



CONGRESSIONAL BUDGET OFFICE
U.S. CONGRESS
WASHINGTON, D.C. 20515

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Erratum

Financial Condition of the U.S. Electric Utility Industry March 1986

On page 57, Chapter IV, the third sentence of the concluding paragraph should read:

While current practices probably will not result in widespread electricity shortages, the nation's electricity supply could become less cost-effective if regulatory incentives continue to bias utilities away from capital investments regardless of their technical or economic merit.

**FINANCIAL CONDITION OF THE
U.S. ELECTRIC UTILITY INDUSTRY**

**The Congress of the United States
Congressional Budget Office**



NOTES

Unless otherwise noted, all dollars are expressed as 1984 dollars.

Because of the normal delays in reporting and obtaining financial data, the financial conditions of utilities described in this report refer to events through June 1985 and, unless otherwise noted, do not take into account the influence of subsequent events.

PREFACE

For many investor-owned utility companies, the past five years have been marked by substantial financial woes. Liquidity problems arose, in part, from overanticipated growth in electricity demand, construction costs of additional power capacity, and a set of economic and regulatory conditions that substantially raised the cost of obtaining capital for some firms. Today, the overall financial condition of the industry is much improved, although a number of firms still remain under financial stress as they attempt to recover the large costs of recently completed or cancelled power plants in the wake of modest demand growth.

Two concerns have arisen because of the financial problems recently experienced by the industry. First, is electricity supply threatened by the temporary liquidity problems of some companies? Second, will the regulatory environment encourage cost-effective investments for meeting future demand or merely promote expensive, expedient solutions for meeting potential supply shortfalls? This study, prepared at the request of the Senate Committee on Energy and Natural Resources, explores these issues and focuses on the problems now confronting the industry and those affecting future electricity supplies. In addition, the study considers what actions the federal government might take to resolve current financial difficulties and potential long-term concerns, as well as examining the role now being played by state regulatory commissions, state governments, utility investors, and electricity consumers. In keeping with the mandate of the Congressional Budget Office (CBO) to provide objective analysis, the report makes no recommendations.

Dan Carol and Thomas Lutton of CBO's Natural Resources and Commerce Division prepared the report under the supervision of David L. Bodde, Everett M. Ehrlich, and John Thomasian. Susan Punnett and Robert Horney provided valuable computational and research assistance. The authors would like to thank members of the Edison Electric Institute and Environmental Action for their generous assistance. The authors also appreciate the comments and suggestions of Richard Bauer, Peter Blair, Paul Joskow, and David Lantz. Patricia H. Johnston edited the report. Patricia Joy typed the many drafts and prepared the report for publication.

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March 1986

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SUMMARY

Two concerns dominate public policy discussions of the electric utility industry. The first is the disparate financial condition of the nation's electric utilities and whether financially weak firms present a threat to the nation's electricity supply. Most of the industry now has recovered from its acute financial distress of the 1970s and early 1980s, but the circumstances of individual utilities differ markedly. A number of companies still suffer serious financial stress, and a few may be candidates for bankruptcy. While the economic consequences of this financial weakness are speculative, the possibility of electricity supply disruptions is unlikely.

The second concern is the current regulatory system governing electric utilities and how that system may affect electricity supply in the long term. Again, the central issue is not whether supplies are threatened, but rather how to ensure that regulations promote the most cost-effective mix of generation and transmission capacity. Inappropriate regulations will probably not prevent the construction of new power sources, but they could lead to generation and distribution systems that are not well-matched to their task.

CURRENT FINANCIAL CONDITIONS

Most investor-owned utilities are in better financial condition today than at any other time in recent years. Industry-wide liquidity, measured by the ratio of cash flow to dividend payments, stood at 2.7 in 1984, well above the 2.0 ratio usually considered a prudent minimum. The financial recovery of the industry has been reflected in its common stock: by the end of May 1985, the market-to-book ratio (the market value of common stock divided by the depreciated book value of the utility's assets) for the industry as a whole was 108 percent, a marked contrast to the 73 percent of 1980.

