

July 2, 1998

FOR: The Commissioners

FROM: L. Joseph Callan /s/
Executive Director for Operations

SUBJECT: FINAL RULE ON FINANCIAL ASSURANCE REQUIREMENTS FOR DECOMMISSIONING NUCLEAR POWER REACTORS

PURPOSE:

To request Commission approval to publish in the *Federal Register* a final rule on financial assurance requirements for decommissioning nuclear power reactors.

SUMMARY:

This final rule was developed to amend the NRC's regulations relating to financial assurance requirements for the decommissioning of nuclear power plants. The rule was in response to the anticipated rate deregulation of the power generating industry. The staff believes the final rule provides for adequate protection in the face of a changing environment not envisioned when the present rule was written in the mid-1980s. This final rule lets stand the definition of "electric utility" contained in 10 CFR 50.2 as it applies to financial qualifications for operating plants as provided in section 50.33(f). However, this definition is no longer being used with respect to decommissioning funding assurance. Rather, 10 CFR 50.75(e) describes the circumstances under which licensees may use the external sinking fund method of financial assurance for decommissioning exclusively. This is one of the financial assurance mechanisms allowed by NRC, and is currently used by virtually all power reactor licensees. In response to comments on the proposed rule, the final rule identifies additional financial assurance mechanisms that may be used for decommissioning, which, the staff believes, provide levels of assurance equivalent to those mechanisms currently allowed by the NRC. As provided in the proposed rule, the final rule adds a definition of "Federal licensee" to further clarify the issue of which licensees may use statements of intent, and requires power reactor licensees to report periodically on the status of their decommissioning funds and changes in their external trust agreements. The rule also amends the regulations to expressly allow licensees to take credit for the earnings on decommissioning trust funds during operating and decommissioning periods.

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BACKGROUND:

The staff submitted a proposed rule on financial assurance requirements for decommissioning nuclear power reactors (SECY-97-102) to the Commission on May 16, 1997. The Commission issued a staff requirements memorandum (SRM) on June 30, 1997, approving publication of the proposed rule subject to some modifications. Subsequently, on August 15, 1997, the Commission issued COMSAJ-97-009, directing the staff to further modify the proposed rule. On the basis of the Commission's comments, the proposed rule was resubmitted to the Commission and published in the *Federal Register* on September 10, 1997 (62 FR 47588). The attached final rule responds to the comments received on the proposed rule and contains the final amendments to be published in the *Federal Register*.

DISCUSSION:

The proposed rule, published in the *Federal Register* on September 10, 1997, was written to accomplish three objectives. First, the NRC proposed modifications to decommissioning financial assurance mechanisms to address concerns resulting from the potential deregulation of the power generating industry. Second, the NRC proposed that power reactor licensees report periodically on the status of their decommissioning funds and on the changes in their external trust agreements. Third, the NRC proposed that licensees be allowed to take a specified credit for the earnings on decommissioning trust funds.

A total of 33 commenters submitted more than 200 comments on the proposed rule. Some of the comments simply endorsed the Nuclear Energy Institute (NEI) positions. The commenters represented 25 utilities and utility groups, 5 State agencies or Public Utility Commission groups, and 2 public interest groups; one individual did not state any affiliation.

In general, the commenters were supportive of the Commission taking action at this time on financial assurance requirements for decommissioning nuclear power reactors. However, the industry expressed concern that the proposed rule needed clarification and that the proposed assurance mechanisms were too stringent. In particular, commenters expressed significant concern regarding the Commission's proposed definition of "electric utility" because they objected to the linking of decommissioning costs with the costs of operations and maintenance in the definition of "electric utility" or any surrogate definition. The commenters were concerned that as a health and safety issue, decommissioning funding assurance is a separate issue from financial qualifications for operations. Specifically, the proposed rule continued the distinction currently codified in the Commission's financial assurance regulations between "electric utility" licensees and others in terms of providing decommissioning funding assurance and assurance of financial qualifications for operations. Second, in the proposed rule, the definition of "electric utility" in 10 CFR 50.2 was expanded to address non-bypassable wires charges that some States have imposed to recover decommissioning costs. The proposed rule contained other definitions in section 50.2 to clarify what the NRC means by "cost-of-service regulation," "Federal licensee," and other related terms. Finally, NEI, with many of the licensee commenters endorsing the NEI position, proposed an alternative concept of "qualified nuclear entity," because NEI believes that "electric utility" is no longer a valid concept. These commenters also requested additional financial assurance mechanisms and a liberalizing of the existing mechanisms, including the

After evaluating the comments, the staff decided not to revise the definition of "electric utility" in the final rule, nor to define a new entity for the purposes of financial assurance for decommissioning. In view of the lack of action by some States on restructuring and deregulation, the staff believes that the concept of "electric utility" will remain valid for quite some time. However, the staff recommends including directly in section 50.75(e)(1)(ii), the types of licensees that could make use of an "external sinking fund" as a method of financial assurance for decommissioning. In section 50.2, several definitions have been revised to clarify what the NRC means by "cost-of-service regulation," "Federal licensee," "Incentive regulation," "Non-bypassable charges," and "Price-cap regulation." Further, in view of the guidance to the staff in the Commission's January 15, 1998, SRM ("Staff Requirements -- SECY-97-253-- Policy Options for Nuclear Power Reactor Financial Qualifications in Response to Restructuring of the Electric Utility Industry"), the staff believes that the existing definition of "electric utility" should continue to apply at this time to financial qualifications of operations. Regarding the comments requesting additional flexibility, the staff has added provisions in the rule for certain long-term contracts and case-specific proposals that licensees may use under specified circumstances. The staff has also identified directly in section 50.75(e)(1)(ii) under which circumstances licensees would be able to make use of an "external sinking fund" as a method of financial assurance for decommissioning. Also, the staff has modified appendices A and C to 10 CFR Part 30 to address the issue of combining assurance mechanisms (i.e., external sinking funds combined with parent or self-guarantees.)

Regarding the proposed reporting requirement, commenters generally did not oppose reporting to the NRC on the status of decommissioning funding assurance. However, several did oppose the proposed frequency and the NRC endorsement of a Financial Accounting Standards Board (FASB) exposure draft (through draft Regulatory Guide 1060 (DG-1060)) or any other FASB-based position that is not final. The staff believes that the wording in the rule is explicit in identifying the financial assurance data required for decommissioning. Therefore, the staff has suspended work on the regulatory guide and will not resume work on it, nor endorse the FASB standard, until that standard is made final.

Lastly, the commenters generally favored the NRC's proposal to allow credit for earnings on licensees' prepaid decommissioning trust funds or external sinking funds. However, the proposed 2 percent real rate-of-return was considered too low by some commenters and too high by others. The staff continues to believe that the 2 percent value is appropriate, but has modified the final rule to allow licensees, at their discretion, to use values up to a 2 percent annual real rate of return, if the licensee's rate regulator has not authorized some other rate.

RESOURCES:

Resources needed for review of the reports required by this rule are expected to be minimal (2-staff-weeks) and will be subsumed within existing resources.

COORDINATION:

The Office of the General Counsel has no legal objection to this paper. The Office of the Chief Financial Officer has reviewed this Commission paper for resource implications and has no objections. The Chief Information Officer has reviewed the final rule for information technology and information management implications and concurs in it.

RECOMMENDATIONS:

That the Commission:

1. Approve for publication in the *Federal Register* the final amendments to 10 CFR Part 50 (Attachment 1).
2. Certify that this rule, if promulgated, will not have a significant economic impact on a substantial number of small entities, pursuant to the Regulatory Flexibility Act, 5 U.S.C. 605(b).
3. Note that
 - a. The Chief Counsel for Advocacy of the Small Business Administration will be informed of the certification regarding the economic impact on small entities and the reasons for it as required by the Regulatory Flexibility Act;
 - b. The NRC made a determination that this action is a major rule under the Small Business Regulatory Enforcement Fairness Act of 1996 and will confirm this determination with the Office of Management and Budget. This determination is reflected in correspondence to the President of the Senate, the Speaker of the House, and the General Counsel of the General Accounting Office (Attachment 2);
 - c. The appropriate Congressional committees will be informed (Attachment 3);
 - d. A press release will be issued (Attachment 4);
 - e. A regulatory analysis (Attachment 5) will be available in the Public Document Room;
 - f. This rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). The Paperwork Reduction Act aspects of this rule have been approved by the Office of Management and Budget.
 - g. It is estimated that this action will result in an additional annual NRC burden of approximately 2 staff-weeks;
 - h. The staff intends to prepare the final "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance" (NUREG-1577) to reflect the Commission's decision on decommissioning funding in this final rule; and
 - i. The staff will issue Regulatory Guide 1060, after the FASB standard becomes final.

- Attachments:
1. *Federal Register* Notice of Final Rulemaking
 2. Letters to Congress and GAO under SBREFA
 3. Congressional Letters
 4. Press Release
 5. Regulatory Analysis

ATTACHMENT 1

[7590-01-P]

NUCLEAR REGULATORY COMMISSION
10 CFR Parts 30 and 50
RIN 3150-AF41

Financial Assurance Requirements for Decommissioning Nuclear Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations on financial assurance requirements for the decommissioning of nuclear power plants. The amendments respond to (1) the potential rate deregulation in the power generating industry and (2) NRC concerns regarding whether current NRC decommissioning funding assurance requirements will need to be modified. The amendment requires power reactor licensees to report periodically on the status of their decommissioning funds, and on changes in their external trust agreements and other financial assurance mechanisms. The amendment also allows licensees to take credit for certain earnings on decommissioning trust funds.

EFFECTIVE DATE: (60 days from the date of publication in the *Federal Register*.)

FOR FURTHER INFORMATION CONTACT: Brian J. Richter, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-1978; e-mail: bjr@nrc.gov.

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 - 50.73 Licensee event report system.
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SUPPLEMENTARY INFORMATION:

I. Background

The NRC published an advance notice of proposed rulemaking (ANPR) for "Financial Assurance Requirements for Decommissioning Nuclear Power Reactors" on April 8, 1996 (61 FR 15427). This action was developed to amend the NRC's regulations relating to financial assurance requirements for the decommissioning of nuclear power plants in anticipation of rate deregulation of the power generating industry. In response to the comments received on the ANPR, the NRC published a proposed rule on September 10, 1997 (62 FR 47588). The NRC proposed to: (1) revise the definition of "electric utility" and related definitions contained in 10 CFR 50.2; (2) add a definition of the term "Federal licensee" to address the issue of which licensees may use statements of intent; and (3) require power reactor licensees to report periodically on the status of their decommissioning funds and changes in their external trust agreements. The rule also would have amended 10 CFR 50.75 to expressly allow licensees to take credit for the earnings on decommissioning trust funds during the operating and decommissioning periods.

II. Comments on the Proposed Rule

The Commission received 33 letters containing more than 200 comments on the proposed rule representing 25 licensees or licensee organizations, 5 State agencies or Public Utility Commissions, 2 public interest groups, and an individual with no affiliation provided. Copies of the letters are available for public inspection and copying for a fee at the Commission's Public Document Room, located at 2120 L Street, NW. (Lower Level), Washington, DC 2055-0001.

The comments have been organized by topic and an analysis of them follows.

1. Definition of Electric Utility

A. LINKAGE BETWEEN DECOMMISSIONING FINANCIAL ASSURANCE REQUIREMENTS AND FINANCIAL QUALIFICATION REQUIREMENTS (I.E., LINKAGE BETWEEN COSTS OF OPERATION, MAINTENANCE, AND DECOMMISSIONING)

Several commenters, including the Nuclear Energy Institute (NEI), stated that NRC should not use the term "electric utility" in its decommissioning financial assurance rules because the term is used for different purposes in the context of NRC's financial qualification requirements in 10 CFR 50.33(f). These commenters stressed that only decommissioning costs are of concern with respect to the financial assurance requirements, whereas only operation and maintenance costs are of concern with respect to the financial qualification requirements. By referencing all these costs as well as the cost of "electricity," the proposed definition of electric utility is both unclear and problematic.

The commenters cited several specific problems. First, the definition does not adequately express NRC's intent that an entity can demonstrate adequate assurance if it can "conclusively demonstrate a government-mandated, guaranteed revenue stream for all unfunded decommissioning obligations" by virtue of a non-bypassable charge that covers only decommissioning costs. (For example, one commenter stated that, in California, licensees are assured of recovering decommissioning costs in distribution rates through non-bypassable means, although recovery of the costs of operation and

maintenance may not be assured.) Second, the definition could unnecessarily invite challenges to the rates established by regulators. Specifically, by requiring that an electric utility's rates be "sufficient for the licensee to operate, maintain, and decommission its nuclear plant safely," the proposed definition could imply that NRC may in the future evaluate the sufficiency of rates established by other regulatory authorities to cover costs of operations and maintenance. Third, by referencing "operation," the definition could create or imply some responsibility for decommissioning funding on the part of nonowner operators that, they argued, may inhibit the formation of joint operating companies.

