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Prudence Issues Affecting the U.S. Electric Utility Industry Executive Summary

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PRUDENCE ISSUES AFFECTING THE U.S.
ELECTRIC UTILITY INDUSTRY

EXECUTIVE SUMMARY

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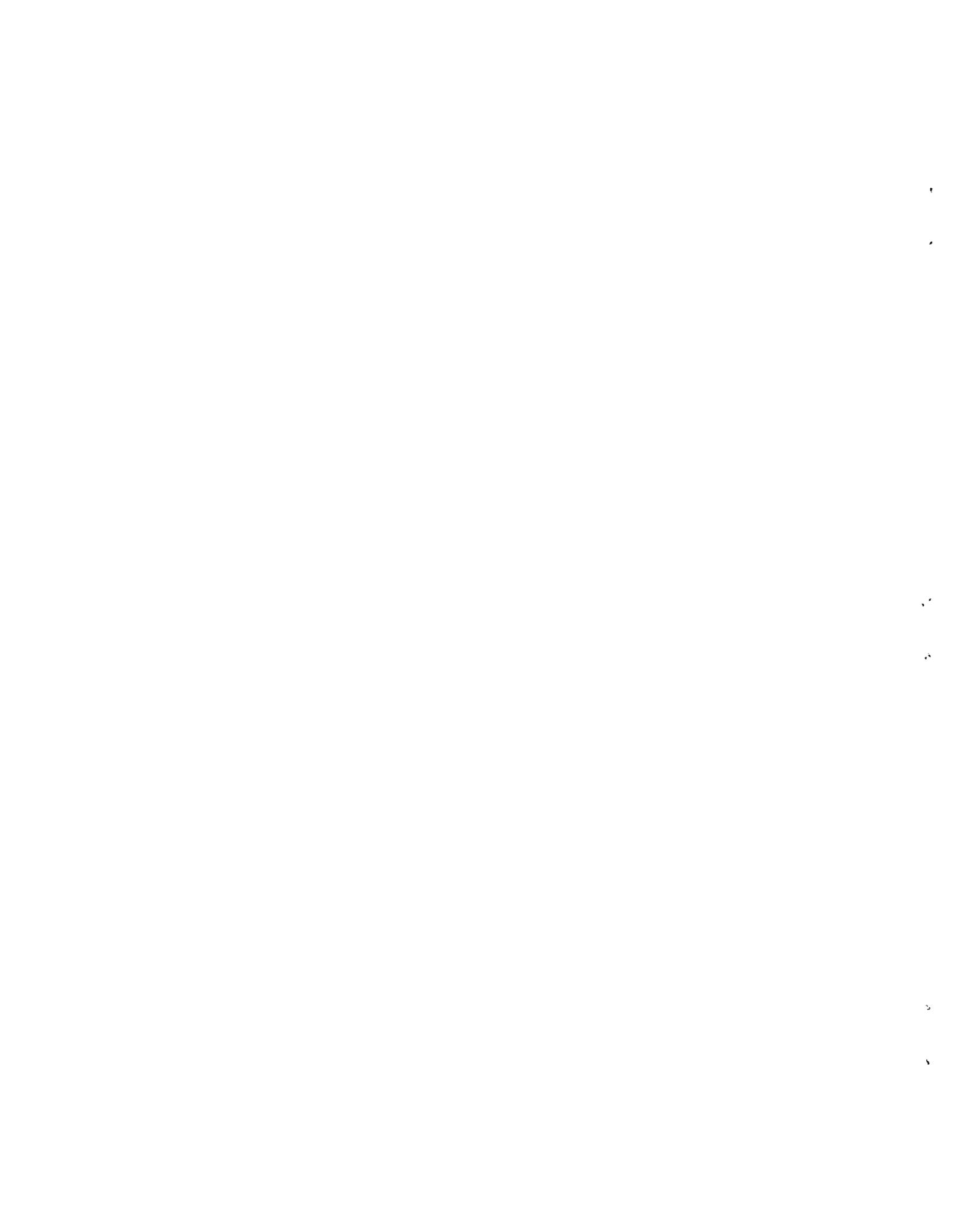
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ABSTRACT