The current health of the industry was restored by a reversal of many factors that led utilities into decline in the 1970s. The economic recovery has contributed to a revival in the demand for electricity. Many utilities have finished the extensive and expensive construction programs undertaken during the 1970s. Other utilities have cancelled plants that had become too costly or that would have led to excessive reserve margins; and fuel prices and interest rates have declined.

Despite these overall improved circumstances, the financial condition of several companies remains poor. During 1984, 15 of the 100 largest investor-owned utilities had cash-flow coverage of 1.5 or less. The common equity of eight utilities was valued by the market at less than 75 percent of book value. Excess electricity capacity in some areas may exacerbate these problems for some firms. In general, financially stressed companies are still trying to finish large construction programs, which, when completed, will yield reserve margins well above those needed for assured supply. At the same time, demand growth over the next decade is forecast to be well below past industry averages. Thus, growth in demand will not quickly absorb the excess capacity.

The recent construction programs have also been quite expensive, with capacity additions costing 6 to 8 times more than originally projected. Some of the excess costs can be traced to unanticipated demand changes, some to overambitious construction programs, some to changes in nuclear program licensing, and some to the high cost of obtaining capital during the late 1970s and early 1980s. Most of this cost has not been recovered from ratepayers, and its treatment is the central near-term issue for electric utilities and their regulators.

THE NEAR-TERM ISSUE: ALLOCATING THE COSTS OF RECENT CONSTRUCTION

In nearly all circumstances, state regulatory commissions allocate the risks and rewards of utility investment among ratepayers and stockholders. These regulators judge whether the construction expenditures were prudently incurred by the utility, and whether the completed plant is needed to meet current demand. For either reason, the commissions can decide to exclude from the rate base some or all of the cost of a completed plant. Because of the magnitude of recent construction costs, such regulatory decisions are difficult for commissions to make and for financially stressed utilities to bear.

If regulators allowed full and immediate recovery of all construction costs incurred by the most distressed utilities, the first-year electricity price increases in their service areas could range from 15 percent to 70 percent. Such increases would lower the demand for electricity at a time of excess supply and could depress economic activity in the affected regions. Conversely, state regulators could withhold recovery of a large portion of current construction costs on the basis that they were imprudent, incurred for unneeded facilities, or both. If utilities were denied full or

partial cost recovery of new plants, distressed firms might lack the financial flexibility to carry the unrecovered investment, and several have stated such action would force bankruptcy. But even in the improbable event of bankruptcy, it is unlikely that electricity service would be interrupted since supplies in most areas are adequate and bankrupt firms can still be required to operate.

In short, financially troubled utilities and their regulators face a two-fold problem. The rapid cost recovery that would relieve a utility's financial stress would also increase electricity prices sharply, thereby depressing the demand for electricity in the service area and, perhaps, leading to further rate increases as fixed costs were spread over a smaller sales base. But postponing recovery of a large portion of burdensome construction costs (or excluding them entirely) could leave a utility in financial peril while sending incorrect signals to the marketplace about the cost of supplying power.

The available evidence suggests that, in most cases, construction costs will be divided between ratepayers and their utilities in such a way as to avoid bankruptcy but to prolong the weakened financial conditions of distressed utilities. The actual supply of electricity may not be threatened by such an outcome, but the nature of future utility investment may be.

PROMOTING LONG-TERM EFFICIENT INVESTMENTS

The long-term concern about the utility industry sometimes focuses on potential shortfalls in electricity supply. It is misleading, however, to infer future shortages simply by comparing capacity now in place with projected future demand under various growth scenarios. To be sure, any growth in demand will eventually require additional generating capacity. But state regulators most probably will never foster a climate in which utilities cannot either build their own generating capacity or purchase electricity from a neighboring system. The real issue is whether current ratemaking practices will encourage the most economic investment decisions to provide cost-effective and efficient electricity supplies in the long run.