The NRC believes that commenters' concerns in this area were addressed by the third sentence of the proposed definition, that states that "An entity whose rates are established by a regulatory authority by mechanisms that cover a portion of its costs will be considered to be an 'electric utility' only for that portion of the costs that are collected in this manner." NRC did not intend to have all licensees consider only the combined costs of operation, maintenance, and decommissioning. Nevertheless, even some commenters who understood NRC's intent suggested modifying this third sentence. One suggestion was to replace it with "An entity whose rates are established by a regulatory authority by mechanisms that cover only decommissioning costs will be considered to be an 'electric utility' with respect to its decommissioning funding responsibilities." (Presumably an additional parallel sentence would address "costs of operation and maintenance costs . . . with respect to its financial qualification requirements.") Another suggestion was to clarify the third sentence by referring to recovery of a certain portion or discrete category of costs. Either of these suggestions would also obviate any need to include the 10 percent de minimis threshold for non-recovered costs that was suggested by one commenter (i.e., because the relevant category of costs -- for decommissioning -- would be recovered, even if they were less than 10 percent of all costs), and would allay the concerns of several commenters that an entity recovering only decommissioning costs through non-bypassable charges might be considered less than a 100 percent electric utility for purposes of the decommissioning requirements.

One possible remedy, as suggested by NEI, would be for NRC to construct and define a new term such as "qualified nuclear entity" that would apply only to the decommissioning financial assurance requirements. NEI would define a qualified nuclear entity as one that obtains decommissioning funds through: (1) a rate-setting mechanism; (2) a non-bypassable charge established by legislative or regulatory mandate; or (3) a binding contractual agreement with another party that is equal in amount to the entity's decommissioning funding obligation. Only the third option in NEI's definition is not generally consistent with NRC's proposed definition. NEI's comment does not fully or adequately explain the meaning or implications of the binding contractual agreement included as the third option in its definition. However, other commenters specifically referenced NEI's comments, and objected to the binding contractual agreement portion of NEI's suggested definition. Some of these commenters stated that a binding contractual agreement would provide inadequate assurance unless the party offering the contract were appropriately qualified.

As a final point, NEI noted that the term "electric utility" may take on a different meaning as a result of industry restructuring, but would not alter the existing definition of electric utility which would, under NEI's proposal, remain applicable to NRC's financial qualification requirements. The logic of this position is that the current rule is intended to address the decommissioning financial assurance requirements rather than the financial qualification requirements. Nevertheless, the loss of regulatory oversight as a potential consequence of industry restructuring is as relevant to NRC's financial qualification requirements as it is to NRC's decommissioning financial assurance requirements. Therefore, the NRC has adopted another approach that is intended to address commenters' concerns, but that does not have some of the shortcomings of NEI's approach. The Commission has decided not to change the current definition of "electric utility" as it applies to financial qualifications requirements in 10 CFR 50.33(f). Rather, the NRC is clarifying the applicability of external sinking funds and other mechanisms directly in 10 CFR 50.75.

B. DIRECT VS. INDIRECT COST RECOVERY

Some commenters argued against the proposed deletion of the phrase "either directly or indirectly" in the first sentence of NRC's *existing* definition of electric utility, which states that "Electric utility means any entity that generates or distributes electricity and which recovers the cost of this electricity, either directly or indirectly, through rates established by the entity itself or by a separate regulatory authority." These commenters stated that allowing cost recovery based only on regulated rates and non-bypassable charges might restrict licensees from competing in the open market. Specifically, the change might prevent licensees with Public Utility Commission (PUC)- or Federal Energy Regulatory Commission (FERC)-approved, long-term power sales agreements from qualifying as electric utilities.

It is not clear whether PUC- or FERC-approved, long-term power sales agreements would qualify as cost of service regulation or as non-bypassable charges (and hence as cost recovery through regulated rates) under *either* the current definition or the proposed definition. Assuming that PUCs or FERC analyze these agreements to ensure that they are consistent with the entity's recovery of all reasonable and prudent costs, it would be reasonable for NRC to interpret these agreements as acceptable under either definition. Because this interpretation would not be obvious under either definition, however, such an interpretation by NRC would have to be implemented through existing or new guidance documents, whether or not the phrase is added to the definition. If these agreements are not consistent with the entity's recovery of all reasonable and prudent costs, then the phrase "either directly or indirectly" has been deleted appropriately.

Another commenter stated that NRC should not delete the phrase "directly or indirectly" because the deletion could be interpreted as eliminating the exemption from financial qualification requirements applicable to nonowner *operators* who cover their costs under contracts with owners. The commenter claimed that NRC has traditionally held that nonowner operators are "electric utilities" exempt from the regulated rates of the owners who are contractually committed to pay the operators' expenses. The logic of the commenter's argument seems to be that nonowner operators recover the costs of their electricity from owners, whose rates are directly regulated, thereby making the operator's cost recovery indirectly regulated. For the reasons that follow, the final rule should render this concern moot.

C. CONSEQUENCES OF NOT MEETING THE DEFINITION

One commenter suggested that the proposed definition could result in the premature shutdown of nuclear power plants that have insufficient funds set aside to pay for decommissioning. This comment appears to argue that premature shutdowns may result if, as a result of an entity's loss of status as an electric utility, it must (but is unable to) provide up-front financial assurance for decommissioning. This issue is analyzed in Section 7.B, Prepayment/Up-front Assurance.

D. IMPLICATIONS FOR STATE RATEMAKING AUTHORITY

Some commenters suggested that NRC clarify that it does not intend to infringe upon State ratemaking authority. To this end, one PUC stated that the NRC should remove from the definition the requirement that utilities recover "the cost of electricity," which is only an intermediate consideration in the development of rates. This commenter suggested that the definition should be changed to "any entity that generates, transmits, or distributes electricity."

In response, the NRC has neither the intention nor the authority to infringe on State ratemaking authority. The NRC believes that the final rule described below will obviate these commenters' concerns.

E. REGULATORY EFFICIENCY

Some commenters suggested that the proposed regulation at 50.75(e)(3) be revised to avoid repeating the definition of electric utility. This comment has been adopted, de facto, by the final rule.

F. APPLICATION OF DEFINITION TO PUBLIC POWER AGENCIES

Some commenters noted that the proposed definition does not appear to require public power agencies to recover all of their costs in their rates, only that they set their own rates. In a competitive market, it does not follow that the authority of such agencies to set their own rates will, in and of itself, provide assurance of decommissioning funding.

These comments appear to address the last sentence in the proposed definition of electric utility:

Public utility districts, municipalities, rural electric cooperatives, and State and Federal agencies, including associations of any of the foregoing, that establish their own rates are included within the meaning of "electric utility."

This sentence automatically classifies any licensee that falls in one of the above-referenced groups (collectively referred to by the commenter as "public power agencies") as an electric utility. Thus, public power agencies automatically qualify as electric utilities without consideration of any of the definition's other conditions on rate recovery. The commenters' assessment appears sound in that, in a competitive market, such entities might not recover all their costs even if they can set their own rates. The ability to set rates adequate to achieve full cost recovery would be undermined by the loss of an exclusive service territory. Although the NRC is retaining, unmodified, the definition of "electric utility" for purposes of financial qualifications, the NRC has adopted this comment in its revised section 50.75(e).

2. Definition of Non-Bypassable Charge

A. STRICTER DEFINITION NEEDED

One commenter suggested revising the definition to require that monies collected via the non-bypassable charge be *available* to the licensee, either through assignment or some other mechanism. This comment seems reasonable. If charges are not available to the licensee (e.g., if the revenue stream resulting from the charge has been assigned to an unrelated party as a result of a securitization), then the non-bypassable charges would not provide reasonable assurance of decommissioning funding. The final rule has been modified to reflect that non-bypassable charges should be available to the licensee as part of funds for decommissioning deposited in an external sinking fund.

One commenter stated that because decommissioning funding must be secured and insulated from market risk, the *preferred* funding method should be a non-bypassable charge established by a regulatory mandate. According to the commenter, this approach better assures adequate funding while removing decommissioning as an issue in future competition, and also would help utilities in making optimal business decisions in the competitive environment. Regardless of the validity of the comment, the NRC believes that it would be encroaching upon the responsibilities of other regulators if it were to establish a single method for cost recovery.

B. LINK BETWEEN OPERATION, MAINTENANCE, AND DECOMMISSIONING

One commenter stated that the definition's reference to "costs associated with operation, maintenance, and decommissioning" is problematic for the same reasons that were noted in the "electric utility" definition. [See discussion and analysis in Section 1-A.] Another commenter stated that NRC's proposed definition of non-bypassable charge could be interpreted to mean that operation, maintenance, and decommissioning costs must all be covered by a charge in order to meet the definition. This may be inconsistent with actual charges established by PUCs. For example, a PUC could decide to establish a charge for decommissioning costs, but not for operation and maintenance costs.

One feasible solution was suggested by several commenters, who stated that the definition should be revised to read "costs associated with operation, maintenance, *or* decommissioning" They noted that this is more consistent with the intent of the rule and would not exclude licensees that recover only decommissioning costs through a non-bypassable charge, but that recover all other costs through competition. The final rule reflects this modification.

C. TYPES OF NON-BYPASSABLE CHARGES

One commenter stated that it is not clear whether the proposed definition encompasses wire charges, stranded cost charges, transition charges, exit fees, other similar charges, the securitized proceeds of a revenue stream, or price cap regulation. If NRC decides to defer to State regulatory officials, the final rule should be clear in stating the types of charges covered by the definition. Similarly, other commenters suggested expanding the definition to include other funding mechanisms imposed or established by a governmental authority. One commenter suggested the definition might include a decommissioning liability covered by State securitization legislation. Another suggested it might include binding contracts secured by legislation or a regulatory commission order or both.

The proposed definition, as stated, includes

...charges imposed by a governmental authority which affected entities are required to pay [over an established time period] to cover costs associated with operation, maintenance, and decommissioning of a nuclear power plant.

As noted in the previous section, the NRC has modified the definitions of "non-bypassable charges" in the final rule to focus solely on "costs associated with decommissioning of a nuclear power plant." With that modification, this definition seems to provide an effective performance standard for any type of charge that might be developed by State regulatory officials to cover decommissioning costs. Consequently, there seems to be little benefit to the commenter's suggestion, and some possible danger if any specific charges that might be listed in a revised definition were ultimately implemented by State regulatory officials in ways that did not meet the currently proposed definition. Nevertheless, the NRC has cited examples of non-bypassable charges in its definition, without limiting such charges only to the cited examples.

Finally, one commenter stated that NRC's commentary that securitization of a licensee's interest in non-bypassable charges "may" be an acceptable method of providing decommissioning funding assurance seems to suggest that the existence of a licensee's entitlement to *non-securitized* irrevocable, non-bypassable charges may *not* be sufficient to meet the definition and avoid up-front funding. This comment, however, seems at odds with the plain meaning of the definition of non-bypassable charges.

D. OTHER

Finally, one commenter suggested revising the definition to replace the phrase "governmental authority" with the phrase "regulatory authority." As pointed out by the commenter, this would make the definition more consistent with the definitions of "electric utility" and "cost of service regulation." The NRC is aware of the difference and believes the definition as presented better represents the NRC position because the term "governmental authority" is more inclusive and allows for actions by non "regulatory authorities," such as State legislatures.

3. Definition of Cost of Service Regulation

The comments addressing the definition of "cost of service regulation" seemed, in general, more directly applicable to other parts of NRC's proposal, as discussed below.

One commenter stated that the modifier "all" should be deleted from the "cost of service" definition. This commenter argued that a definition requiring that "all" reasonable and prudent costs be recovered invites a challenge to the sufficiency of a licensee's rate regulation. Similarly, another commenter stated that the definition should account for the possibility of "partial" cost of service regulation. The NRC believes that commenters' concerns in this area were addressed by the third sentence of the proposed definition of electric utility, that states "An entity whose rates are established by a regulatory authority by mechanisms that cover only a portion of its costs will be considered to be an 'electric utility' only for that portion of the costs that are collected in this manner." NRC did not intend to imply that a licensee was subject to cost of service regulation only in the event that all its reasonable and prudent costs are recovered per the definition, but rather that the licensee would be deemed to be regulated under cost of service regulation for whatever *portion* of its reasonable and prudent costs are covered per the definition. This comment has been rendered moot by the NRC's revised final rule.

Another commenter stated that the proposed definition of "cost of service regulation" should not exclude "performance based" and "incentive" ratemaking adopted by some State ratemaking authorities. This commenter proposed adding the following to the definition: "Cost of service regulation includes, but is not limited to, alternative forms of ratemaking which provide for a portion of costs to be recovered based on reasonable benchmarks and incentives for good performance."

