

PROJECT MANAGEMENT FOR OPERATING FACILITIES

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INTRODUCTION

State commissions are increasingly directing their attention towards the prudence of decisions relating to electric utility operating performance - most visibly in the realms of planned or unplanned outages, plant availability and efficiency, as well as capital investments for plant additions or modifications. In analyzing this changing regulatory focus, our objective is to provide answers to the following questions:

1. What trends are occurring in commission regulatory investigations of utility operating performance?
2. What changes are being made by utilities in response to increased commission scrutiny of plant operations?

This paper represents a partial answer to these two questions based on research and review of published materials, including recent state commission rulings. In addition, we are conducting a survey of a sample of utilities to obtain their viewpoint on regulatory trends toward plant operations and any proposed revisions in project management activities. The survey results are available from the authors.

CHANGING ENVIRONMENT FOR UTILITIES

Traditionally, utilities have exercised substantial discretion in the management and operation of electric generating facilities - with commission encouragement. During the past decade, the convergence of a number of factors seems to be altering this traditional utility operating environment.

Current nuclear plant construction programs are nearly complete. State commissions, previously preoccupied with the prudence of nuclear plant construction costs, are now reviewing down times, operating and maintenance costs with greater frequency.⁽¹⁾ This change in regulatory focus is an indication of the expanded application of a varying prudence standard to other areas of utility operations, e.g., outages, plant availability and efficiency. In some cases, an increased burden of

proof appears to be placed on the utility to show or affirm more positively the reasonableness of operating and maintenance expenses, capital investment decisions and outage management.

Regulator scrutiny is also intensified by allegations of poorer-than-anticipated operating records for some nuclear plants. Charges are that these plants do not always generate the reliable and inexpensive source of energy that was expected, resulting in lower plant availability and higher replacement power costs.

Intervenors are playing an active part in this changing environment by exerting increased pressure on state commissions. They argue that ratepayers should not be required to pay for what is asserted to be a utility's poor operating performance. In some states, the review of certain aspects of operating performance has become a legal requirement. In Michigan, for example, a statute requires that utilities present proof of prudence for every outage that is over 90 days in duration.

Thus, the operating environment for utilities is being complicated by increased regulator scrutiny, expanded application of the prudence standard, increased intervenor pressure, and allegations of poor operating performance at some nuclear plants. This new environment has caused and is causing some utilities to revise their management techniques and to negotiate unique ways to determine allowable operating costs.

UTILITY SURVEY

Our survey addresses both commission regulatory actions and changes in utility management practices necessitated by the new operating environment. Both nuclear and fossil operations are included. The survey attempts to review the utility perspective across nine topical areas, summarized as follows:

Commission Regulatory Trends

This section of the survey queries the extent of commission interest in outages, backfits, betterments, or modifications. It also questions whether prudence reviews, refunds, disallowances, or other

actions have occurred or are anticipated for operating facilities. Topics include: reviews of capacity utilization performance, legislation mandating operating cost reviews, financial pressure caused by plant operations, level of inter-venor pressure and regulatory policy as a disincentive for investment.

Utility And Commission Mutual Agreements

This section of the survey queries the existence of agreements or negotiated settlements concerning cost and schedule performance criteria, or recouping investments in plant modifications. Topics include: commission review of planned maintenance schedules or planned modifications, setting of cost caps, plant efficiency standards and the effectiveness of commission agreements.

Project And Outage Management Organizations

This section of the survey queries the nature of any changes made in project or outage management organizations. Topics include: outage planning, plant and corporate management involvement in outage projects, internal or external reviews of project or outage management, employee incentive programs tied to plant performance criteria, and the role of outside service firms on backfit or betterment projects.

Procurement And Contract Administration

This section of the survey queries the nature of any changes made in procurement or contract administration. Topics include: amount of work performed under firm price or incentive contracts versus reimbursable contracts, amount of work contracted out versus performed in-house, bidder prequalification procedures, progress payment controls, requested warranties, resolution of disputes and fuel contract administration.

Costs And Estimating

This section of the survey queries the nature of any changes made in estimating or cost reporting and control procedures. Topics include: preserving historical cost databases, use of work breakdown structure for cost estimating and reporting, cost and schedule integration, tracking costs by event, and the utility's economic decision-making process (e.g., development and consideration of alternatives).