Demand Forecasts and Investment Planning

For the nation as a whole, reserve margins are now about 34 percent and should remain at this level for the next few years, as plants now under construction are brought into service. But utilities must plan their investments around demand forecasts that are projected 10 or more years into the

future. These forecasts suggest nationwide demand growth ranging from 1 percent to 4 percent, and individual utilities may experience even greater variation. Power purchased from neighboring systems or cogenerators^{1/} together with load management, can provide some flexibility by postponing the need to build new generating capacity. But as these options provide diminishing returns, utility managers must choose between two possible courses of action: (1) to meet expected demand growth by beginning power plant construction well in advance of the anticipated need and chance overbuilding; or (2) to defer such additions until demand growth can be more clearly seen and risk shortfalls in baseload capacity.

Either choice could risk economic losses--from excess capacity in the first case, or from inefficient capacity in the second. A decision to build new capacity to meet projected demand requires a major commitment of capital beginning many years before the plant enters service. If the demand forecast was accurate, a large, efficient plant could provide the electricity at a lower cost than any other alternative. But if actual demand was less than anticipated, costs of the underused investment would create economic losses. For example, the carrying charges for a \$1 billion investment would be \$100 million per year at a 10 percent interest rate.

On the other hand, a decision to postpone construction could risk having to meet higher than expected demand with units not well-suited for baseload service. These units are less capital intensive than baseload plants and can be brought on line more quickly, thus reducing the financial exposure of the utility. But in providing baseload service, their advantages are offset by significantly higher operating and fuel costs.

Estimates suggest that the potential nationwide costs of building excess capacity in the face of low demand are in the \$40 billion to \$50 billion range, while the costs of meeting unanticipated high electricity demand with inefficient generating units are \$30 billion to \$40 billion (in discounted 1984 dollars). Falling prices for oil and, hence, all fossil fuels could significantly reduce the penalties of inefficiency. Further, new generating technologies may eventually reduce capital as well as fuel costs by allowing utilities to meet smaller increments of load with smaller, but highly effi-

1. Cogeneration refers to the sale of excess power generated by a privately or commercially owned company to a regulated utility. For example, a business that produces electricity for plant operations (such as a pulp and paper mill) could act as a cogenerator, and sell its excess power to the utility in its service area. This excess power would then enter the utility's "grid," becoming part of its total electricity supply.

cient, modular plants. The widespread deployment of such technologies before the year 2000 is questionable, however, and the traditional generating options and their variations are likely to remain the principal choice of the utility industry in the 1990s.

Thus, investment decisions in the electric utility industry will continue to require a balancing of risks. The task of regulation is to allow utility managers to make such choices on their economic and technical merits without regulatory bias either for or against new construction. In many cases, current practice falls short of that ideal.

Regulation and Investment Decisions

Ratemaking can influence a utility's decision to invest by making the recovery of construction costs more uncertain than the recovery of fuel and other operating costs. Charges for construction work in progress are often held in a separate account rather than immediately entered into the rate base and reflected in the price of electricity. Only when the plant is placed in service is the accumulated amount, together with a return earned on it, entered into the rate base for recovery of the investment.

This practice can lead to several difficulties. Electricity consumers are first shielded from one price effect of their consumption--the need for new capacity--but later presented with sharp rate increases when the plant begins service. At the same time, the utility's ability to make additional investments is constrained by cash-flow limitations and the recognition by investors that business risk has been increased by the lower quality of earnings.

The most important issue, however, is the implicit treatment of risk. If the demand for electricity proves to be less than forecast when the plant was begun, the utility may be required to bear the carrying costs of the excess capacity until it becomes "used and useful." By contrast, commissions tend to allow the costs of less efficient generation to be more easily and quickly recovered through operating and fuel-adjustment clauses that provide swift rate relief. To the extent that this happens, utility decision-making is biased against incurring capital charges for construction of base-load plants and toward fuel and operating expenditures for construction of smaller but less efficient units. This could lead to a stock of generating equipment less suited to its task than would result if investments had been made under a more balanced regulatory treatment of risk.