This comment does not seem to recognize that the term "cost of service regulation" is actually referenced as "*traditional* cost of service regulation" by the proposed definition of electric utility, which distinguishes cost of service regulation from indirect cost recovery through non-bypassable charge mechanisms. In the final rule, this reference to traditional ratemaking is contained in the definition of "cost of service regulation." In this broader context, the NRC's intention to keep the present focus of "cost of service regulation" seems clear and, moreover, the licensee's suggested additions seem inappropriate (because they are not precisely consistent with traditional direct recovery of reasonable and prudent costs). However, given that the NRC believes that incentive or price-cap-based ratemaking provides reasonable assurance of decommissioning funding, the NRC revised the definition of "cost of service regulation" to reflect this concern.

4. Need for General Flexibility

The flexibility issue has two dimensions. First, several commenters wanted the maximum number of financial assurance options available to reactor licensees. Second, these commenters urged NRC not to include specific or detailed criteria in its rules, which should be kept general, but to address implementation details in a regulatory guide or similar non-binding form.

Among the various financial assurance mechanisms, there are differences in cost, availability, and risk (i.e., degree of assurance). Similarly, because licensees vary in their financial situations and prospects, they pose different degrees of risk in terms of their abilities to provide funding for reactor decommissioning. Making riskier financial assurance mechanisms available to riskier licensees compounds risk to the public that adequate funds will not be available when needed. Thus, prudent public policy may limit the range of mechanisms that should be offered to certain categories of licensees. This is recognized by the commenters themselves, who more or less endorsed the NRC framework, which distinguishes a category of licensees that should not be afforded the option of using an external sinking funding, by itself, as a mechanism of assurance. The commenters did not contend that all licensees should be allowed to use all mechanisms; however, they wanted the external sinking fund option to be made available to more reactor licensees than might qualify under the NRC proposal. If this mechanism were equal to the others in terms of risk, the NRC could make it more available in the interests of flexibility. Because this option has more risk than other available assurance options, the NRC believes it is prudent to restrict its use to licensees with stronger financial or rate regulatory characteristics.

With respect to keeping the rule general and reserving details for a regulatory guide, there are two key considerations. First is a matter of regulatory philosophy and enforcement posture. Reserving details for regulatory guides is an approach that the NRC has used. However, regulatory guides are statements of one way in which licensees can meet regulations and do not establish requirements.

The second consideration is the potential need to change the requirements. It is much easier to change, add, or delete methods as acceptable for meeting requirements in regulatory guides than in regulations. Inasmuch as the NRC's power reactor licensees have begun on a path of economic restructuring, and will be in a period of transition for a number of years, the flexibility afforded by using a regulatory guide as a vehicle for decommissioning financial assurance requirements may be an advantage. On balance, the NRC is maintaining a level of detail equivalent to previous rulemaking in this area, and reserves the right to issue more detailed guidance where necessary. The NRC, in acknowledging the use of combinations of assurance methods, cannot list all possibilities, but includes as an example, the recent New Hampshire legislation that provides for the proportionate liability of the co-owners of the Seabrook Nuclear Power Station in the event that another minority owner, Great Bay Power Company, defaults on its obligations.

5. Applicability of Requirements to Plant Owners and Operators

Two commenters urged the NRC to clarify that the requirements for decommissioning financial assurance apply only to owners or entities that have assumed decommissioning liability under contracts and not to entities that are solely operators. The commenters argued that this clarification is important to the formation or use of specialized operating service companies with no ownership interests in the facilities they operate.

Applying financial assurance requirements to both owners and operators provides flexibility, since either can demonstrate compliance. This approach also recognizes scenarios in which the operator has greater financial resources or creditworthiness or both than the owner. Such a scenario is conceivable following the economic restructuring of the electric power industry. To provide greater flexibility and assurance, the NRC will not specifically exempt operator licensees from the financial assurance requirement. This is unlikely to affect the formation or use of operating service companies, because they can negotiate with reactor owners regarding which party or parties will be responsible for demonstrating financial assurance for decommissioning purposes.

6. Site-Specific Cost Estimates

Four commenters addressed the desirability of allowing licensees to use site-specific decommissioning cost estimates as the basis for financial assurance and reporting, even if these estimates are less than the current minimum amounts prescribed in 50.75. The primary advantage asserted would be to avoid unnecessary assurance expenses when a site-specific estimate is less than the current NRC minimum. Other asserted benefits of allowing licensees to use site-specific cost estimates below the NRC minimums include greater consistency with PUC approaches, tax treatment, and possible Financial Accounting Standards Board (FASB) requirements. Moreover, acceptance of site-specific estimates might enhance the integrity of the rule, given the perception stated by several licensees of problems with the current minimum amounts and the acceptance by PUCs of site-specific cost estimates as the basis for financial assurance even where the site-specific estimates are less than the NRC minimums. However, given other potential weaknesses in current implementation (primarily relating to the adequacy of cost estimates and the potential under-funding indicated by current balances in decommissioning trust funds), such an allowance could aggravate the risk of potential under-funding associated with the external sinking fund mechanism. Submittal of site-specific estimates to the NRC would enable it to better evaluate the funds needed for decommissioning. However, the Commission has decided to defer allowing site-specific estimates that are lower than the amounts specified in 10 CFR 50.75(c) until additional decommissioning data are obtained. (Staff Requirements Memorandum, SECY 97-251 - Proposed Rule on Nuclear Power Reactor Decommissioning Costs, February 5, 1998.)

7. Alternative Methods of Assurance

A. ALTERNATIVE FRAMEWORK PROPOSED BY NEI

NEI's proposed framework for financial assurance for decommissioning resembles in broad outline NRC's framework, which broadens the range of allowable assurance mechanisms for reactor licensees that lose the ability to recover decommissioning costs through regulated rate fees or other mandatory charges established by a regulatory body. Although the external sinking fund, standing alone, is not allowed for the licensees losing such regulatory oversight, the NRC framework also offers opportunities for case-by-case consideration of non-standard financial assurance arrangements. Examples include section 50.75(e)(1)(v), which allows unspecified, other guarantee methods; and certain contractual arrangements in section 50.75(e)(1)(ii)(C).

The NEI's framework involves three, rather than two, categories of power reactor licensees. Under the NEI framework, the broader set of assurance mechanisms (including the current external sinking fund approach) would be available to: first, licensees meeting the criteria for "qualified nuclear entities" and second, licensees that do not meet the requirements for "qualified nuclear entities" but that satisfy a set of financial criteria. NEI does not specify in its comments what these financial criteria would be. Third, licensees that satisfy neither the criteria for qualified nuclear entities nor the alternate financial criteria would not be allowed to use the external sinking fund option, but would be able to use the other mechanisms. NEI also includes an option for non-standard demonstrations of assurance.

The effect of the NEI proposal would be to make the current external sinking fund financial assurance option available to a larger number of licensees than would be allowed under the NRC proposal. This effect is the result of: (1) defining "qualified nuclear entities" in terms of criteria that may be less stringent than the proposed criteria for "electric utility"; and (2) allowing licensees that satisfy certain financial criteria also to take advantage of the external sinking fund option, which they would not be allowed to do under the NRC proposal. The NEI proposal would mean an increase in the risk that adequate funds will not be available when needed because of an inadequate funding rate, inadequate earnings on invested funds, or premature shutdown. It would decrease the cost to licensees. NRC's proposal entails less risk of inadequate funding, but greater cost to licensees.

On balance, to make the external sinking fund option more available to reactor licensees, the NEI framework would result in greater risk that sufficient decommissioning funds will not be available when needed. The NEI proposal also would require the development of appropriate financial criteria, which would be challenging to develop because of the unpredictable nature of the industry. An entity that meets the financial criteria, unlike those licensees who retain the ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body, would have no guarantee of collecting sufficient funds for decommissioning and could encounter deteriorating financial conditions that could cause a

reduction or cessation of payments into the external sinking fund.

The NEI framework would produce the same result if the financial criteria were made an alternate basis for being a "qualified nuclear entity." This would produce a two-tier framework parallel in structure to the NRC proposal, though different in content.

Based on these considerations, the NRC is not adopting NEI's proposed approach. Rather, the NRC is specifying in section 50.75, a variety of mechanisms for providing decommissioning financial assurance that licensees may use, depending upon their circumstances. The revised regulations would also permit the use of "other guarantee methods" that are not specifically identified in the regulations.

B. PREPAYMENT/UP-FRONT ASSURANCE

One commenter addressed the issue of up-front assurance. The commenter stressed that it is unfair for NRC to require up-front funding for licensees that no longer meet the definition of "electric utility." In particular, the commenter argued that licensees have presumed all along that they would be able to gradually fund decommissioning throughout their plants' operating lives and that, as a result, licensees who are no longer considered electric utilities may be unable to remain in business.

NRC's current financial assurance requirements for decommissioning nuclear power reactors are based on the premise that the reactors are owned by regulated or self-regulating entities that recover their decommissioning costs through a rate-setting process overseen by the applicable regulating body. This regulatory oversight provides reasonable assurance that such licensees will recover reactor decommissioning costs and continue paying into external sinking funds for decommissioning.

It is true that those licensees no longer able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body may incur a greater burden by having to provide up-front assurance. This up-front assurance could take the form of prepayment or it could take the form of some type of surety mechanism (e.g., a letter of credit, or a partner or self guarantee). It is possible, under some restructuring scenarios, that this could lead to premature shutdown of some reactors. However, the likelihood of this occurring is highly doubtful. Many PUCs have already indicated their intention to allow for the regulated recovery of decommissioning costs, either through rates or through some type of non-bypassable charge, even for otherwise deregulated entities. For licensees that will not be able to collect funds through such a process after industry restructuring, up-front assurance is necessary to ensure that reasonable financial assurance is provided for all decommissioning obligations. In the more competitive environment that is likely to prevail after restructuring, some of these licensees may not remain financially viable for reasons not related to decommissioning financial assurance, further suggesting the need for up-front assurance.

C. ACCELERATED FUNDING

In the preamble to its proposed rule, NRC requested comment on whether accelerated funding should be considered as a financial assurance option for licensees no longer meeting the definition of "electric utility." Several commenters supported accelerated funding, provided that the accelerated funding period would be long enough. They generally stressed that, if the funding period were too short, non-electric utilities would be placed at a competitive disadvantage, potentially leading to insolvency and premature shutdown of plants. One commenter asserted that the burden of accelerated funding would be most severe for licensees with little time remaining before shutdown. Several commenters offered specific suggestions regarding the length of an accelerated funding period, stating that it should last most or all of the remainder of the license period, two-thirds of the remaining license term or 10 years (whichever is greater), or five-eighths of the remaining license period. One suggested that the licensee or the licensee's parent company should have to pass a financial test for any unfunded amount in order to use accelerated funding. Others cautioned that accelerated funding could interfere with licensees' business planning or lead to negative tax consequences.

For licensees with reactors that have remaining operating lives of less than the accelerated funding period, the accelerated funding option would have no impact because licensees' funding schedules would be no different than they are currently. NRC would have less assurance from these licensees, given that they would no longer recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body. For licensees associated with reactors that have remaining operating lives longer than the accelerated funding period, the accelerated funding option would be a significantly less burdensome means of demonstrating financial assurance than full, up-front funding. In all cases, however, the relative decrease in burden to the licensee must be weighed against the reduced level of financial assurance provided to NRC during any accelerated funding period.

The length of an accelerated funding period would affect individual licensees differently, depending on the amount of unfunded decommissioning obligation and on the time period that the licensees would otherwise have had to complete the funding. The greater the amount of money that must be funded on an accelerated schedule, the more significant the impact will be on a licensee. For example, assuming licensees are otherwise identical and have been adequately funding an external sinking fund all along, the impact of a 10-year accelerated funding schedule would be greater for a licensee with 25 years of operating life remaining than for a licensee with 15 years of operating life remaining. (This contrasts with the comment asserting that impacts would be most severe for licensees with little time remaining before shutdown. In fact, the opposite is true, except for licensees that have been making inadequate contributions to their decommissioning sinking funds.)

The NRC believes that the alternative of requiring accelerated funding for all plants over a defined period, to cover the possibility of premature shutdown at some plants, would be too arbitrary and would lead to wide variations in impacts on licensees. Accelerated funding results in the inequitable inter-generational problem of the present generation paying for the decommissioning costs, while the future generation may receive the benefits of future electricity generation without incurring the costs of decommissioning. The suggestion that NRC should allow licensees to use accelerated funding only if they or their parent companies have sufficient assets is analogous to combining a self-guarantee or parent company guarantee with the external sinking fund mechanism. This idea has significant advantages to licensees, and is discussed in Section 7.J, "Combinations of Methods."

