

emphasizing that these actions can have either a positive or negative effect on public health and safety; (2) reflects the Commission's concern that certain forms of economic performance incentive (EPI) regulation may adversely affect the operation of nuclear plants and the public health and safety; (3) specifically identifies those methods that are of particular concern (e.g. the use of sharp thresholds, the measurement of performance over very short time intervals, the lack of "null zones," and inappropriate reliance on systematic assessment of licensee performance (SALP) scores or other performance indicators; (4) indicates that the NRC will continue to monitor the application of EPIs and performance criteria to nuclear power plant operations; and (5) urges licensees and State regulatory commissions to inform the NRC of EPI programs that are being considered for application to NRC licensees.

**EFFECTIVE DATE:** This policy statement becomes effective July 24, 1991.

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**SUPPLEMENTARY INFORMATION:** In exercising their jurisdiction over the economics of the generation of electricity, a number of State regulatory commissions and the Federal Energy Regulatory Commission (FERC) have established economic performance incentive (EPI) programs for electric power plants. Although some programs have existed unchanged for a number of years, others have been substantially modified or are newly established. They can significantly help to improve the economic performance of electric power plants. They can also affect the safety of nuclear power plants. The NRC monitors and evaluates these incentive programs to determine the effect that they may have on the safe operation of nuclear power reactors.

After reviewing the information on EPI programs established by State regulatory commissions that regulate the economic returns of utilities operating nuclear power plants, the Commission decided that it should set forth its views in a Commission Policy Statement on the manner in which such programs could affect safety.

#### **Summary of Comments**

On October 28, 1990, the NRC published the draft policy statement, "Possible Safety Impacts of Economic Performance Incentives," in the Federal Register (55 FR 43231). The NRC received 37 comments: 14 from State

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#### **Possible Safety Impacts of Economic Performance Incentives: Final Policy Statement**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Final policy statement.

**SUMMARY:** This statement presents the final policy of the Nuclear Regulatory Commission (NRC) with respect to the possible safety impacts of economic performance incentive (EPI) programs established by State commissions regulating electric utilities. The policy statement (1) Contains a discussion of the possible effect of the policies and actions of State regulatory bodies,

public utility commissions, 12 from utility licensees or law firms representing utility licensees, and 11 from public interest groups, trade associations, non-affiliated individuals, or governmental bodies other than public utility commissions.

Most of the commenters believed that the NRC should provide advice but not endorse any specific EPI program. They indicated that the NRC should monitor the effectiveness of EPI programs but should not interfere in the proceedings of State public utility commissions. Almost all of the commenters also indicated that the NRC, the utilities, and the State utility commissions should continue to communicate with one another. Many of the utilities or their representatives that commented stated that the NRC should discourage the use of EPIs in the absence of evidence that they promote safety. Further, a number of utility commenters indicated that the SALP scores and other performance indicators should not be used for assessing penalties. In addition, certain commenters stated that regulators should not use the results of root-cause and self-assessment analysis to determine if costs should be disallowed. In separate correspondence, one utility informed the Commission of its concerns that State regulators had used the utility's voluntary corrective actions to justify a disallowance. Certain commenters also believed that the NRC should evaluate the manner in which specific EPI programs either benefit or hinder safety but should not endorse specific types of programs. Finally, some commenters suggested that the Policy Statement should be more specific by stating, for example, the difference between a long-term performance measure and a short-term performance measure.

Most of the State public utility commissions that commented indicated that rational incentive programs do not adversely affect the operation of nuclear power plants and thus do not adversely affect public health and safety. Many of the States that commented indicated that they do not use any of the criteria of concern to the NRC, such as sharp thresholds, short term performance measures, or SALP scores. The State utility commission for New York stated that it does not penalize or reward utilities for operating at or close to the industry's average capacity factors. However, it imposes penalties and rewards on a sliding scale for deviations from the target factors. The State utility commission for North Carolina stated that it establishes targets based on long-term averages of nuclear capacity factors for testing the efficiency of nuclear plant generation. It does not automatically impose penalties for not

meeting these targets if a utility can show that its nuclear operations were prudent. The State public utility commissions generally indicated that States cannot legally be precluded nor should be precluded from adopting performance standards that encourage utilities to both economically and safely operate nuclear power plants.

The public advocacy group, Massachusetts Public Interest Research Group (MASSPIRG) provided a substantial amount of comments. It was a major participant in the settlement agreement that resulted in the Massachusetts performance incentive plan for the Boston Edison Company relating to the Pilgrim Nuclear Plant. MASSPIRG generally supported the objectives of the draft Policy Statement and desired to work with NRC in identifying superior alternative indicators for use in EPI plans.

MASSPIRG indicated that the Massachusetts plan was of necessity in confidence because it was a part of a larger settlement with the Boston Edison Company. MASSPIRG stated that it understood the concerns that the NRC had previously expressed relating to the use of SALP scores and performance indicators. However, in developing the plan for the Boston Edison Company, MASSPIRG used expert consultants and searched for indicators that could correlate with long-run economic performance, correspond with recurrent Pilgrim problems, encourage the timely maintenance of equipment, and provide early indications of problems that would lead to long-run economic and safety performance. MASSPIRG also looked for indicators that were easy to evaluate and use in an incentive system and would cover a broad range of plant activities and systems.

