energy and Environmental Policy Center, October 1980.

low average expenditure levels, a heavy reliance on general revenue funding, short commissioner terms, and a high percentage of Democratic commissioners were also much more likely to generate an unfavorable regulatory climate than PUCs with the opposite characteristics. For example, a shift from assessment funding to general revenue funding for the "otherwise average PUC" increased the probability of an unfavorable rank by forty points (from .08 to .48), while a shift from a PUC having no Democrats to one having all Democrats increased the probability of an unfavorable rank seven points. Finally, a requirement that commissioners be professionally qualified and a reduction in the percentage of oil used by utilities in states having automatic fuel adjustment clauses appear to improve regulatory climate, although the effects appear weaker.

Policy Responses to the PUC Problem

It is perhaps easier to determine the effects of PUC regulation on national energy policy and ratepayers than to decide what the policy response ought to be. Federal intervention risks usurping states' rights. On the other hand, a failure to act means a missed opportunity to displace up to 2.6 billion barrels of oil over the next decade. Recognition of these problems suggests a two-phase solution: short-run federal intervention combined with long-run regulatory reform undertaken by the states or, failing that, imposed from Washington.

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Short-Run Federal Intervention. Short-run displacement of petroleum imports will probably require some type of federal aid since regulatory reform is unlikely to come about quickly enough to solve the utilities' financial problems. One form of assistance might be a government grant program for petroleum-displacing investment. For example, the Carter administration's proposed "utility oil back-out" bill, whose goal was a 1 million barrel a day reduction in petroleum consumption by 1990, would have provided roughly $10 billion in funds for coal conversion and petroleum-displacing investments in coal, solar, nuclear, and other nonpetroleum technologies. That bill, which was defeated in the last Congress, was opposed mainly on the ground that it represented a Chrysler-style bail out of the utility industry and its regulators. To members of Congress like Richard C. Shelby (Democrat, Alabama), large-scale federal aid was a perverse reward for utility mismanagement and the wrong solution to the more fundamental problem of PUC misregulation. Shelby's point is well taken. In my view, however, there is great risk in not seizing the opportunity to displace 1 million barrels of petroleum a day by 1990.

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In the longer run, regulatory reform is clearly preferable to federal aid. The difficult question is whether the federal government should rely on the states for reform—at the risk it will never be done—or impose it directly—at the risk of violating states' rights.

Federal Regulatory Reform. The three commonly mentioned federal remedies for the PUC problem are nationalization of the regulatory apparatus, regionalization of the PUCs, or the imposition of federal regulatory standards.

Nationalizing regulation, whereby the federal government takes over the responsibility of regulating the utilities from the PUCs, might be more useful as a threat to force state regulatory reform than a workable solution. The most likely agency to assume state regulatory responsibilities would be the Federal Energy Regulatory Administration (FERC), which regulates the wholesale sales of electric power. But FERC has neither the staff nor the resources to handle such massive new responsibilities. Besides, having only an average regulatory climate ranking itself, it is perhaps not the model agency for such a challenge. Under its steward-

ship, regulatory performance might improve in states like Mississippi, Missouri, and Georgia, but deteriorate in Texas, Indiana, and North Carolina.

Regionalizing electric utility regulation might be a more useful approach. At present, state PUCs rarely communicate or coordinate with one another. Most utilities, however, provide electricity on an interstate basis and many are organized into sophisticated regional power pools that help minimize the costs of electricity through the sharing of power. Perhaps the most likely method of bringing regionalization about would be for Congress either to mandate that states organize regional regulatory commissions or, alternatively, to create them itself (with state representation being achieved by allowing the states to appoint their own commissioners). This would preserve a degree of state control over state-based utilities, while creating a structure that more closely parallels that of the national electrical generation and delivery system. Regional coordination also would provide a system better equipped to cope with the kinds of energy shortages that stemmed from the oil embargo of 1973 and the 109-day coal strike of 1978.

A *federal standards* approach would involve promulgating new regulatory requirements that the PUCs must adopt. Such standards should include those policies that will improve regulatory climate: allowing CWIP in the rate base, normalizing tax benefits, using a future test year to calculate rates, and limiting regulatory lag (for example, by allowing, as Massachusetts has done, a maximum of six months for consideration of rate hikes). The precedent for a federal guidelines approach already exists in the Public Utility Reform and Policy Act of 1978, which set up five rate-making and six regulatory standards for state PUCs.

State Regulatory Reform. If states want to avoid federal intervention, then regulatory reform must come from within. For the PUCs, that means (once again) shifting to the innovative policies that produce a healthy regulatory climate. This course is not without political hazards, however, for any diminution in existing "consumerist" policies will be hard fought.

Thus state legislative action will also be needed—to depoliticize the PUC environment as well as to improve the quality of PUC regulation. Most of the required reforms are obvious. To reduce politicization, PUC commissioners should be appointed rather than elected, their terms should be long enough to insulate them from political pressure, and the PUCs themselves should be financed primarily through assessments on the utilities rather than from general tax revenues. To improve the quality of regulation, salaries should be competitive with those for similar federal and industry positions, professional competence should be required of commissioners, and the PUCs should command budgets adequate to the responsibilities they face.

The policy response to the finding that a state's regulatory climate worsens with increased oil use by utilities is less clear. Nevertheless, because there are economic and national security costs associated with petroleum import dependence and because poor regulatory climate contributes to that dependence, federal aid to assist the petroleum-dependent states in reducing their consumption seems justified.

Finally, the glib response to the finding that regulatory climate worsens as the percentage of Democrats on a PUC increases is "throw the rascals out." The more serious message, however—and one that was perhaps transmitted in the last election—is that it is time to rethink some basic liberal doctrines. In the field of electric utility regulation, enlightened policy requires not only bucking the tide of public opinion but also turning it around. For, in the long run, "pro-consumer" policies raise rates, reduce the electrical system's reliability, and worsen our oil import dependence. Regulatory reform would allow the nation's utilities to earn a fair and reasonable return and everyone would be better off—everyone, that is, except OPEC. ■

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