The cost impact to private utilities resulting from prudence hearings before State Public Utility (Service) Commissions is currently a matter of considerable concern to investors and the nation. Cost disallowances for many utilities threaten the economic health of the companies. The disallowances, which deny full construction cost recovery to utilities, have had a negative effect on the ordering of any new base load power plants, either nuclear or coal. They have contributed to the fact that no nuclear plants have been ordered since 1978, and none are currently being planned in the U.S. This situation has led to a major national concern that adequate, reliable and economic electric power may not be available to fully meet future needs of the country.

The U.S. Department of Energy is addressing the institutional, financial and regulatory problems of the nuclear power industry. This report addresses the prudence issues aspect of this program. This includes the development of a body of data depicting the causes of electric power plant cost disallowances, analysis of the causes and their impact, and the development of recommended actions that may eliminate or alleviate the negative conditions found.

PRUDENCE ISSUES AFFECTING THE
U.S. ELECTRIC UTILITY INDUSTRY

EXECUTIVE SUMMARY

ELECTRIC UTILITIES PERSPECTIVE AND RATES

Under a regime of regulation, electric utilities undertake an obligation to serve all customers within a specified service area with reliable electric service at fair and non-discriminatory rates. Rates are regulated because large electric utilities are viewed as natural monopolies. The utility is provided an opportunity to earn a fair return on the investment it has made in facilities to provide such electric service. Because the utility is provided some measure of protection against the risks assumed by competitive businesses in unregulated markets, the return on utility investment generally is less than that available for investments made in unregulated businesses.

A key element of regulation is the method used to set rates. Rates are designed to recover the revenue requirement from the various classes of customers. The revenue requirement is computed by determining various production costs (including fuel and operation and maintenance costs needed to provide reliable electric service), and adding to those costs a fair return on the investment in assets (rate base) used to provide the electric service.

PRUDENCE

It has long been recognized that not every capital expenditure made by a utility should necessarily be included as part of the rate base. Rather, only "prudent" expenditures should be included in the rate base. The classic definition of such expenditures was provided by Justice Brandeis in his separate opinion in Missouri ex rel. Southwestern Bell Telephone Co. v. Public Service Commission, 262 U.S. 276 (1923). In his opinion, Brandeis states (id. at 289):

"The term prudent investment is not used in a critical sense. There should not be excluded from the finding of the base, investments which, under ordinary circumstances, would be deemed reasonable. The term is applied for the purpose of excluding what might be found to be dishonest or obviously wasteful or imprudent expenditures. Every investment may be assumed to have been made in the exercise of reasonable judgement, unless the contrary is shown."

The significant aspect of the Brandeis definition is how narrow it is. Imprudent expenditures are linked with those that are "dishonest" or "obviously wasteful". Moreover, Brandeis is clear to state that "[e]very" investment is assumed to be reasonable, and imprudence must be demonstrated. This narrow view of imprudent expenditures has continued until the very recent time.

Beginning in the late 1970's, the propriety of utility investments began to be challenged. This change in regulator approach primarily arose because of two

factors. First, beginning in the late 1970's and continuing through the mid-1980's, a significant number of nuclear power plant construction projects were cancelled in mid-stream. Second, beginning in the early 1980's and continuing to the present, the costs associated with a significant number of completed nuclear power plants rose very dramatically. In both cases, public utility commissions (PUC's) relied primarily on legal principles developed for rate base valuation to mitigate the impacts on customers.

In most cancelled nuclear plant cases, PUC's followed traditional principles and did provide some protection for the utility investor. However, in some states no amortization was permitted and the investor was denied both a return on the use of his money and return of the investment itself.

While the cancellation cases set the stage, most recent regulatory activity addressing the prudence of power plant construction costs has been aimed at the set of completed nuclear power plants coming on-line in the 1980's. These plants typically have been characterized by substantial increases in cost over initial budget and substantial increases in schedule over initial projections. These two factors provide both a reason for investigating the costs incurred (to minimize the rate impact to the customer) and a basis for disallowing some of the costs (treating the initial cost estimate and schedule projection like a fixed price contract).