Another way to reduce the burden of accelerated funding on licensees would be to ensure that the accelerated contributions are tax deductible. Under current Internal Revenue Service (IRS) rules, accelerated payments into decommissioning funds may not be deductible. However, these tax changes are

beyond the NRC's mandate and Congressional or IRS action would be required to accomplish them. Consequently, unless these rules are changed, licensees may be ineligible to receive tax breaks on deposited funds.

For the reasons stated above, the NRC does not consider accelerated funding to provide reasonable decommissioning financial assurance.

D. PARENT GUARANTEES/SELF-GUARANTEES

The commenters generally endorsed parent company guarantees and self-guarantees as a reasonable method of assurance for licensees no longer meeting the definition of "electric utility." However, a number of commenters stated that the financial tests specified in Appendices A and C to 10 CFR Part 30 are inappropriate for these licensees and would be overly burdensome. Several commenters suggested specific revisions to NRC's existing financial tests:

- One commenter suggested that NRC allow non-electric utilities to use: (1) a parent company guarantee from a parent meeting the criteria for *self-guarantees*; and (2) a self-guarantee for licensees meeting at least two of the following criteria:
 - Licensee has an investment grade bond rating;
 - Licensee's pre-tax income (before interest expense) divided by interest applicable to debt is greater than or equal to 2; and
 - Licensee's net worth is at least twice the current remaining unfunded cost of decommissioning in current year dollars.
- One commenter stated that the self-guarantee test's "10 times requirement" for assets should be lower, but did not suggest an alternative threshold.
- One commenter suggested that the financial tests should require total assets in the U.S. and tangible net worth to be one to two times the estimated decommissioning costs, rather than what is currently specified in the tests.
- One commenter suggested that the Commission consider ownership of other revenue-generating assets (besides the nuclear power plant).
- One commenter suggested that the NRC should develop a process similar to the one used by bond-rating agencies to assess the ability of firms to continue repaying principal or to continue paying interest or dividends.
- Finally, one commenter suggested that the NRC allow non-electric utilities to use parent company guarantees in conjunction with other allowable financial assurance methods, such as external sinking funds. (The issue of using parent company guarantees in combination with other mechanisms is discussed in Section 7.J, "Combinations of Methods").

NRC's parent company guarantee is based largely on a financial test developed by the EPA more than 15 years ago. EPA's test was intended to assess the financial condition of firms managing hazardous waste that were seeking to assure closure and post-closure care obligations that are substantially smaller than typical decommissioning costs for power reactors. In adopting these tests, the NRC believed that its objectives for financial assurance would be reasonably met, but recognized that the tests were most appropriate for materials licensees, although, at that time, the financial tests were also made applicable to nuclear power plant licensees who were not "electric utilities." The NRC realized that most power plant licensees would likely use external sinking funds rather than parent or self guarantees to provide decommissioning funding assurance, and thus did not perform a detailed analysis of their applicability to power plant licensees.

Because deregulation is still in its earliest phases, it is not yet possible to identify or define the financial characteristics of entities that may ultimately be responsible for reactor decommissioning. Consequently, evaluating or improving the test's applicability to those licensees who are no longer able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body may be difficult, and any criteria that might be developed could become outdated or misleading relatively quickly. Finally, developing and implementing alternative tests (such as those suggested by commenters) could place a substantial burden on the NRC. For these reasons, the NRC is considering any changes to financial tests separate from this rulemaking. Nevertheless, the NRC is implementing some changes to parent and self guarantees that may make these assurance methods more viable for power reactor licensees. Section 7.J describes these changes in more detail.

E. SURETY METHODS

Three commenters addressed the issue of surety methods of financial assurance (i.e., surety bonds, letters of credit, lines of credit). The predominant issue raised by these commenters pertained to the limited availability of these mechanisms to licensees no longer meeting the definition of "electric utility." One commenter claimed that because the majority of generating companies will have an assured recovery mechanism through non-bypassable charges, there will be no new market created for surety mechanisms after industry restructuring, and that licensees required to obtain these mechanisms will be faced with significant costs. Another argued that NRC should ascertain the availability of these instruments before issuing a final rule based on the assumption of their availability. This commenter proposed the creation of a Government-managed decommissioning insurance plan to provide such mechanisms (discussed in Section 7.G, "Government-Managed Insurance Plan").

NRC recognizes that there are likely to be limits on the availability of surety mechanisms such as letters of credit, lines of credit, and, in particular, surety bonds, to licensees trying to demonstrate financial assurance. This limited availability would arise from two factors. First, the amount that would need to be assured under such a mechanism (i.e., the difference between the licensee's decommissioning cost estimate and the current balance in its external sinking fund) could in some cases be quite large and could pose a significant risk to potential providers of the mechanisms. Second, mechanism providers also may view some licensees (those that lose the ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body) as financially risky ventures given their restructured operations and newly deregulated financial characteristics (e.g., licensees may no longer have guaranteed service areas). Some licensees may be able to obtain these mechanisms only after

offering significant levels of collateral to the provider as security. Generating subsidiaries without access to substantial assets other than the nuclear plant may find it difficult to provide the necessary collateral and may be unable to obtain a surety mechanism. Even if surety mechanisms are not available to some licensees, licensees may be able to use prepayment mechanisms (e.g., full up-front funding of the external sinking fund), possibly arranging for the necessary funding prior to restructuring (e.g., before a nuclear plant is placed in a generating subsidiary with few other assets). Licensees may also have access to parent and self guarantees, which are still less costly.

F. POWER SALES CONTRACTS

Commenters suggested two possible roles for power sales contracts in the financial assurance program: (1) as a threshold condition for being able to use the external sinking fund; and (2) as a mechanism for demonstrating financial assurance. One commenter recommended that power sales contracts be accepted as a means by which licensees not meeting NRC's proposed definition of electric utility can qualify to use the broader range of assurance mechanisms -- such as the external sinking fund. Another commenter concurred, stating that such contracts would be secured by legislation or a regulatory commission order or both. Commenters also recommended that, for licensees not qualified to use the external sinking fund, an assurance mechanism that would allow a licensee to show that power sales contracts are in place, could provide some or all decommissioning funding.

There is an important difference between using power sales contracts as a threshold criterion, for reactor licensees that lose the ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body, and as a financial assurance mechanism. As a threshold criterion, power sales contracts would represent evidence of the financial status and prospects (e.g., sales backlog) of a company. These contracts would be considered when private financial organizations assess the credit-worthiness of companies. However, power sales contracts have some disadvantages that work against their use as a threshold criterion. First, power sales contracts may have contingencies that make it difficult to project revenues or earnings. Such contracts are not equivalent to a Government-mandated revenue stream that would fully fund decommissioning costs. It also would be very difficult for NRC to define clearly how it would analyze and evaluate such contracts, potentially creating issues of fairness, consistency, and accountability. For example, the NRC would need to assess whether a given contract covers all licensee costs (including decommissioning), how binding it is, and its effective term. Unlike financial statement data, which can be statistically associated with subsequent financial performance, there is no objective basis or validated test for linking sales contracts to future financial performance. By making it easier for licensees that lose the ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body, or that do not have access to a Government-mandated revenue stream to use the external sinking fund, acceptance of power sales contracts as a threshold criterion may increase the risk that funds will not be available when needed. However, under certain circumstances that the NRC has specified in this final rule, the NRC believes that long-term contracts can provide levels of decommissioning funding assurance that are equivalent to other acceptable methods.

Power sales contracts also are unlikely to make good financial assurance mechanisms, unless they have terms that provide for payment of decommissioning costs under most likely occurrences. They often lack the provisions needed to ensure effective and continuing coverage (e.g., automatic renewal, notice of cancellation). For example, in *Town of Boylston v. FERC* (21 F.3d 1130, 305 U.S.App.D.C. 382), municipal purchasers successfully challenged an order to pay reactor decommissioning costs as a charge under their power purchase contracts. Moreover, FERC has authority to impose alternative provisions in the public interest if it finds contracts to be unjust and unreasonable. Power sales contracts often contain contingencies that may make it difficult to determine corresponding levels of revenues. Long-term contracts for the supply of uranium, natural gas, and coal have all been subject to litigation at one point or another because of market or regulatory changes, which may be specifically addressed in contracts or covered under "force majeure"¹ clauses. These contracts typically do not themselves effect the setting aside or guarantee of monies, although contracts could be written to serve as guarantees or to require that proceeds be deposited in external sinking funds. The NRC believes that power sales contracts that contain provisions to mitigate these shortcomings can provide reasonable assurance of decommissioning and have been allowed, under specified conditions, in the final rule.

G. GOVERNMENT-MANAGED INSURANCE PLAN

Two commenters addressed the NRC's decision to eliminate from future consideration the concept of a captive insurance pool to pay unfunded decommissioning costs. One noted only that it agreed with the decision not to pursue this option. The other commenter, however, disagreed with the decision and urged the NRC instead to investigate the creation of a Government-managed decommissioning insurance plan. Under this plan, the licensee would be able to purchase an insurance policy from the Federal Government. The cost of the policy could be determined by each plant's performance history or Systematic Assessment of Plant Performance (SALP) rating, with poorly run plants paying a higher premium and well-run plants paying a lower premium. The commenter noted that Federal Government participation in private insurance markets is not unprecedented, citing the example of Federal flood insurance. The commenter weakened the force of his example, however, by also pointing out that Federal Government participation in private insurance markets takes place "especially where the risk is not readily subject to management or the level of potential exposure is large." Clearly, basing premiums on plant performance history implies that the commenter would expect poorly-run plants to close more frequently than well-run plants, suggesting that the risk can be managed.

The commenter advocating further examination of an insurance plan did not make clear whether the commenter favored a captive insurance pool entirely funded by the industry or an insurance system that was funded, completely or partially, by the Federal Government.

The arguments against a captive insurance pool are strong. The participants would be able to cause losses simply by not taking action to set aside adequate funds for decommissioning. Delay in setting aside funds could be beneficial because of the use value of the funds that a licensee could reallocate to some other purpose. In addition, the members of the insurance pool would be in competition with each other, and could shift costs to competitors by means of the insurance pool. Thus, an insurance pool for decommissioning would offer no incentive to licensees to reduce the magnitude of their potential claims on the pool, either from an insurance standpoint (because their decommissioning costs are insured) or from an economic standpoint (because of the advantages to them of delaying payment and of shifting costs to their competitors).

The commenter's suggestion that rates should be based on plant performance is unlikely to satisfactorily address the problem of adverse selection.

Those posing higher risks might continue to be more likely to enter an insurance pool, despite being assessed higher rates, thus raising the proportion of high-risk insureds. This could increase the price of the insurance and cause other relatively low-risk entities to avoid entering the pool, even if they were being charged less. The nexus between plant performance, however measured, and likelihood of premature closure is not so clear that the Government agency responsible for the insurance would be able to set premiums accurately. Eventually the proportion of high-risk insureds could increase to the point that providing the insurance becomes unprofitable or impossible. Alternatively, mandatory participation by low-risk insureds could lead to situations in which they were subsidizing the high-risk entities, even with a rate differential.

The commenter did not present any arguments supporting Government management of a decommissioning insurance plan. If such a plan were set up without the inclusion of Federal funds, there seems to be little reason to assign a Government agency to manage it.

Finally, insurance that is partially or wholly subsidized by the Federal Government, such as flood insurance, would require Congressional action, and is outside the scope of an NRC rulemaking. Thus, the Commission is not pursuing this option further.

H. REGULATORY CERTIFICATION

Only one commenter suggested that NRC should reconsider its dismissal of the possibility of PUC or FERC certification that licensees within their jurisdiction would be allowed to collect sufficient revenues through rates to complete decommissioning funding. That commenter noted that NRC had relied upon the views expressed to the NRC that "no current commission can bind a future commission" and that a PUC "could not give a blanket guarantee that all licensees would be allowed to collect revenues to complete decommissioning funding."

This commenter argued that these uncertainties are "no greater than those associated with cost of service regulation, which certainly does not constitute a 'guarantee' of availability of sufficient decommissioning funds," noting also that the underlying regulatory standard is only one of "'reasonable assurance'."

The commenter, however, did not address a number of important considerations. First, the opponents of certification are particularly well informed. The comments upon which NRC relied in dismissing certification as an option came from the National Association of Regulatory Utility Commissioners (NARUC) and several State PUCs, that are particularly good sources of information concerning the limits of their own authorities and their ability to bind their successors. Second, the commenter did not address the argument, presented by NEI and endorsed by several PUCs, that new Federal legislation would be necessary to make such certifications binding. Third, the commenter did not address limitations on FERC's jurisdiction, and consequent limitations on FERC's ability to make binding certifications. Finally, the commenter suggested that NRC had adopted a "guarantee of availability" standard rather than the underlying regulatory standard. Given the weight of arguments in opposition to certification, however, NRC has concluded that certification is not a viable financial assurance mechanism.