Schedule Control

This section of the survey queries the nature of any changes made in schedule control procedures. Topics include: documentation of reasons for and length of schedule delays, management involvement in schedule approval process, updating project or outage schedules, length of planned outage durations, as-built schedules, and integration of contractor or engineers' schedule.

Quality Control And Maintenance

This section of the survey queries the nature of

any changes made in maintenance, quality control or quality assurance practices. Topics include: quality control programs for both nuclear and non-nuclear facilities, procedures for assuring product quality from manufacturers, preventive versus corrective maintenance, and number of maintenance shifts.

Training

This section of the survey queries the nature of any changes made in training programs. Topics include: formal training for nuclear and non-nuclear plant personnel, project management training, automatic retraining, and incorporation of lessons learned.

Documentation

This section of the survey queries the nature of any changes made in documentation techniques. Topics include: information management systems, organization and type of information maintained, project or outage chronologies, review of meeting minutes or project documentation, and increased justification of plans, decisions and actions.

Preliminary answers, based upon the review of published materials thus far, are set forth below.

COMMISSION REVIEW OF UTILITY OPERATIONS

The first major nuclear outage we have identified resulting in commission review of operating costs occurred in 1976 at Indian Point No. 2 nuclear plant.(2) Since then, commission actions seeking to penalize utilities for higher costs, stemming from alleged imprudent management of operations, have increased in frequency. Heightened attention is now directed towards cited instances of low capacity utilization, asserted mismanagement, higher operating and maintenance expenses, avoidable schedule delays and excessive overtime.

Planning and execution of outages is attracting considerable commission interest. The cause, duration and management of outages are increasingly subject to prudence audits and reviews. An increased burden of proof in some jurisdictions now appears to rest with the utility to demonstrate the reasonableness of their management processes and procedures. In these cases, a utility that cannot provide the required substantiation may have to absorb any cost deemed to have been imprudently incurred. Outage cases are concerned with the cost of purchased replacement power or the cost of repairs. Where findings of imprudence have occurred, commissions have granted refunds to rate-payers, disallowed costs, or reduced the amount of fuel cost recovery.

Outage-related cost disallowances in various forms have occurred at the following nuclear stations during the past decade: Beaver Valley No. 1, Crystal River No. 3, Ginna, Indian Point No. 2, Pilgrim No. 1, Salem No. 1, SONGS No. 1, and Surrey No. 2. The amount of money disallowed in these

cases varied from \$2 million to \$33 million.(3) More recently, Philadelphia Electric Co. was ordered to cut rates by \$37 million due to the extended shut-down at Peach Bottom nuclear plant. Public Service Electric & Gas Co., a non-operating owner of Peach Bottom, is facing a potential \$150 million annual revenue loss if not allowed to continue recovering its investment and share of operating costs.(4)

Agreements and negotiated settlements are used by commissions and some utilities as a means of promoting efficient operations or resolving contentious disputes. Various forms of agreement and settlement are evolving, such as: rate of return on investment tied to operating efficiency, incentive and penalty energy cost adjustments, commission approval of planned modifications, establishing cost caps for major modifications, agreed upon disallowances, or upfront agreements concerning recovery of investment. Southern California Edison reached a three part agreement with the California Public Utilities Commission in 1986 which included a reward and penalty mechanism to encourage efficient operation at San Onofre and Palo Verde nuclear stations and to protect ratepayers.(5)

Many state regulatory commissions are also imposing plant efficiency standards. These standards seek to reward those utilities that operate efficiently, while penalizing those that do not. Twelve states have adopted varying efficiency standards thus far, and seven others are considering them. In New Jersey for example, the commission staff proposed an efficiency range of 60% to 80% capacity utilization.(6) In 1985, Iowa adopted standards for electric utility management that consider fuel cost per kilowatt-hour, plant availability and company-wide load factor in evaluating performance.(7)

Overall, regulatory investigation of utility operating performance is increasing the interaction between the state commissions and the utilities - in advance planning for maintenance and modifications, in setting performance criteria, and in evaluating performance.