DISALLOWANCES

The disallowance of construction costs by a PUC occur for a multitude of reasons that reflect the particular situation of the plant under construction, the approaches and decisions of the electric utility system building or owning the plant, and the PUC approach to rate regulation. The disallowances, however, can be broadly classified into the following five categories:

Imprudence

This category includes disallowances as a result of certain utility decisions judged to be imprudent or unreasonable.

Excess Capacity

A facility should be used and be useful to the public, for inclusion in the rate base. If a utility has excess generating capacity, the new facility may not be deemed useful to the public. Thus, the PUC may disallow part of the investment representing excess capacity from inclusion in the rate base. This disallowance is not permanent and can be included in the rate base as the utility's load requirements grow, eliminating excess capacity.

Cost Caps

This is basically a new idea not encountered frequently in utility rate cases. When a generating facility is under construction, the PUC may specify a cap on the amount of investment that will be allowed in the rate base. If the facility is completed for a higher amount, the excess investment will be disallowed from inclusion in the rate base. Recently, utilities have accepted cost caps as a means for settling contested rate cases, in some instances.

Economic Value

The PUC may decide that the actual cost of a facility is above the economic value of that facility. For example, economic value may be estimated by comparison or inference with alternate sources of generation. The amount in excess of economic value may be disallowed from inclusion in the rate base.

Other

This category includes disallowances that do not fall under the other four categories.

The total disallowances for nuclear plant construction costs in the United States from 1980-1986 are currently estimated to be \$6,592 million. The following list indicates how much of these disallowances was attributable to each of the five categories.

<u>TYPE OF DISALLOWANCES</u>	<u>AMOUNT OF DISALLOWANCE</u>	
	<u>\$ x 10⁶</u>	<u>PERCENT</u>
Imprudence	3,421	51.9
Excess Capacity	2,185	33.2
Economic Value	371	5.6
Cost Caps	237	3.6
Other	378	5.7
Total	6,592*	100.

The total disallowances for coal-fired and other plants is \$127 million which is quite small compared to the \$6,592 million for nuclear plants. The total disallowances, as a percent of investment costs going into the rate base over seven years from 1980 to 1986, is 9.6% for nuclear plants and 0.3% for coal-fired and other plants.

CONSEQUENCES OF DISALLOWANCES

Currently, six plus billion dollars have been excluded from the rate base of utilities for various reasons during the period 1980 to 1986. Although this is small compared to total investment in assets by utilities (the current investment by utilities for large central station nuclear and coal fired power plants, 1980 to 1986, is in excess of 100 billion dollars), any individual utility can be harmed badly by disallowance decisions focused on their plant(s).

The disallowances of capital costs is already having a chilling effect on investment in nuclear and coal-fired plants. Virtually all nuclear plants currently commencing commercial operation are facing possible disallowances. Investors are not willing to commit funds to situations where risk indicates a

* Since the \$6,592 billion represents a snapshot in time (thru 1986), the disallowances will change as decisions are appealed, court settlements occur, or new disallowances are considered in current and future rate cases.

certain loss despite a high return. Many other adverse consequences are possible. Some of these adverse consequences are discussed below:

Utility Investment Policy

In order to build a power plant with a 10 to 15 year leadtime being typical, a utility must forecast demand 10 to 15 years into the future. If economic conditions change during this period from what was forecasted (as they almost certainly will), demand will be higher or lower than forecasted. In such circumstances, the application of ex-post prudent investment rules can have perverse unintended effects on the investment policies of regulated utilities. These effects create disincentives for long-leadtime construction projects, which could increase chances of underinvestment. Insufficient power at high cost may thus be the result of misguided efforts to protect ratepayers from costs that currently appear high.

Utility Bankruptcy

Utility bankruptcy also is a possible consequence of improperly applying the prudent investment test so as either to disallow from the rate base all or a part of a utility's investment in a completed electric utility plant or to disallow cost recovery for an abandoned plant in which a large investment has been made.