I. "ANY OTHER METHOD"

A number of commenters stated that NRC should permit more flexibility in the allowable methods for demonstrating reasonable assurance of decommissioning funding, particularly for licensees no longer meeting the definition of "electric utility." Several commenters suggested that NRC review and evaluate licensee-specific funding proposals on a case-by-case basis. Another commenter recommended that NRC allow non-electric utilities to use mechanisms developed by governmental authorities and approved by NRC. Finally, one commenter suggested that NRC grant individual licensees or States the flexibility to develop initiatives/mechanisms for providing reasonable assurance of funding.

Licensees, as discussed in Sections 7.B and 7.E of this statement of considerations, may well encounter cost and availability issues in trying to use some of the financial mechanisms allowed by NRC. In addition, the applicability of the NRC's parent company guarantees and self-guarantees to power reactor licensees is questionable (as discussed in Section 7.D.) because the underlying financial tests were developed primarily for other types of entities assuring smaller decommissioning obligations. Consequently, a case-by-case approach, through which reactor licensees that lose the ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body, could provide assurance equivalent to the other methods that the NRC is allowing. However, the NRC will need to ensure that the mechanisms used will, in fact, provide adequate financial assurance. Although, the NRC expects that only a very-limited number of licensees will use a case-by-case approach, this will potentially place a resource burden on the NRC to review individual "non-standard" mechanisms.

J. COMBINATIONS OF METHODS

Several commenters stated that NRC should allow utility licensees and, in particular, non-utility licensees to use combinations of mechanisms to demonstrate financial assurance for decommissioning. Two commenters suggested specifically that NRC allow non-electric utility licensees to use parent company guarantees or self-guarantees or both in conjunction with other allowable methods.

NRC's current requirements already allow combinations of mechanisms, except that two mechanisms -- the self-guarantee and the parent company guarantee -- may not be used in combination with other mechanisms. Allowing combinations of funding methods increases the regulatory flexibility to licensees trying to meet the requirements. (Note, however, that a licensee using a combination of mechanisms faces a greater administrative burden to obtain its mechanisms and, similarly, NRC faces an increased burden in reviewing multiple mechanisms.) For mechanisms that guarantee payment (e.g., trust fund, payment surety bonds, letters of credit), a combination of mechanisms that equals the total decommissioning cost estimate is unlikely to lead to any difficulty in assuring that decommissioning funds will be used for their intended purpose.

Some mechanisms, however, guarantee performance rather than payment. These mechanisms are self-guarantees, parent company guarantees, performance surety bonds, and some insurance. The terms of these mechanisms promise that the issuer will complete required decommissioning activities if necessary. It can be problematic to combine a performance mechanism with another mechanism (payment or performance) because of the inherent subjectivity in valuing performance. For example, a licensee may wish to combine a \$100,000 parent company guarantee with a \$100,000 letter of credit to assure a decommissioning cost estimate totaling \$200,000. If the guarantor proves to be inefficient in conducting decommissioning, it may spend \$100,000 on activities that should have cost less. In this case, the letter of credit would be inadequate to fund the remaining activities, even

though the guarantor could claim to have fulfilled its performance guarantee.²

However, the NRC believes that this problem is of less concern in the specific case of a self-guarantee being used in combination with an external sinking fund because, in this case, the guarantor has no incentive or ability to shift costs or to avoid greater responsibility. However, if the self-guarantee were to be combined with a mechanism such as a letter of credit, that required the licensee to offer collateral to the issuer, then it is possible that if NRC were to draw on the letter of credit, the bank might seize the licensee's collateral which, in turn, might prevent the licensee from performing under the self-guarantee.

The combination of a parent or self guarantee and an external sinking fund also appears to provide a relatively low-cost means for licensees to demonstrate financial assurance while continuing to gradually fund decommissioning costs over time (either on the current schedule or on an accelerated schedule). Because of the low costs of guarantees, however, allowing this combination of mechanisms could create an incentive for licensees to delay or cease payments into the sinking fund and, instead, to rely on the guarantee for as much of the cost as possible. Given the magnitude of typical decommissioning costs for reactors, this possibility could hinder the timely conduct of decommissioning. In other words, decommissioning could be significantly delayed if, because of a licensee's inadequate contributions to its sinking fund, a guarantor had to come up with large amounts of money at the time of decommissioning.

The NRC generally believes that it should not allow licensees to use parent company guarantees and self-guarantees in combination with each other to assure decommissioning obligations. Because parent companies typically consolidate the financial statements of all their subsidiaries into their own financial statements, combining parent company guarantees and self-guarantees could result in double counting of the same limited financial strength to pass separate financial tests (e.g., one for costs covered by a parent company guarantee, and one for costs covered by a self guarantee).

In sum, the NRC has eliminated the prohibition on combining parent company or self guarantees with external sinking funds. The NRC will also consider other combinations of mechanisms on a case-by-case basis when the aforementioned concerns are addressed.

K. REQUIRED TIMING OF ALTERNATIVE METHODS

Several commenters wrote that the NRC should allow affected licensees an extended period of time to secure alternative financial assurance mechanisms. One commenter stated that NRC's current regulations allow a licensee 30 days to develop a submittal describing how decommissioning funding will be assured if the licensee no longer satisfies a given criterion (e.g., the definition of "electric utility"). This commenter recommended that NRC allow licensees 180 days in these instances, and also suggested that NRC allow licensees to continue making payments to their existing decommissioning funds until NRC approves the alternative funding submittal. Another commenter stressed that NRC should allow "adequate transition time for legislative and regulatory changes to accommodate the new definition of 'electric utility'."

The comments presented the argument that licensees will need more time to obtain alternative financial assurance mechanisms (e.g., 180 days) than they would in the event of the cancellation of an existing mechanism (only 30 days). This argument ignores the fact that deregulation will not occur instantly and unexpectedly. Licensees are likely to have months or even years to evaluate whether they may be able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body and what mechanisms they might use to demonstrate financial assurance if and when that occurs. Consequently, no additional time should be provided to licensees in response to this comment.

8. Federal Licensees

A. APPLICABILITY TO FEDERAL LICENSEES

A number of commenters argued that financial assurance requirements for electric utilities should apply equally to Federal licensees, that no special treatment should be afforded Federal licensees, and that all licensees should satisfy the same requirements. One stated explicitly that "Federal" licensees should be required to provide the same level of financial assurance as other power reactor licensees, but qualified his comment by stating that "the proposed rule should ensure that at such time as these Federal entities become private enterprises, they are subject to the definition of 'electric utility.' In doing so, they must provide the same measures of financial assurance currently required to electric utilities, i.e., they must provide the same level of external funding or other assurance that would otherwise have been required of them from the initial issuance of their operating license." This commenter apparently did not oppose the use of statements of intent by Federal licensees, until the point at which they become private.

The Tennessee Valley Authority (TVA), the only current Federal licensee for a nuclear power reactor, was the sole commenter that argued in favor of special provisions that would apply only to Federal licensees. It noted, in particular, that under Federal law it is required to charge rates for power that will produce gross revenues sufficient to cover all operating expenditures of the power system, and that such operating expenses are considered to include decommissioning costs. TVA's arguments are evaluated below.

B. DEFINITION OF "FEDERAL LICENSEE"

Several commenters made identical, or almost identical, recommendations concerning the definition of Federal licensee. Each supported the intent of the definition, which they considered to be to exclude from the definition any Federal agency whose obligations do not constitute the obligations of the United States. However, each recommended that the definition be modified to define a Federal licensee as "any NRC licensee, the obligations of which are guaranteed by and supported by the full faith and credit of the United States Government." Each argued, without explaining fully, that the term "full faith and credit backing" is neither defined nor commonly used in other legislation relating to Federal agencies.

Presumably, the commenters who found the phrase "full faith and credit backing" ambiguous did so because it does not specify that all obligations of the entity are backed by the credit of the Federal Government, nor does it say explicitly that the obligations are "guaranteed," as does the proposed replacement definition. The proposed replacement definition thus is slightly more precise. Much of the suggested definition has been used previously and commonly in legislation pertaining to Federal agencies. Thus, it would have the advantage of removing any ambiguity that might arise from using a totally new definition. A preliminary search of the United States Code, Annotated, uncovered a number of situations in which the proposed phrase is used. For example, under Chapter 50 of Title 7, the Secretary of Agriculture is empowered under 7 U.S.C.A. 1928, to guarantee certain agricultural

credit real estate loans and emergency loans. Section 1928 specifies that contracts of insurance or guarantee executed by the Secretary under Chapter 50 "shall be an obligation supported by the full faith and credit of the United States." Similarly, the Secretary of the Interior is empowered under Title 16 of the U.S. Code to insure certain loans of private lenders. Section 470d of Title 16 provides that "Any contract of insurance executed by the Secretary under this section . . . shall be an obligation supported by the full faith and credit of the United States. . . ." Finally, under Title 42, Chapter 7 (Social Security) of the U.S. Code, the Secretary of the Treasury can issue obligations for purchase by the social security trust fund. Section 401 of Title 42 provides that "the obligation is supported by the full faith and credit of the United States. . . ." The commenters appear to have identified the phrase generally used to describe such an obligation, and therefore replacement of the current definition of "Federal licensee" with the definition suggested by the commenters appears warranted.

TVA argued against the proposed definition of Federal licensee because the proposed definition would preclude TVA's use of the statement of intent. In its view, there are "ample reasons" to support the continued use of the statement of intent by TVA. In particular, TVA argued that with respect to decommissioning funding assurance, "the key fact is that Federal law requires TVA to adequately fund the conduct of TVA's power activities, and this includes operating, maintaining, and decommissioning its nuclear facilities." TVA pointed out that even before decommissioning funding assurance requirements from NRC, TVA was taking action to ensure that funds would be available to decommission its nuclear units. TVA argues, in effect, that a financial assurance requirement other than the statement of intent amounts to "imposing separate regulatory requirements to oversee the manner in which TVA is meeting its statutory requirements. . . ."

These arguments amount, in sum, to an assertion that because TVA is subject to an existing statutory requirement to fund decommissioning, the Commission should not impose any different, or additional, requirements. TVA maintains that the NRC should have reasonable assurance that TVA will have adequate funding to ensure the conduct of decommissioning activities "because Federal law *requires* TVA to provide such funds." (emphasis in original)

It also could be correctly said, however, that Federal law requires other reactor licensees to provide reasonable assurance of decommissioning funding. The purpose of financial assurance is to present a second line of defense, if the financial operations of the licensee are insufficient, by themselves, to ensure that sufficient funds are available to carry out decommissioning. TVA apparently concedes that its obligations are not supported by the full faith and credit of the United States Government; therefore, if TVA cannot fund the decommissioning, the Federal Government is not obligated to do so. Although the TVA board has the authority to set electric power rates to meet power system obligations, including decommissioning, it may not, contrary to its assertions, have the "unfettered ability" to do this, because its markets may not support such rates. TVA noted that its current business plan recommends an offer to its distributor customers to change their power contracts after five years from a rolling 10-year term to a rolling 5-year term.

TVA appears to misunderstand the purpose of the statement of intent, which is to obtain a commitment by another, and superior, governmental entity that the obligations of the subordinate governmental entity will be paid by the superior entity if the subordinate entity cannot pay them. Absent such a commitment, which would be represented by support for the obligations by the full faith and credit of the United States, there is no "statement of intent" upon which TVA can "continue to be able to rely."

Following publication of this rule, the NRC will review TVA's current decommissioning financial assurance arrangements and determine whether any actions are required in light of the added definition of "Federal licensee." The publication of this rule, by itself, does not constitute an action of the NRC with respect to TVA's current decommissioning financial assurance.

9. Reporting on the Status of Decommissioning Funds

A. USE OF FINANCIAL ACCOUNTING STANDARDS BOARD (FASB) STANDARD

The commenters generally did not oppose reporting to NRC on the status of decommissioning funding assurance in accordance with the requirements of a final FASB promulgation, on the grounds (as expressed by NEI) that a standard reporting mechanism should be used that does not add unnecessary burden. However, several commenters did oppose a requirement that they use the preliminary FASB exposure draft, or any other FASB-based position that is not final. They argued that changes from the proposed to the final FASB standard, which cannot be predicted because the standard is still under development, could make it inappropriate for meeting NRC's endorsement. Unless the FASB standard is adopted soon, these commenters argued, other reporting options should be adopted. Some commenters suggested that regulatory language need not be changed, but that the contents of DG-1060 would need to be amended to reduce the reliance on the FASB draft.

Some commenters went further, and expressed criticisms of the FASB exposure draft, indicating that even if it became final in its current form they would not find it appropriate for use. In the view of these commenters, merely recognizing the liability and periodic expense for decommissioning, which is the focus of the FASB draft, is not sufficient to ensure adequate funding. In their view, the FASB standards establish accounting procedures but are not the appropriate computations for determining necessary cash flows for funding external trusts. One commenter stressed that the focus of the FASB draft, as well as issues concerning the appropriate discount rate, also made the FASB standard questionable for NRC's purposes.