The Pacific Gas and Electric Company (PG&E) provided many comments on the manner in which the comprehensive performance-based ratemaking settlement approved in 1988 by the California Public Utilities Commission (CPUC) for the Diablo Canyon Nuclear Power Plant provides long-term incentives to improve the reliability of the Diablo Canyon plant. The settlement, which will be in effect for 28 years, provides a number of incentives to PG&E to improve the reliability and safety of plant operations. PG&E assumes risks associated with equipment failures, prolonged outages, and new regulatory requirements for the entire 28 year period of the settlement. This program provides PG&E with an economic incentive to ensure that the plant operates well over many years. The Diablo Canyon settlement does not rely on short-term performance measurements with sharp thresholds and does not use SALP scores—features that the NRC has identified that may

adversely affect the public health and safety.

#### **NRC Response to Comments**

Many of the comments related to the role of the NRC in EPI programs. The NRC certainly agrees that economic regulatory agencies should be the groups to develop and approve EPIs. However, the NRC reviews matters that raise safety concerns at licensed facilities. The NRC deals with safety issues regardless of the source of the concern.

The commenters provided a number of suggestions for changing the Policy Statement, particularly to more clearly specify certain issues. The NRC believes this should not be done. A wide variety of acceptable EPI programs could be devised. Because rate regulatory agencies and licensees are more familiar with economic regulatory options than is the NRC, they are more capable of devising plans to meet these regulatory objectives. It is the position of the NRC that the Policy Statement provides sufficient guidance on safety issues for the parties to use in developing or improving EPI programs.

Some licensees commented that the NRC should allow licensees to voluntarily report to it on EPI programs. These licensees also indicated that the NRC should not require licensees to evaluate or analyze information. However, the NRC believes that some EPI programs clearly could be of major safety concern, and that the NRC must obtain sufficient information to properly conduct its regulatory responsibility.

Certain commenters also stated that confidential negotiations may be necessary under certain circumstances to develop EPI programs because other regulatory matters are also involved. While the NRC concedes that such negotiations may be necessary, it is unlikely that the program developed must be withheld from the NRC until after final adoption. The NRC is issuing the Policy Statement to improve communications with agencies having economic regulatory responsibilities of nuclear power plants.

After carefully considering all the comments on the draft Policy Statement, the NRC has decided to issue the final Policy Statement with little change from the draft Policy Statement.

#### **Statement of Policy**

##### *Potential Impacts*

The NRC recognizes that the existing programs vary considerably from State to State and that the plans are not easily classified, especially as to the effect that they may have on the safe operation of plants. However, certain general characteristics of programs can be evaluated and found to have an effect on safety that is either desirable (or at least neutral) or undesirable.

A desirable plan provides incentives to make reasonable improvements in operation and maintenance that result in long-term improvement in the reliability of the reactor, the main generator, and their support systems. An undesirable plan provides incentives to operate a facility that could have safety problems or to start up before it is fully ready, merely to meet an operational goal.

A desirable EPI program rewards a utility for having sound operations and maintenance programs and for correcting recurrent or predictable failures or other problems that could lead to an operational transient, an unplanned plant outage, or a derating. Such an incentive is desirable because a well run plant and the prompt correction of problems enhance safety.

Unanticipated transients and shutdowns challenge operators and safety systems and, although with a low probability, could initiate a more serious event.

Economic performance incentives can encourage a utility's operational organization to improve its performance, which can help to improve both safety and economic performance. However, current safety and economic requirements also provide utilities with incentives to operate safe plants.

The current influence of incentive plans on reactor safety is believed to be small. However, the Commission's concern with incentive plans is that, in the interest of real or perceived short-term economic benefit, the utility might hurry work, take short cuts, or delay a shutdown for maintenance in order to meet a deadline, a cost limitation, or other incentive plan factor.

Therefore, an incentive program could directly or indirectly encourage the utility to maximize measured performance in the short term at the expense of plant safety (public health and safety). By keeping a reactor on line when it should be taken down for preventive or corrective maintenance and by using shortcuts or compressed work schedules to minimize down time, the licensee could decrease the margin of safety.

#### *Adverse Effects on Plant Operation and Public Health and Safety*

Some specific features of incentive plans now used by some States could adversely affect public health and safety. These features are (1) Sharp thresholds between rewards and penalties (or between penalties and null zones, or rewards and null zones) and (2) performance measurements that have short time intervals. The NRC believes that these features should not be allowed to prompt licensees to operate a plant when it should be shut down for safety reasons.

A sharp threshold is a situation in

which a licensee narrowly misses a target capacity factor and must bear a large part or all of the resulting replacement power costs. By creating a sharp threshold in its incentive program, a State could prompt a licensee to continue to operate a plant to achieve a target capacity factor in order to avoid the large replacement power cost or to earn a substantial reward. This type of incentive could divert attention from safe plant operation. To minimize these effects, States should consider incorporating a reasonably broad null zone of acceptable performance in which no rewards or penalties are imposed.

