

Managing Risk:

Prudence Reviews and Nuclear Projects

How to avoid the billions of dollars in costs that were disallowed during the last round of construction.

BY RILCK NOEL

With nuclear energy again being viewed as part of the solution for the United States' energy needs, a number of companies are starting the early permitting and licensing process. However, no nuclear facility will be con-

structed if capital markets don't believe that a plant can be built within established budget targets. Meeting budget targets means the industry must address project-management issues and the risk of end-of-project disallowances for

any company or regulator to be able to move forward with new construction.

Prudence Reviews and the Resultant Disallowances

A prudence review is a retrospective analysis of the decision-making process and the activities performed during the licensing, construction, and start-up phases of nuclear power-plant construction. It uses specific evaluative criteria to determine whether construction-related decisions were reasonably made and the activities prudently performed.

When these activities or decisions are found to be imprudent, the adverse impact, if any, is evaluated and quantified in financial terms. This financial quantification exercise forms the basis for identifying expenditures that may be disallowed from inclusion in the rate base upon completion of the prudence review.

If some expenditures are disallowed, the shareholders of the utility—not the customers—pay the cost of activities and decisions found not to have been reasonable to the extent that a third party (*e.g.*, a construction company, architect/engineering firm or another similar entity) is not found responsible and liable.

The cost and difficulty of a traditionally conducted prudence review is substantial because of the effort required to analyze activities inadequately documented when performed years earlier. For various reasons, utilities historically have not comprehensively or effectively documented the decisions and activities regarding nuclear power projects during construction.

The cost of traditional prudence reviews pales in comparison to some of the amounts disallowed in the last round of construction. For example, PG&E sought to recover \$5.5 billion in expenditures for building its Diablo Canyon nuclear power plant. The Cali-



California Public Utilities Commission allowed only \$1.1 billion of these expenditures to be included in the rate base, a disallowance of \$4.4 billion. PG&E prepared to litigate the decision before a settlement was reached that amounted to a \$2 billion disallowance.

Similarly, San Onofre, South Texas Project, Byron, Braidwood, and Davis Besse are all examples of nuclear power plants where construction activities were subject to prudence reviews, and various amounts were disallowed by state regulatory commissions.

Changing Technologies, Risks & Tools

Since the last nuclear power plants came on line in the United States a few decades ago, nuclear power-plant construction has evolved in terms of new reactor technologies, regulatory requirements, project management, and accounting advances. These programmatic and technological changes have given birth to new risks, thereby adding complexity to future prudence reviews. Consequently, evaluation criteria need to be modified to match the new reality.

For example, the use of sophisticated, automated project management tools such as Primavera will be expected to monitor and control project execution. In addition, project managers' qualifications will have to include a high degree of computer literacy and proficiency with other control tools not expected during, for example, the South Texas Project (STP) prudence review performed almost 20 years ago.

The project management tools and techniques that are to be used to build and manage the construction of the new generation of nuclear power plants are likely to be borrowed from many other industries, including nuclear power-plant projects abroad and projects from capital-intensive industries

In 2001, Exelon, Entergy, and Dominion applied for ESPs. In 2004, Dominion and Nustart, a consortium of eight utilities, applied for COLs. The NRC is expected to approve these applications in the 2006-2007 time frame.

such as oil and gas, automotive, and pharmaceuticals. Unlike the domestic nuclear industry, these have not suffered from a self-imposed moratorium. They have continued to devise and adopt more effective project management tools and techniques to complete their capital-intensive, complex projects on time and on budget.

Upcoming Prudence Reviews

As individual utilities and consortia embark on new nuclear construction programs, they likely will face the prospect of prudence reviews as they attempt to recoup their investment. While factors such as breach of contract, a dissatisfied minority owner, or gross negligence may trigger an assessment of nuclear power-plant construction, a primary management focus should be on imprudent costs incurred during the construction process. These costs are historically significant and very manageable if the underlying symptoms are proactively addressed.

Within the past several years, three utilities and a consortium of eight utilities—driven by the growth of demand (particularly in the Southeast), incentives provided by the Energy Policy Act of 2005, and environmental concerns—have developed and submitted to the Nuclear Regulatory Commission (NRC):

- Early site permit (ESP) applications for building new nuclear

power plants at existing sites;

- Combined operating license (COL) applications for building new plants at new sites.

In 2001, Exelon, Entergy, and Dominion applied for ESPs. In 2004, Dominion and Nustart, a consortium of eight utilities, applied for COLs. The NRC is expected to approve these applications in the 2006-2007 time frame.

Addressing the Disallowance Risk

A company must address the project-cost disallowance risks from a prudence review or stand to lose several million dollars. Entities considering the construction of nuclear power plants at existing or new sites should implement the following two-pronged approach to mitigate or eliminate the risk of cost disallowance in a prudence review:

- 1) Throughout all project phases, companies should acquire and implement innovative and effective project-management technologies and processes, and adequate human resources. Innovative project-management methodologies and tools can be adopted from industries that have continued to successfully complete large capital projects while nuclear power-plant construction projects were dormant in the United States.

2) Companies should review project activities and expenditures throughout the nuclear power-plant planning, licensing, construction, and start-up phases. These project reviews should be performed independently of the project managers and contractors. Effective project-management tools and techniques alone are not sufficient to ensure successful project completion. They must be augmented by the periodic project reviews performed by an independent party to maintain the objectivity and effectiveness of the review process and to address issues up front rather than at the end of the project.

An instructive analogy to the prudence reviews of the 1970s and 1980s is that of an irreversible process in thermodynamics, one that cannot be returned to its original state once it has taken place, as opposed to a reversible process that theoretically can be undone. Prudence reviews deal with largely irreversible processes, because it is difficult to re-create and analyze nuclear power-plant construction activities and decisions that occurred many

years ago. The longer the interval between changes and the more significant the changes, the more irreversible the process becomes.

Chief among the benefits derived from performing periodic prudence reviews is the ability to take corrective actions almost immediately. This is likely to reduce the cost of resolving any issue that surfaces as a result of these reviews. A contractor, for example, not installing cable trays to required seismic specifications will be asked to correct the problems before additional miles of trays are improperly erected.

Having an independent party perform these reviews also will eliminate groupthink among project participants. For example, project quality assurance and technical staff personnel may develop some familiarity with each other during the project due to repeated interaction and socialization outside of work. It is difficult for an inspector to report that a tech staff engineer is using an outdated version of a drawing after they have become friends. The independent reviewer is not encumbered by such consideration and can thereby be more objective.

Management and Investor Objectives

The objective of management and the capital markets is to ensure that the plants can be constructed as planned without having to write off significant amounts of unrecoverable costs at the conclusion of construction. By implementing multiple, independent, and objective reviews throughout the course of a project, companies can deal proactively with issues as they arise and reduce the impact of any findings from end-of-project prudence reviews.

Anyone leading the overall construction of a new nuclear power plant must be aware of the billions of dollars in disallowed costs that occurred during the last round of construction. Recognizing these risks and taking the appropriate steps—from the beginning of the project through its completion—to identify, manage, and minimize them can improve project economics significantly and facilitate operational efficiency and regulatory relationships. ■

Rilck Noel is managing director, Energy & Utility Practice, at Protiviti. Contact him at 248-506-5568.