Neither the timing nor the ultimate contents of a FASB standard can be predicted at this time, and therefore the conclusion is warranted that alternative requirements should be found. According to a FASB report of January 14, 1998, the Board reviewed the status of the project in its October 2, 1997, meeting and decided it should proceed toward either a second Exposure Draft or a final Statement. However, at its November 26, 1997, meeting, the Board eliminated certain key provisions in the exposure draft relating to the scope of the Statement. According to FASB's "Current Developments and Plans for 1998":

FASB will be developing a refined definition of closure/removal costs that would be applicable to a more general class of long-lived assets than those covered by the Exposure Draft. The Board will also be addressing the question of whether the costs of closure/ removal obligations should be capitalized and will develop criteria to identify constructive obligations. At this time, there is no time frame regarding the issuance of a document or final statement.

Although the timing of future action on the draft is uncertain, reanalysis of the scope issue by the FASB staff during the first quarter of 1998, as well as FASB's statement that it is postponing other issues raised on the Exposure Draft until further progress is made on another Exposure Draft, suggests that action by FASB to issue a final Statement, or even a revised Exposure Draft, will be delayed for a considerable time. Notwithstanding any final FASB action, the NRC can proceed with its own requirement for reporting on the status of decommissioning funds.

B. FREQUENCY OF REPORTS

Most commenters endorsed "periodic" reports to monitor the status of decommissioning assurance. Several commenters, particularly those from State PUCs, supported requiring a report soon (nine months) after the rule becomes effective, and at least every two years thereafter. (Other commenters from utilities suggested every three years or every five years thereafter. The five-year period was suggested to correspond to the recommended five-year adjustment to site-specific cost estimates specified in Regulatory Guide 1.159.) A majority of the commenters also endorsed that utilities nearing decommissioning or in the process of decommissioning submit reports annually. However, commenters noted ambiguity in the requirement that reports should be submitted annually by licensees of plants that are within five years of their projected end of operations. Although agreeing with the concept of such annual reporting, they noted that "the projected end of operations" should be clarified so that it clearly covered premature shutdowns and not just plants within five years of the end of their operating licenses. Several State commissions submitted almost identical proposed language amending 50.75(f) of the proposed rule to require reporting by licensees for a plant within five years of the project end of operations, "or where conditions have changed such that it will close within 5 years (before the end of its licensed life) or has already closed (before the end of its licensed life)...." Requiring annual reporting on a calendar-year basis would, in the opinion of one commenter, reduce the administrative burden of annual reporting because that is how licensees generally gather and accumulate the required information. Another argued that reporting trust fund balances on an annual basis suggested that reports should be required by March 31 for the previous calendar year.

Other commenters noted that when State regulatory bodies require annual reporting on the status of decommissioning funds, as many do, NRC's interests are already protected. One commenter could find no added safety justification for requiring annual reporting within five years of decommissioning. A complete report could be required every five years, in the opinion of this commenter, with updates annually or biennially.

Another commenter recommended that NRC delay the reporting requirements until a Pacific Northwest National Laboratory (PNNL) study is final. However, the Commission's position is that such a delay would deny the NRC and the public the benefits of the information required to be reported while conferring negligible benefits on licensees.

Given NRC's information needs, and the multi-million-dollar size of the contributions that utilities make annually to their decommissioning funds, the potential pay-off per hour of staff labor that NRC invests in monitoring of funds is likely to be significant. Thus, the NRC is adopting a biennial reporting requirement. NRC also is adopting commenter suggestions that reporting frequency be increased for plants approaching the end of commercial operation or experiencing operating problems, or for plants involved in mergers/acquisitions.

C. CONTENTS OF REPORTS

Most of the commenters who addressed reporting did not question the need for reports on the status of decommissioning funds and they did not address in detail the contents of such reports. Similarly, most of the commenters who raised questions about reliance on the FASB draft for decommissioning status reporting did not recommend alternative reporting standards. Several commenters implicitly suggested that the contents of reports submitted to State PUCs would be sufficiently similar to NRC's requirements, by recommending that copies of State reports should be acceptable to NRC.

One commenter argued that NRC's proposed "per unit" reporting was unclear about whether individual licensees of a jointly owned plant would each be required to submit their own status reports, or whether the plant operator could submit reports on behalf of all co-licensees. The commenter suggested that having the operator submit the data for all owners could be the most efficient approach, assuming the aggregate of available funds is the most important question. In contrast, another commenter believed that it would be "prudent" for NRC to require annual filings from all co-owners. Requiring filings by all co-owners would provide NRC with more detailed information, but would also place on it the burden of combining and assessing the data. The NRC believes that plant owners and operators should decide who will submit the required information. However, even if all information is submitted by the operator, the information will need to be broken down by owner in order to evaluate each owner's contributions to decommissioning.

One commenter recommended a clarification to ensure that the amount accumulated to the date of the report means the "as of" date, and not the date of the report. The same commenter wanted to limit the report to the single item of accumulated trust fund balances, unless NRC had concerns, based on its knowledge of the plant, about whether the amount accumulated for decommissioning is sufficient. In that case, more detailed information could be required.

The comments did not address several issues raised by commenters on the NRC's Advance Notice of Proposed Rulemaking (ANPR) of April 8, 1996 (61 FR 15427) concerning the information needed by NRC to monitor the status of decommissioning funds. In particular, the comments on the proposed rule did not address the 50-plus reporting items suggested by commenters in response to the ANPR.

How the industry will understand the core concept of the reporting requirement, the "status of the decommissioning fund," is not clarified by the comments on the proposed rule. At least one commenter suggested that "status" means simply the "amount" of the decommissioning trusts. Other commenters may be suggesting, by their emphasis on the responsibility of an operator to coordinate information from several co-owners, and on the possibility that NRC might need to obtain follow-up information, that "status" can include a quantitative or qualitative assessment of the "adequacy" of the fund relative to required or estimated decommissioning costs. The extent of that assessment is not clarified by the comments received, which do not address whether "status" implies a general discussion provided by the licensee or a specific report prepared by the trustee. The NRC has addressed some of the commenters' concerns discussed above by modifying the final rule. Because of their level of detail, other potential concerns are better addressed by a regulatory guide. The NRC will consider issuing such guidance after evaluating the first set of reports received.

10. Rate of Return

NRC's proposed language in 10 CFR 50.75(e)(1)(i) and (ii) allows licensees to take credit for earnings on their prepaid decommissioning trust funds or external sinking funds using a 2 percent annual real rate of return from the time of the funds' collection through the decommissioning period. If the licensee's rate-setting authority authorizes the use of another rate, that rate would be used in projected earnings. By specifying that earnings can be credited "through the decommissioning period," NRC is allowing licensees to assume earnings credits for both the safe storage period and the period when funds flow out of the decommissioning financial assurance mechanisms.

Many commenters generally supported NRC's proposed changes in 10 CFR 50.75. Some described the rate as being reasonable, conservative, and consistent with FERC's policy of recognizing earnings and inflation. One commenter specifically endorsed the provision that allows licensees to use assumed rates of return that are approved by State regulatory bodies. A few commenters supported the changes but stated that licensees also should be given the flexibility to use a rate that is *less than* the proposed rate.

Other commenters did not support NRC's selection of the 2 percent rate. One commenter claimed that the proposed 2 percent rate might result in underfunding if it does not account for the effect of income taxes. More typically, commenters argued that the rate is too low and should be increased. Suggested rates were 3 percent and 7 percent. Two commenters noted that 3 percent and 7 percent discount rates are used in NRC's regulatory analysis guidance (in NUREG/BR-0058 and SECY 93-167). Other commenters stated that NRC should allow licensees to use any "realistic" rate of return or any rate they can justify, possibly in conjunction with periodic reevaluation of the funds collected. A few commenters argued that NRC should not specify a 2 percent rate of return during the period following operations (i.e., the safe storage and outflow periods) and that different rates should be allowed if specifically approved by a rate-setting authority.

As stated in the preamble to the proposed rule, the 2 percent real rate of return suggested by NRC is based on historical data on returns from U.S. Treasury issues, and represents "as close to a 'risk-free' return as possible." Although this rate may seem relatively low given that higher interest rates are frequently paid on common stocks and corporate bonds, the lower rates paid on Government securities pose considerably less risk and are likely to be achieved on a more consistent basis.

Given the need for "reasonable" assurance of decommissioning funding, there is little justification for selecting a rate greater than 2 percent. As shown in the table below, the historical average real return on long-term U.S. Government bonds has been very close to 2 percent, and the historical average real return on "risk-free" U.S. Treasury Bills has been less than 1 percent. Based on this information, NRC would have difficulty justifying a higher rate.

Real Rates of Return for Sample Time Periods

Rate	U.S. Treasury Bills	Long-Term Government Bonds
Current (1997)	3.49%	13.91%
Contemporary Average (1975-1994)	1.96%	7.65%
Long-Term Average (1926-1997)	0.6%	2.1%

Source: Ibbotson Associates, Chicago. *Stocks, Bonds, Bills and Inflation: 1998 Yearbook*, Table 4-1 and Table 6-8.

Averages are calculated as geometric means.

The commenter's concern that 2 percent is less than the 7 percent and 3 percent *discount* rates called for in NRC's regulatory analysis guidance is not relevant.³ Discount rates are used for capital investment analysis and other decision-making purposes but, if used to calculate contributions to decommissioning funds, could result in financial assurance levels that are not adequate to pay for all assured obligations.

11. Other

A. COST RECOVERY THROUGH RATES

Several commenters opposed the inclusion of any mechanism that provides for a stranded cost bailout of the nuclear industry by ratepayers, arguing, among other things, that such a bailout would be unfair, destroy real competition, inhibit employment gains, slow the economic growth of more viable, cost effective, and less polluting power generating technologies, and harm the environment by allowing the continued operation of nuclear power stations that might otherwise shut down. These comments may reflect a misunderstanding of the roles played by NRC relative to State PUCs and FERC. Specifically, PUCs and FERC can determine whether decommissioning costs are stranded or whether they must be paid by ratepayers. NRC, unlike the PUCs, does not have the authority to prevent or to allow licensees to pass decommissioning costs on to customers. Thus, the issue of a "bailout" is not relevant to NRC. In the event that NRC allows financial assurance mechanisms whereby licensees recover decommissioning costs from ratepayers (e.g., external sinking funds funded by wire charges), the mechanism for rate recovery (e.g., the wire charges) must be authorized by a PUC or by FERC. Furthermore, the asserted consequences of a "stranded cost bailout" are unsupported.

B. RATE RECOVERY OF STRANDED COSTS USING PNNL'S FORMULA

One commenter suggested that utilities be allowed to recover in their rates only a portion of their decommissioning costs. Specifically, the commenter suggested allowing decommissioning costs to be recovered up to a maximum amount determined using PNNL's 1993 generic decommissioning cost formula. Estimated costs in excess of the generic PNNL estimate could not be recovered in rates and would have to be funded by shareholders. Also, in the event of premature shutdown, the commenter would make shareholders (rather than ratepayers) responsible for *all* decommissioning costs that are not yet funded, including any unfunded portion of the generic PNNL estimate.

The comment described above addresses how decommissioning costs, including stranded decommissioning costs, might equitably be divided between ratepayers and shareholders. However, the comment is not directly relevant to decommissioning financial assurance. From NRC's standpoint, it does not matter whether the source for a licensee's financial assurance is the licensee's ratepayers or its shareholders, but only that the licensee has provided adequate financial assurance for decommissioning. The question of how much of the decommissioning cost should be borne by ratepayers as opposed to shareholders is one that has traditionally been answered by State PUCs. NRC, unlike the PUCs, does not have the authority to direct licensees to recover costs from ratepayers. Although the NRC did sponsor the development of PNNL's 1993 generic decommissioning cost formula, this formula, like its predecessor in 10 CFR 50.75(c), was designed to help answer a different question, namely, what constitutes a reasonable minimum level of decommissioning assurance for a given reactor. Within this more limited context (and outside the scope of this rulemaking), NRC is currently evaluating the 1993 formula relative to 10 CFR 50.75(c).

Finding of No Significant Environmental Impact: Availability

The NRC is amending its regulations on financial assurance requirements for the decommissioning of nuclear power plants. The amendments are in response to the likelihood of deregulation of the power generating industry and resulting questions on whether current NRC regulations concerning decommissioning funds and their financial mechanisms will need to be modified. The amendments allow a broader range of assurance mechanisms than under existing regulations for reactor licensees that lose the ability to recover decommissioning costs through regulated rates, add definitions of "Federal licensee" to address the issue of which licensees may use statements of intent and other relevant terms, and require power reactor licensees to report periodically on the status of their decommissioning funds and on the changes in their external trust agreements. Also, the amendments allow licensees to take credit for the actual and projected earnings on decommissioning trust funds.