THE FEDERAL ROLE

Traditionally, the major responsibilities for providing electricity have been left to utility companies and their state regulators. The available evidence suggests that, in most cases, these institutions are well-equipped to reconcile the current cash-flow needs of the financially stressed utilities with the price increases imposed on ratepayers. Sales of electricity among utility systems have increased markedly, thus helping to balance overcapacity in one area with the demand for economic generation in another. Incipient mergers may strengthen the financial resources of some utility systems. The federal tax code now helps to reduce the financial losses of utilities and their stockholders through provisions that allow such losses to be deducted from income. Further federal aid--through either direct assistance or new tax expenditures--would be inconsistent with the intent of both the Balanced Budget and Emergency Deficit Control Act of 1985 and the tax reform legislation now under consideration in the Congress. Thus, the case for special federal intervention to alleviate the short-term financial distress of some utilities is not compelling. For the long run, however, the Congress might wish to consider ways to improve competition and investment efficiency in the utility industry. Several options are discussed below.

Federal Guidelines

One approach would establish federal guidelines for state regulation. These could be similar in concept to the standards that the Public Utility Regulatory Policies Act of 1978 requires states to consider, but not adopt. The guidelines could suggest that, in order to foster cost-effective investment, the state commissions should provide more balanced treatment of the risks entailed in constructing excess capacity and less efficient generation.

For example, state regulatory commissions could consider better ways to share the responsibility for predicting demand. States could approve (or disapprove, as appropriate) plant costs at several stages in the construction process. This staged review would lower investment risk by guaranteeing eventual cost recovery of the approved portion of the project, even if these costs were not immediately included in the rate base. It would call attention to changes in demand growth, thereby enabling the utility either to abandon construction or to mothball the plant for future use if conditions warranted. The State of Indiana has taken this approach in a law enacted in April 1985. Alternatively, some portion of prudently incurred construction costs could be included in the rate base before the plant entered service.

Other guidelines might allow utilities a higher rate of return on cost-effective investments. When new capacity resulted in net "avoided costs," some portion of the savings could be reflected in utility earnings, thus giving these companies a direct financial stake in providing the least costly generation. This approach might better balance risk and reward in states seeking ways to give their utilities greater responsibility for the economic outcome of investment decisions. Finally, fuel-adjustment clauses could be amended to encourage fuel-switching investments when appropriate.

On the other hand, the federal government has had little influence on state ratemaking in the past, and it is uncertain how much real force voluntary guidelines could have. Further, even voluntary guidelines could be seen as a federal intrusion into the traditional prerogatives of state regulation, and thus encounter resistance regardless of their economic merit.

Fuel Use Restrictions

The Fuel Use Act, as amended, generally prohibits the construction of new generating stations fueled by oil or natural gas. The deregulation of oil and gas markets, together with the recent dramatic decline in the price of these fuels, suggests that these prohibitions be reconsidered. The removal of the gas restriction would yield environmental benefits, stimulate interfuel competition, and encourage utility investments based on the economics of electricity production. Removing the oil restriction as well would further increase interfuel competition, but would also render utilities and their customers more vulnerable to any future disruptions in oil supplies.

Additional Options

Several other options could also be considered. Removing the restrictions of the Public Utility Company Holding Company Act could strengthen the industry financially by facilitating mergers and allowing utility companies to diversify into other businesses. This would risk, however, diverting capital from the electric industry to other businesses and reducing the effectiveness of state regulation.

Second, the Public Utilities Regulatory Policies Act could be revised to permit utilities to own a majority interest in qualifying cogeneration facilities. This could both reduce the planning uncertainties faced by the industry and lower rates paid by consumers, as the utilities and their customers shared the economic benefits that now flow to the cogenerators. This could, however, reduce the benefits derived from nonutility businesses

competing to supply electricity. Finally, the incentives for economic sales of wholesale electricity could be improved. The Federal Energy Regulatory Commission is now reviewing its regulation of electric utilities that sell in wholesale markets. Congressional inquiry might await the results of this review.

CONCLUSION

In summary, the electric utility industry is in better financial condition today than at any time since the early 1970s. Its near-term problem--the severe financial stress of a few utilities--is not likely to disrupt the supply of electricity, and there seems to be little reason for federal intervention.