Performance measurements for short-term intervals would encourage the licensee to focus on a short term target or performance goals such as a higher capacity factor or availability factor. This target could become the primary focus, diverting attention from long-term goals of reliability and operational safety. In contrast, performance measurements for long-term intervals would prompt the utility to follow sound maintenance and operational practices to improve operating performance. For example, an incentive program could include a three or four year period with a rolling average capacity factor evaluation period and could account for other factors such as refueling outages, inclement weather and other periodic events. Short-term measurements tend to make safety and economic goals conflict with each other, while long-term measurements tend to make the two goals complementary.

#### *Other Special Features or Ratemaking Actions That Cause NRC Concern.*

The Commission is also concerned about undue reliance on NRC's SALP ratings in EPI programs and about any State public utility commission's undue reliance on a utility's corrective actions following an incident to justify the disallowance of costs related to the incident.

Sharp thresholds and short-term performance measures coupled with substantial reliance on NRC's SALP ratings can adversely affect safety and present several major concerns. First, the NRC's SALP ratings assist the NRC and licensees in identifying trends and areas of performance that should receive a more detailed assessment, in assessing the safety of the performance at individual facilities, and in communicating to the licensee. Therefore, these ratings address selected areas of licensee activity, but do not necessarily cover all significant performance areas. Further, the scores and ratings are not based on absolute quantitative considerations, and therefore produce numerical scores that are of limited significance. The NRC

expects licensees to focus on the facts in the SALP report, the issues identified, and the apparent root causes of problems. By determining financial rewards or punishments for the licensee based on SALP, the State may cause the licensee to focus on improving the numerical scores instead of addressing the underlying issues, where the focus should be. If the issues identified in SALP reports are obscured by concerns over the financial consequences incurred as a result of those ratings, the process may not achieve the desired objective and may instead prompt a licensee to take corrective actions that produce rapid results rather than taking those that yield the highest increase in safety in the long term. Undue emphasis on performance indicators in an incentive program could prompt a licensee to improve the scores by taking inappropriate actions rather than by identifying and correcting underlying safety conditions.<sup>1</sup>

The Commission is also concerned about State public utility commission ratemaking actions that might be interpreted as penalizing a utility for improving its own procedures or methods of operation. For example, where a State public utility commission observes that a utility has modified its procedures following an incident, infers from the utility's actions that the original procedures must have been inadequate, and then disallows certain costs on the basis of such assumed inadequacies, the utility will have a strong disincentive voluntarily to enhance or improve its operations and procedures in the future. Such State public utility commission action can discourage utilities from making needed improvements in procedures and operations and, thus, can be detrimental to the long-term safety of operation.

#### *Continued NRC Monitoring Program*

The NRC will periodically survey FERC and State regulatory commissions that regulate the utility rates of power reactors to identify any new programs or substantial changes in existing programs and to ascertain how the

<sup>1</sup> For further information on existing economic incentive programs and the possible effect of such programs on nuclear safety, see NUREG/CR-4911, Incentive Regulation of Nuclear Power Plants by State Regulators, 1991. Copies of NUREG/CR-4911 may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37062, Washington, DC 20013-7062. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is also available for public inspection or copying at the NRC Public Document Room, 2120 L Street, NW, Washington, DC.

programs have been implemented, and to determine if large penalties have been imposed.

We will update the survey annually. We will periodically assess the frequency of the surveys to determine the need to adjust the schedule.

*Licensees and Utility Commissions Urged To Inform NRC of Program Initiatives*

The NRC needs to be informed of EPI programs that are being planned by State regulatory commissions and that can affect safety. Information on these programs enables the Commission to judge not only whether they could adversely affect safety but also whether they could enhance safety. A number of commenters supported certain features of an EPI program. The Commission has reviewed these features and believes State Public Utility Commissions (PUCs) may want to consider these features in establishing programs that prompt licensees to both economically and safely operate nuclear power plants. These features include (1) capacity factor targets based upon industry's average performance to account for problems throughout the industry, (2) equal opportunities for rewards and penalties, (3) the "banking" of superior performance to offset lower performance, and (4) using performance measures of the entire system instead of those for a specific unit. Frequently, the States develop these programs in coordination with regulated utilities. Therefore, the NRC will request by generic letter that licensees report whenever these commissions develop or substantially revise EPIs. The NRC also will ask FERC and the State utility regulatory commissions to discuss with the NRC initiatives to impose or change an EPI program that applies to an NRC licensee. The NRC will take these actions in order to gain information on the principal features of the program so that the NRC can assess the extent to which the program will affect plant safety. Further, by a generic letter, the NRC will request licensees to report the rewards and penalties assessed through these programs as they occur. A free exchange of information between the NRC and the agencies with economic jurisdiction over nuclear utilities will help the NRC and those agencies to work together to achieve the goals of the safe and economic operation of nuclear power plants.

Dated at Rockville, Maryland, this 18th day of July 1991.

For the Nuclear Regulatory Commission.  
Samuel J. Chilk,  
*Secretary of the Commission.*