Bankruptcy in itself could result in an increase in the cost of capital that could very well lead to larger increases in utility rates. Also, other utilities (particularly those in financial difficulty) could see their costs of capital rise to offset the higher risks perceived by investors. This too could eventually lead to higher rates.

Utility Relationships

The relationships among the parties with an interest in utility construction could change as they adjust to a possible new regulatory environment. The consequence of these shifting relationships is usually to increase costs in ways that ultimately are borne by utility customers. For example, bidding policies could change to fixed-price, lump sum bids that may require the contractor to include large provisions for contingencies. There could be increased litigation and record keeping requirements, leading to a deterioration in utility-contractor relationships and eventually to adverse effects on ratepayers.

FRAMEWORK FOR CHANGE

Disallowances are due to factors that can be classified as Technical and Regulatory as follows:

Technical

Energy and economic changes of the last fifteen years, have led to two significant events. The first of these is the sudden decline in electricity demand growth, creating large amounts of unused (and, hence, to some "nonuseful")

capacity for which regulators are reluctant to charge customers. The second change is the large increase in cost and schedule from early estimates, particularly for nuclear plant construction projects.

Regulatory

The changing approach to regulation also has contributed to the disallowance problem. The recent use of the prudence test to exclude billions of dollars of construction costs actually incurred is more than a mere application of a long-established doctrine. Rather, it represents regulators' discovery of an apparently respectable way of keeping rates from piercing some perceived politically acceptable level. Furthermore, ex-post regulatory findings that portions of new capacity are not "used and useful," even if prudent, represent an added attempt to penalize investors for unavoidable changes in demand that could not be reasonably projected.

Utilities and investors understand quite well that risks previously borne by consumers have been shifted to utilities. As long as there is excess capacity, this realization may matter little. However when new or replacement capacity is required, sooner or later, someone (most probably the ratepayer) will have to bear the increased costs associated with this shift in risk from the customer to the utility.

Consequently, unless some new regulatory framework is developed, one which provides investors with new assurance that capital prudently committed to the business will be fairly compensated, the United States will find itself with a costlier, operating-expense-intensive, capital-starved power system. This will be to the disadvantage of the consumers, whom regulations are designed to protect. Regulators can determine what returns to allow on sunk capital; they cannot conscript new funds.

RECOMMENDATIONS

Reasons for disallowances of certain construction costs in utility rate bases are varied and reflect not only technical and prudence factors but also political, regulatory, and public relation factors. As such, the problems need to be addressed on many fronts. The recommendations address those situations where the prudence process appears to be abused as compared to fair, unbiased treatment for both ratepayers and investors. The following recommendations reflect these considerations.

Improved Management Techniques

Clearly where there has been a significant cost increase from the original planning estimate for a nuclear plant, a PUC may have legitimate concerns about such an increase. What the utility must demonstrate is that the cost of the plant was controlled, to the extent that it is reasonably controllable, by management. For future construction of a power plant, the company should identify the management control techniques to be used, as well as the actions to be taken by management in order to control the engineering and construction process. These could be supplemented by statements in response to potential management audit questions, which support the company's position that it, in fact, controlled the costs to the extent that they were controllable.

Stable Regulatory Environment For Design and Construction

A major reason for cost increases, schedule delays, engineering design changes and construction rework has been the very large increase in the volume of and changes to regulatory requirements, codes and standards, which govern the design, construction and operation of nuclear and coal-fired plants. It is important that DOE work toward the objective of providing a much more stable regulatory environment for guiding the design and construction of these plants. This would significantly reduce schedule delays, design changes and construction rework, which would result in lower overall project costs. As a result, disallowances of power plant construction costs would be minimized.

Standard Plant Design and Construction

A large number of nuclear plants and many large coal-fired plants built over the last fifteen years have basically been custom designed and constructed. As such they have experienced "first-of-a-kind" problems that have led to numerous design changes, construction rework and extended schedules. Development of prelicensed standard plant designs would certainly reduce these factors and minimize disallowances relating to these factors.