According to growing evidence, the utility industry is responding to an increasingly risky business environment by adopting strategies that emphasize flexibility and limit capital exposure. This response is unlikely to lead to widespread physical shortages of electricity. But, because rate regulation makes the recovery of capital costs more uncertain than the recovery of fuel and operating costs, regulations could bias utility investments toward less cost-effective equipment. The long-term issue, therefore, is to provide regulatory incentives for utilities to use the mix of fuel and capital equipment that will produce the most efficient generation of electricity.

CHAPTER I

INTRODUCTION

The financial difficulties experienced by some of the nation's investor-owned electric utilities have attracted widespread attention over the past two years.¹ This attention is motivated by two key concerns: the allocation of financial losses among the parties at risk and the integrity of long-term electricity supplies.

The first concern pertains to the allocation of costs incurred by a group of utilities that undertook large programs to construct power plants in the late 1960s and 1970s. Some plants are being completed significantly above planned cost; others could not be completed at all; and in yet other cases, the electricity from the completed plants is not needed to meet current demand and hence produces no income. In all cases, state regulatory commissions have been required to allocate the costs of these plants among the various parties at risk: ratepayers in the utilities' service areas; the companies' stockholders; the companies' creditors; and, to a lesser extent, the taxpayers. In most instances, regulators have sought to shield ratepayers from full price effects of the new investments, severely constraining the cash flow of the affected utilities. Because of this financial distress, some observers have questioned whether these utilities can meet their current financial obligations and whether the industry at large will be able to undertake new investments in the future.

Potential constraints on new investment is central to the second concern--long-term electricity supply. Most analysts agree that widespread shortages of electricity are unlikely. But many observe that uncertainty about the regulatory treatment of capital investment, added to the more customary uncertainties of electricity demand and plant cost, encourages utilities to minimize their financial exposure--that is, the amount of funds

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1. Publicly owned or publicly financed electric enterprises have also had financial problems, but these events--such as the \$2.5 billion bond default by the Washington Public Power Supply System in 1983 or the May 1985 bankruptcy filing by the Wabash Valley Electric Cooperative--are not directly addressed in this paper. Unless otherwise differentiated, the term electric utility as used in this paper refers only to investor-owned, or private, utilities.

committed to new plant and equipment in hopes of earning future returns. While some financial restraint is a rational response to currently uncertain market conditions, many utilities now seek to defer investment as a matter of policy.

For the immediate future, this policy is unlikely to affect electricity supplies because new capacity is not generally needed. When additions in capacity are eventually needed, however, this perceived market risk--if it is sustained by continued regulatory uncertainty--may lead utilities toward investments that require less capital and shorter construction time, but that produce costlier electricity. Thus, the long-term issue is whether the present regulatory climate provides incentives that lead to the most economic mix of fuels, generating equipment, and transmission capabilities.

CAUSES OF THE CURRENT FINANCIAL DIFFICULTIES

Although causes vary by company, the roots of the current financial problems of the troubled utilities can be traced to ambitious construction programs initiated in the late 1960s and 1970s under assumptions of high growth in electricity demand and high oil prices. These expectations proved incorrect. Overall demand rose only 2.5 percent annually from 1970 to 1983 in contrast with the 7 percent annual growth experienced from 1930 to 1970, thus removing the imperative for new power plants to provide expanded service. At the same time, declining oil prices and rising construction costs--the latter resulting from increases in inflation, interest rates, labor costs, and construction lead times--substantially weakened the incentives to substitute new plants for old. Utilities that cancelled new plants or completed their building programs before 1982 have generally fared well financially. But firms still engaged in expensive new plant construction have experienced significant cash-flow shortages. Several firms have had to omit or substantially reduce common stock dividends to sustain operations.

Regulation also played an important part in creating these financial conditions. Health, safety, and environmental requirements sometimes led to costly "backfitting" and construction delays. Equally important, state utility commissions--which set the allowed rates utilities can charge their in-state customers--often did not permit utilities to recover construction costs until a plant was fully "used and useful." Firms often had to borrow substantial funds at high interest rates to sustain construction. Even today, state regulatory decisions barring recovery of investments deemed "imprudent"--as defined by utility rate procedures--continue to cloud some firms' chances of recovering the costs of nearly completed power plants.