These changes would have the following effects on nuclear power reactor licensees: (1) potentially requiring licensees who have been "deregulated" to secure decommissioning financial assurance instruments that provide full current assurance for projected decommissioning costs, (2) limiting the types of licensees that can qualify for the use of Statements of Intent to satisfy decommissioning financial assurance requirements, (3) requiring periodic reporting on the status of their accumulation of decommissioning funds, thus leading to the potential for the NRC to require some remedial action if the licensee's actions are inadequate, and (4) permitting licensees to assume a real rate of return up to two percent per annum, or such other rate as is permitted by a PUC or the FERC, on their accumulated funds. These actions are of the type focused upon financial assurances and mechanisms to ensure funding for decommissioning and are not actions that would have any effect upon the human environment. Neither this action nor the alternatives considered in the Regulatory Analysis supporting this final rule would lead to any increase in the effect on the environment of the decommissioning activities considered in the final rule published on June 27, 1988 (53 FR 24018), as analyzed in the "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities" (NUREG-0586, August 1988).⁴

Promulgation of these rule changes will not introduce any impacts on the environment not previously considered by the NRC. Therefore, the Commission has determined, under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment and, therefore, an environmental impact statement is not required. No other agencies or persons were contacted in reaching this determination, and the NRC staff is not aware of any other documents related to consideration of whether there would be any environmental impacts from the action. The foregoing constitutes the environmental assessment and finding of no significant impact for this final rule.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0011.

The public reporting burden for this information collection is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments on any aspect of this information collection, including suggestions for reducing the burden, to the Information and Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet electronic mail at bjr@nrc.gov; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-(3150-0011), Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

Regulatory Analysis

The Commission has prepared a Regulatory Analysis of this regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. Interested persons may examine a copy of the Regulatory Analysis at the NRC Public Document Room, 2120 L Street NW (Lower Level), Washington, DC. Single copies of the analysis may be obtained from Brian J. Richter, Office of Nuclear Reactor Regulation (O-10 H5), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone (301) 415-1978, e-mail bjr@nrc.gov.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

Backfit Analysis

The Regulatory Analysis for the final rule also constitutes the documentation for the evaluation of backfit requirements, and no separate backfit analysis

has been prepared. As defined in 10 CFR 50.109, the backfit rule applies to

. . . modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position

The amendments to NRC's requirements for the financial assurance of decommissioning of nuclear power plants allow a broader range of assurance mechanisms for reactor licensees who lose their ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body than previously, and define "Federal licensee." The amendments also add several associated definitions; add new reporting requirements pertaining to the use of prepayment and external sinking funds; impose new reporting requirements for power reactor licensees on the status of decommissioning funding that specify the timing and contents of such reports; and permit power reactor licensees to take credit for up to a 2 percent annual real rate of return (or another rate if permitted by their rate regulators) on funds set aside for decommissioning from the time the funds are set aside through the end of the decommissioning period.

Although some of the changes to the regulations are reporting requirements, which are not covered by the backfit rule, other elements in the changes are considered backfits because they would modify, supplement, or clarify the regulations with respect to: (1) acceptable decommissioning funding options under various scenarios; and (2) which licensees may use statements of intent. The Commission has concluded, on the basis of the documented evaluation required by 10 CFR 50.109(a)(4) and set forth in the Regulatory Analysis, that the new or modified requirements are necessary to ensure that nuclear power reactor licensees provide for adequate protection of the health and safety of the public in face of a changing competitive and regulatory environment not envisioned when the reactor decommissioning funding regulations were promulgated and that the changes to the regulations are in accord with the common defense and security. Therefore, the NRC has determined to treat this action as an adequate protection backfit under 10 CFR 50.109(a)(4)(ii). Consequently, a backfit analysis is not required and the cost-benefit standards of 10 CFR 50.109(a)(3) do not apply. Further, these changes to the regulations are required to satisfy 10 CFR 50.109(a)(5).

Small Business Regulatory Enforcement Fairness Act

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC has determined that this action is a major rule and has verified this determination with the Office of Information and Regulatory Affairs of the Office of Management and Budget.

List of Subjects

Part 30 -- Byproduct material, Criminal penalties, Government contracts, Intergovernmental relations, Isotopes, Nuclear Materials, Radiation protection, Reporting and recordkeeping requirements.

Part 50 -- Antitrust, Classified information, Criminal penalties, Fire protection, Intergovernmental relations, Nuclear power plants and reactors, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended and 5 U.S.C. 552 and 553, the NRC is adopting the following amendments to 10 CFR Parts 30 and 50.

PART 30 - RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL

1. The authority citation for Part 30 continues to read as follows:

AUTHORITY: Secs. 81, 82, 161, 182, 183, 186, 68 Stat. 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2111, 2112, 2201, 2232, 2233, 2236, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 30.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102-486, sec. 2902, 106 Stat. 3123, (42 U.S.C. 5851). Section 30.34(b) also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 30.61 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. In 10 CFR Part 30, Appendix A paragraphs II.A.1(ii), (iv), II.A.2(ii), and (iv) are revised to read as follows:

APPENDIX A - Criteria Relating to Use of Financial Tests and Parent Company Guarantees for Providing Reasonable Assurance of Funds for Decommissioning

II. Financial Test

A.***

1.***

(ii) Net working capital and tangible net worth each at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used), or, for a power reactor licensee, at least six times the amount of decommissioning funds being assured by a parent company guarantee for the total of all reactor units or parts thereof (Tangible net worth shall be calculated to exclude the net book value of the nuclear unit(s).); and

(iv) Assets located in the United States amounting to at least 90 percent of the total assets or at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used), or, for a power reactor licensee, at least six times the amount of decommissioning funds being assured by a parent company guarantee for the total of all reactor units or parts thereof.

2.***

(ii) Tangible net worth each at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used), or, for a power reactor licensee, at least six times the amount of decommissioning funds being assured by a parent company guarantee for the total of all reactor units or parts thereof (Tangible net worth shall be calculated to exclude the net book value of the nuclear unit(s).); and

(iv) Assets located in the United States amounting to at least 90 percent of the total assets or at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used), or, for a power reactor licensee, at least six times the amount of decommissioning funds being assured by a parent company guarantee for the total of all reactor units or parts thereof.

3. In 10 CFR Part 30 Appendix C, Paragraphs II.A.(1) and (2) are revised to read as follows:

Appendix C - Criteria Relating to Use of Financial Tests and Self Guarantees for Providing Reasonable Assurance of Funds for Decommissioning

II. Financial Test

A.***

(1) Tangible net worth at least 10 times the total current decommissioning cost estimate for the total of all facilities or parts thereof (or the current amount required if certification is used), or, for a power reactor licensee, at least 10 times the amount of decommissioning funds being assured by a self guarantee, for all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor for the total of all reactor units or parts thereof (Tangible net worth shall be calculated to exclude the net book value of the nuclear unit(s).).

(2) Assets located in the United States amounting to at least 90 percent of total assets or at least 10 times the total current decommissioning cost estimate for the total of all facilities or parts thereof (or the current amount required if certification is used), or, for a power reactor licensee, at least 10 times the amount of decommissioning funds being assured by a self guarantee, for all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor for the total of all reactor units or parts thereof.

PART 50 - DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

4. The authority citation for Part 50 continues to read as follows:

AUTHORITY: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 50.10 also issued under secs. 101, 185, 68 Stat. 955 as amended (42 U.S.C. 2131, 2235), sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.13, 50.54(dd), and 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138). Sections 50.23, 50.35, 50.55, and 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a and Appendix Q also issued under sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Section 50.37 also issued under E.O. 12829, 3 CFR 1993 Comp., p. 570; E.O. 12958, as amended, 3 CFR, 1995 Comp., p. 333; E.O. 12968, 3 CFR 1995 Comp., p. 391. Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80 - 50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

5. In 50.2, the definitions of *Cost of service regulation*, *Federal licensee*, *Incentive regulation*, *Non-bypassable charges*, and *Price-cap regulation* are added in alphabetical order to read as follows:

50.2 Definitions.

Cost of service regulation means the traditional system of rate regulation, or similar regulation, including "price cap" or "incentive" regulation, in which a rate regulatory authority generally allows an electric utility to charge its customers the reasonable and prudent costs of providing electricity services, including capital, operations, maintenance, fuel, decommissioning, and other costs required to provide such services.

* * * * *

Federal licensee means any NRC licensee, the obligations of which are guaranteed by and supported by the full faith and credit of the United States Government.

* * * * *

Incentive regulation means the system of rate regulation in which a rate regulatory authority establishes rates that an electric generator may charge its customers that are based on specified performance factors, in addition to cost-of-service factors.

* * * * *

Non-bypassable charges mean those charges imposed over an established time period by a Government authority that affected persons or entities are required to pay to cover costs associated with the decommissioning of a nuclear power plant. Such charges include, but are not limited to, wire charges, stranded cost charges, transition charges, exit fees, other similar charges, or the securitized proceeds of a revenue stream.

* * * * *

Price-cap regulation means the system of rate regulation in which a rate regulatory authority establishes rates that an electric generator may charge its customers that are based on a specified maximum price of electricity.

* * * * *

6. In 50.43, paragraph (a) is revised to read as follows:

50.43 Additional standards and provisions affecting class 103 licenses for commercial power.

* * * * *

(a) The NRC will:

(1) Give notice in writing of each application to the regulatory agency or State as may have jurisdiction over the rates and services incident to the proposed activity;

(2) Publish notice of the application in trade or news publications as it deems appropriate to give reasonable notice to municipalities, private utilities, public bodies, and cooperatives which might have a potential interest in the utilization or production facility; and (3) Publish notice of the application once each week for 4 consecutive weeks in the *Federal Register*. No license will be issued by the NRC prior to the giving of these notices and until 4 weeks after the last notice is published in the *Federal Register*.

* * * * *

7. In 50.54, the introductory text of paragraph (w) is revised to read as follows:

50.54 Conditions of licenses.

* * * * *

(w) Each power reactor licensee under this part for a production or utilization facility of the type described in 50.21(b) or 50.22 shall take reasonable steps to obtain insurance available at reasonable costs and on reasonable terms from private sources or to demonstrate to the satisfaction of the NRC that it possesses an equivalent amount of protection covering the licensee's obligation, in the event of an accident at the licensee's reactor, to stabilize and decontaminate the reactor and the reactor station site at which the reactor experiencing the accident is located, provided that:

* * * * *

8. In 50.63, paragraph (a)(2) is revised to read as follows:

50.63 Loss of alternating current power.

(a) * * *

(2) The reactor core and associated coolant, control, and protection systems, including station batteries and any other necessary support systems, must provide sufficient capacity and capability to ensure that the core is cooled and appropriate containment integrity is maintained in the event of a station blackout for the specified duration. The capability for coping with a station blackout of specified duration shall be determined by an appropriate coping analysis. Licensees are expected to have the baseline assumptions, analyses, and related information used in their coping evaluations available for NRC review.

* * * * *

9. In 50.73, paragraph (b)(2)(ii)(J)(2)(iv) is revised to read as follows:

50.73 Licensee event report system.

* * * * *

(b) * * *

(2) * * *

(ii) * * *

(J) * * *

(2) * * *

(iv) The type of personnel involved (i.e., contractor personnel, licensed operator, nonlicensed operator, other licensee personnel).

* * * * *

10. In 50.75, paragraphs (a), (b), (d), and (e) are revised, and paragraphs (f)(1), (2), and (3) are redesignated as paragraph (f)(2), (3), and (4) and a new paragraph (f)(1) is added to read as follows:

50.75 Reporting and recordkeeping for decommissioning planning.

(a) This section establishes requirements for indicating to NRC how a licensee will provide reasonable assurance that funds will be available for the decommissioning process. For power reactor licensees, reasonable assurance consists of a series of steps as provided in paragraphs (b), (c), (e), and (f) of this section. Funding for the decommissioning of power reactors may also be subject to the regulation of Federal or State Government agencies (e.g., Federal Energy Regulatory Commission (FERC) and State Public Utility Commissions) that have jurisdiction over rate regulation. The requirements of this section, in particular paragraph (c) of this section, are in addition to, and not substitution for, other requirements, and are not intended to be used, by themselves, by other agencies to establish rates.

(b) Each power reactor applicant for or holder of an operating license for a production or utilization facility of the type and power level specified in paragraph (c) of this section shall submit a decommissioning report, as required by 10 CFR 50.33(k) of this part. (1) The report must contain a certification that financial assurance for decommissioning will be (for a license applicant) or has been (for a license holder) provided in an amount which may be more but not less than the amount stated in the table in paragraph (c)(1) of this section.

(2) The amount to be provided must be adjusted annually using a rate at least equal to that stated in paragraph (c)(2) of this section.

(3) The amount must use one or more of the methods described in paragraph (e) of this section as acceptable to the NRC.