Small and Intermediate Size Nuclear Plants

Over the last two decades, the size of nuclear plants has increased sharply to large 1000 to 1300 MWe units. Large plants are more complex in design and require more sophisticated construction approaches. This tends to lead to more redesign and construction rework, which eventually could be disallowed by a PUC. Smaller nuclear plants have the potential to minimize these problems through simplified design and innovative construction techniques that are not necessarily applicable to larger plants.

Smaller plants can have shorter schedules and may be less prone to schedule delays. Bringing capacity on line in smaller increments will also reduce the possibility of excess capacity minimizing disallowances due to imprudent schedule delays and excess capacity. Innovative smaller plants are, however, needed to offset the disadvantage associated with these plants due to the principle of economy of scale.

Preapproval Incentive Standards

Under this approach, a PUC and utility might consider the following regulatory bargain:

- o Establish an expected total cost of a plant having a PUC-specified capacity (and, perhaps, other operating characteristics). This base should be established (most likely through PUC-utility negotiations) in light of best available forecasts and agreed upon capacity needs.
- o Establish (i.e., negotiate) a preapproved minimum recovery level equal to a percentage of the expected total cost of the plant. The minimum recovery amount should be subject

to only the most narrowly defined prudence challenges. Such a minimum recovery level could also be set for a situation in which the plant may be cancelled.

- o For actual costs above the minimum recovery level and up to the originally expected cost, allow a rate base equal to actual cost plus a fixed percentage, of the difference between expected and actual costs.
- o For actual costs that are higher than the originally expected cost, restrict recovery to no more than originally expected cost plus a certain percent of the cost over the originally expected level.
- o Allow the foregoing caps to be indexed by the economy's general rate of inflation (including an inflation premium in the interest rate that constitutes the utility's cost of capital); and allow automatic adjustment of the caps for regulatory delays and mandated mid-stream equipment and design changes.

Public and PUC Awareness

While it may be politically expedient for a PUC to disallow certain construction costs from inclusion in the rate base, the public and the PUC should be made aware by DOE and the utility industry, as to the long range adverse implications of such disallowances on the cost to the utility and its ratepayers for the generation of electricity.

The Prudence Review Process: Retrospective and Commentary

In a report by R.J. Rudden Associates entitled "Nuclear Prudence Reviews: Retrospective and Commentary" several recommendations were identical to this study and the following additional recommendations were made.

More balance between short-term and long-term costs and benefits should be achieved. We do not agree with some observers' views that prudence cases represent a one-time aberration in regulatory trends that will not adversely affect investors' expectations of future treatment. The effects on ratepayers, investors, and utility managers extend well beyond near-term rate and capital loss issues. However, regulators correctly perceive, and utilities need to recognize, that public and political response to these cases will largely be based upon immediate impacts.

The problem of spiralling interest costs ("AFUDC") during unavoidable delays and while the ratemaking treatment of the plant is being considered should be mitigated by interim rate relief for project costs, granted subject to refund upon the final determination of prudence. The problems of rate shock should not be made worse by delaying the recovery of prudent costs any longer than is necessary.

All parties need to clearly distinguish between the issues of rate shock and managerial prudence and deal with them separately. The fact that management's actions have led to a situation which will have a major impact on rates does not mean that those actions are imprudent. The prudent investment test should not be viewed as the solution to the problem of rate shock associated with most nuclear plants. It is equally unreasonable for utility managers to believe that their responsibilities in prudence cases end with a convincing defence of management's actions. In order for any solution to these problems to be complete, it must adequately consider both the immediate and longer term impacts on ratepayers, including the price, availability, and reliability of electric service.

All parties should recognize the political realities of regulation and that prudence cases are expensive and imperfect means to the end of reasonable rates. A greater recognition of the inexactitude of the ratemaking process and long-term need for reliable power sources should lead to a greater willingness by the parties in prudence cases to explore settlements and compromises. In the end, mountains of documents and armies of attorneys and expert witnesses cannot achieve perfection in a process as inherently judgemental as the determination of reasonable rates.