UTILITY MANAGEMENT OF OPERATING FACILITIES

Utilities are implementing a number of changes in their operations management in response to and anticipation of greater commission scrutiny. Prominent among these are changes in documentation, information management systems, outage planning and control procedures, maintenance programs and contractual commitments, together with the pursuit of up-front agreements with their commissions. For the utility, an overriding concern is the ability to demonstrate prudence, if necessary, in order to receive compensation for incurred operating and maintenance costs. Some of the changes also have the effect of avoiding protracted uncertainty as to cost allowability for rate making.

Documentation And Information Systems

The essence of a prudence audit is the review of the organizational flow of information used to evaluate alternatives and make decisions.

A utility that can show its commissions the factual setting for its major decisions, and demonstrate that those decisions were reasonable, under the circumstances, has jumped a significant hurdle in meeting its burden of proving prudence. A major component in a utility's prudence preparation, therefore, should be the systematic collection and organization of facts... it is extremely important to identify, organize, and analyze key documents.(8)

With the benefit of hindsight from construction prudence investigations, utilities are improving their documentation of decisions, events, and actions, especially in regard to outages. Project histories and as-built schedules that associate events with their cost and schedule impact are used in identifying underlying or concurrent causes of outages. Better planning and scheduling, more detailed estimating and improved cost controls are becoming important.

As prudence audits are applied to operations, a key decision for utilities concerns the information system - what type of documentation to maintain and in what format. On their own, many utilities have periodically and quite regularly improved their information systems. Strenuous prudence litigation in recent years appears to be headed toward creation of far more "paper trails" than before (including some overreaction and generation of unneeded documentation with its own set of higher costs).

Outage Planning And Control

Some utilities have established specific departments to plan, execute and monitor outage performance. Project team organizations responsible for everything from pre-outage planning, to implementation and post-outage review have proven successful in controlling outage productivity and efficiency.(9)

Maintenance Programs

As capital costs and risks of new plant investment continue to soar in aggregate, utilities are shifting to plant life extension programs in order to meet future demand for electricity. The economics currently (and probably temporarily) favor the repair and refurbishment of current plant capacity over building new capacity. Long-term preventive maintenance programs are on the upswing as utilities seek to improve current operations and extend the plant life of their generating stations.(10)

Contractual Commitments

In seeking to pin blame on the utilities for higher expenses stemming from cost and schedule overruns, commissions are increasingly requiring the utilities to identify the specific causes for higher expenditures. In those instances where higher expenditures are due to breach of contractual commitments by vendors, engineers and contractors, the breaching party is arguably accountable. The net effect of this trend is to increase the level of intra-party disputes and litigation.

Advance Agreements

Some utilities are actively pursuing advance agreements with their commissions to ensure a reasonable return on investments. In one instance, a utility has actually refused to go forward with investments until their commission specifies how the costs will be split with ratepayers.(11) These agreements are used to obtain commission "buy-in" before committing capital and to resolve disputes.

Overall, utilities are changing project and outage planning and management procedures, hiring new management personnel, expanding training, increasing and improving documentation, upgrading information systems, improving maintenance programs, and obtaining advance commission agreements in their effort to demonstrate management prudence in operational performance.

SUMMARY

As current nuclear plant construction programs draw to a close, state commissions are redirecting their efforts toward the review of operational performance. Operating and maintenance expenses are being challenged, where previously, construction costs were at issue. Commissions have acquired significant nuclear plant experience from construction prudence hearings; and bolstered by additional staff, they feel quite prepared to review utility operations.

The emerging prudence standard is being redefined to apply to utility operations - outage management, fuel contracts, fuel adjustments, plant additions and modifications. Again, commissions seek to cause the burden of proof to rest with the utility to demonstrate prudent management. The level of substantiation and type of evidence required in order to demonstrate prudence is still evolving. The role of intervenors, and the public pressure that intervenors generate, is expected to increase.

The message for utilities is clear. Lessons learned from prudence audits of construction should be thoughtfully applied to operations. The commissions appear to want changes. Utilities can distinguish real improvements from unnecessary and inappropriate ideas that may not be cost-effective. Utilities can then implement those real and cost-effective improvements at the appropriate times. Where revisions are required - in documentation, outage planning and execution, information systems, maintenance programs and contract enforcement - they can be performed in a timely manner to anticipate and prepare for the next round of commission scrutiny.

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