(4) The amount stated in the applicant's or licensee's certification may be based on a cost estimate for decommissioning the facility. As part of the certification, a copy of the financial instrument obtained to satisfy the requirements of paragraph (e) of this section must be submitted to NRC.

* * * * *

(d)(1) Each non-power reactor applicant for or holder of an operating license for a production or utilization facility shall submit a decommissioning report as required by 10 CFR 50.33(k) of this part.

(2) The report must:

(i) Contain a cost estimate for decommissioning the facility;

(ii) Indicate which method or methods described in paragraph (e) of this section as acceptable to the NRC will be used to provide funds for decommissioning; and

(iii) Provide a description of the means of adjusting the cost estimate and associated funding level periodically over the life of the facility.

(e)(1) Financial assurance is to be provided by the following methods.

(i) Prepayment. Prepayment is the deposit made preceding the start of operation into an account segregated from licensee assets and outside the licensee's administrative control of cash or liquid assets such that the amount of funds would be sufficient to pay decommissioning costs. Prepayment may be in the form of a trust, escrow account, Government fund, certificate of deposit, deposit of Government securities or other payment acceptable to the NRC. A licensee may take credit for projected earnings on the prepaid decommissioning trust funds using up to a 2 percent annual real rate of return from the time of future funds' collection through the projected decommissioning period. This includes the periods of safe storage, final dismantlement, and license termination, if the licensee's rate-setting authority does not authorize the use of another rate. However, actual earnings on existing funds may be used to calculate future fund needs.

(ii) External sinking fund. An external sinking fund is a fund established and maintained by setting funds aside periodically in an account segregated from licensee assets and outside the licensee's administrative control in which the total amount of funds would be sufficient to pay decommissioning costs at the time termination of operation is expected. An external sinking fund may be in the form of a trust, escrow account, Government fund, certificate of deposit, deposit of Government securities, or other payment acceptable to the NRC. A licensee may take credit for projected earnings on the external sinking funds using up to a 2 percent annual real rate of return from the time of future funds' collection through the decommissioning period. This

includes the periods of safe storage, final dismantlement, and license termination, if the licensee's rate-setting authority does not authorize the use of another rate. However, actual earnings on existing funds may be used to calculate future fund needs. A licensee, whose rates for decommissioning costs cover only a portion of such costs, may make use of these methods only for that portion of such costs that are collected in one of the manners described in this paragraph, (e)(1)(ii). This method may be used as the exclusive mechanism relied upon for providing financial assurance for decommissioning in the following circumstances:

(A) By a licensee that recovers, either directly or indirectly, the estimated total cost of decommissioning through rates established by "cost of service" or similar ratemaking regulation. Public utility districts, municipalities, rural electric cooperatives, and State and Federal agencies, including associations of any of the foregoing, that establish their own rates and are able to recover their cost of service allocable to decommissioning, are assumed to meet this condition.

(B) By a licensee whose source of revenues for its external sinking fund is a "non-bypassable charge," the total amount of which will provide funds estimated to be needed for decommissioning pursuant to sections 50.75(c), 50.75(f), or 50.82 of this part.

(iii) A surety method, insurance, or other guarantee method:

(A) These methods guarantee that decommissioning costs will be paid. A surety method may be in the form of a surety bond, letter of credit, or line of credit. Any surety method or insurance used to provide financial assurance for decommissioning must contain the following conditions:

(1) The surety method or insurance must be open-ended, or, if written for a specified term, such as five years, must be renewed automatically, unless 90 days or more prior to the renewal day the issuer notifies the NRC, the beneficiary, and the licensee of its intention not to renew. The surety or insurance must also provide that the full face amount be paid to the beneficiary automatically prior to the expiration without proof of forfeiture if the licensee fails to provide a replacement acceptable to the NRC within 30 days after receipt of notification of cancellation.

(2) The surety or insurance must be payable to a trust established for decommissioning costs. The trustee and trust must be acceptable to the NRC. An acceptable trustee includes an appropriate State or Federal government agency or an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.

(B) A parent company guarantee of funds for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in Appendix A to 10 CFR Part 30.

(C) For commercial companies that issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in Appendix C to 10 CFR Part 30. For commercial companies that do not issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs may be used if the guarantee and test are as contained in Appendix D to 10 CFR Part 30. For non-profit entities, such as colleges, universities, and non-profit hospitals, a guarantee of funds by the applicant or licensee may be used if the guarantee and test are as contained in Appendix E to 10 CFR Part 30. A guarantee by the applicant or licensee may not be used in any situation in which the applicant or licensee has a parent company holding majority control of voting stock of the company.

(iv) For a power reactor licensee that is a Federal licensee, or for a non-power reactor licensee that is a Federal, State, or local government licensee, a statement of intent containing a cost estimate for decommissioning, and indicating that funds for decommissioning will be obtained when necessary.

(v) Contractual obligation(s) on the part of a licensee's customer(s), the total amount of which over the duration of the contract(s) will provide the licensee's total share of uncollected funds estimated to be needed for decommissioning pursuant to 50.75(c), 50.75(f), or 50.82. To be acceptable to the NRC as a method of decommissioning funding assurance, the terms of the contract(s) shall include provisions that the electricity buyer(s) will pay for the decommissioning obligations specified in the contract(s), notwithstanding the operational status either of the licensed power reactor to which the contract(s) pertains or *force majeure* provisions. All proceeds from the contract(s) for decommissioning funding will be deposited to the external sinking fund. The NRC reserves the right to evaluate the terms of any contract(s) and the financial qualifications of the contracting entity(ies) offered as assurance for decommissioning funding.

(vi) Any other mechanism, or combination of mechanisms, that provides, as determined by the NRC upon its evaluation of the specific circumstances of each licensee submittal, assurance of decommissioning funding equivalent to that provided by the mechanisms specified in paragraphs (e)(1)(i) - (iv) of this section. Licensees who do not have sources of funding described in paragraph (e)(1)(ii) of this section may use an external sinking fund in combination with a guarantee mechanism, as specified in paragraph (e)(1)(iii) of this section, provided that the total amount of funds estimated to be necessary for decommissioning is assured.

(2) The NRC reserves the right to take the following steps in order to ensure a licensee's adequate accumulation of decommissioning funds: review, as needed, the rate of accumulation of decommissioning funds; and, either independently or in cooperation with the FERC and the licensee's State PUC, take additional actions as appropriate on a case-by-case basis, including modification of a licensee's schedule for the accumulation of decommissioning funds.

* * * * *

(f)(1) Each power reactor licensee shall report, on a calendar-year basis, to the NRC by March 31, 1999, and at least once every 2 years thereafter on the status of its decommissioning funding for each reactor or part of a reactor that it owns. The information in this report must include, at a minimum: the amount of decommissioning funds estimated to be required pursuant to 10 CFR 50.75(b) and (c); the amount accumulated to the end of the calendar year preceding the date of the report; a schedule of the annual amounts remaining to be collected; the assumptions used regarding rates of

escalation in decommissioning costs, rates of earnings on decommissioning funds, and rates of other factors used in funding projections; any contracts upon which the licensee is relying pursuant to paragraph (e)(1)(ii)(C) of this section; any modifications occurring to a licensee's current method of providing financial assurance since the last submitted report; and any material changes to trust agreements. Any licensee for a plant that is within 5 years of the projected end of its operation, or where conditions have changed such that it will close within 5 years, or has already closed, shall submit this report annually.

* * * * *

Dated at Rockville, Maryland this ____ day of _____, 1998.

For the Nuclear Regulatory Commission.

John C. Hoyle,
Secretary of the Commission.

ATTACHMENT 2

Mr. Robert P. Murphy
General Counsel
General Accounting Office
Room 7175
441 "G" Street, N.W.
Washington, DC 20548

Dear Mr. Murphy:

Pursuant to Subtitle E of the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. 801, the Nuclear Regulatory Commission (NRC) is submitting final amendments to the Commission's rules in 10 CFR Parts 30 and 50, "Financial Assurance Requirements for Decommissioning Nuclear Power Reactors."

The NRC is revising its regulations relating to financial assurance requirements for the decommissioning of nuclear power plants in response to anticipated rate deregulation of the power generating industry. The amendments modify the regulations concerning decommissioning funds and their financial mechanisms. Further, the amendments require power reactor licensees to report periodically on the status of their decommissioning funds and on changes in their external trust agreements. Lastly, the amendments allow licensees to take credit for the earnings on decommissioning trust funds both during operating and decommissioning periods.

We have determined that this rule is a "major rule" as defined in 5 U.S.C. 804(2). We have confirmed this determination with the Office of Management and Budget.

Enclosed is a copy of the final rule that is being transmitted to the Office of the *Federal Register* for publication. This final rule will become effective 60 days after it is published in the *Federal Register*.

Sincerely,
Shirley Ann Jackson

Enclosure: Final Rule

cc: SECY
 OGC
 OCA
 OPA
 CFO
 CIO

The Honorable Al Gore
President of the United
States Senate
Washington, DC 20510
Dear Mr. President:

Pursuant to Subtitle E of the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. 801, the Nuclear Regulatory Commission (NRC) is submitting final amendments to the Commission's rules in 10 CFR Parts 30 and 50, "Financial Assurance Requirements for Decommissioning Nuclear Power Reactors."

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anticipated rate deregulation of the power generating industry. The amendments modify the regulations concerning decommissioning funds and their financial mechanisms. Further, the amendments require power reactor licensees to report periodically on the status of their decommissioning funds and on changes in their external trust agreements. Lastly, the amendments allow licensees to take credit for the earnings on decommissioning trust funds both during operating and decommissioning periods.

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Sincerely,
Shirley Ann Jackson

Enclosure: Final Rule

cc: SECY
 OGC
 OCA
 OPA
 CFO
 CIO

The Honorable Newt Gingrich
Speaker of the United States
House of Representatives
Washington, DC 20515
Dear Mr. Speaker:

Pursuant to Subtitle E of the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. 801, the Nuclear Regulatory Commission (NRC) is submitting final amendments to the Commission's rules in 10 CFR Parts 30 and 50, "Financial Assurance Requirements for Decommissioning Nuclear Power Reactors."

The NRC is revising its regulations relating to financial assurance requirements for the decommissioning of nuclear power plants in response to anticipated rate deregulation of the power generating industry. The amendments modify the regulations concerning decommissioning funds and their financial mechanisms. Further, the amendments require power reactor licensees to report periodically on the status of their decommissioning funds and on changes in their external trust agreements. Lastly, the amendments allow licensees to take credit for the earnings on decommissioning trust funds both during operating and decommissioning periods.

We have determined that this rule is a "major rule" as defined in 5 U.S.C. 804(2). We have confirmed this determination with the Office of Management and Budget.

Enclosed is a copy of the final rule that is being transmitted to the Office of the *Federal Register* for publication. This final rule will become effective 60 days after it is published in the *Federal Register*.

Sincerely,
Shirley Ann Jackson

Enclosure: Final Rule

cc: SECY
 OGC
 OCA
 OPA
 CFO
 CIO

ATTACHMENT 3

The Honorable Dan Schaefer, Chairman
Subcommittee on Energy and Power
Committee on Commerce
United States House of Representatives

Washington, DC 20515

Dear Mr. Chairman:

In the near future, the Nuclear Regulatory Commission (NRC) intends to publish in the *Federal Register* the enclosed final amendments to the Commission's rules in 10 CFR Parts 30 and 50, "Financial Assurance Requirements for Decommissioning Nuclear Power Reactors."

The rule was developed to amend the NRC's regulations relating to financial assurance requirements for the decommissioning of nuclear power plants. This was done in response to the anticipated deregulation of the power generating industry. The amendments let stand the definition of "electric utility" contained in 50.2, but describe which licensees may make use of the external sinking fund method of financial assurance for decommissioning. Further, the rule identifies additional financial assurance mechanisms which may be used for decommissioning. The rule adds a definition of "Federal licensee" to address the issue of which licensees may use statements of intent, and would require licensees to periodically report on the status of their decommissioning funds and changes in their external trust agreements. Lastly, the Commission would allow licensees to take credit for the earnings on decommissioning trust funds from the time of the funds' collection through the decommissioning period.

Sincerely,
Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure: *Federal Register* Notice

cc: Representative Ralph Hall

The Honorable James M. Inhofe, Chairman
Subcommittee on Clean Air, Wetlands, Private
Property and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, DC 20510
Dear Mr. Chairman:

In the near future, the Nuclear Regulatory Commission (NRC) intends to publish in the *Federal Register* the enclosed final amendments to the Commission's rules in 10 CFR Parts 30 and 50, "Financial Assurance Requirements for Decommissioning Nuclear Power Reactors."

The rule was developed to amend the NRC's regulations relating to financial assurance requirements for the decommissioning of nuclear power plants. This was done in response to the anticipated deregulation of the power generating industry. The amendments let stand the definition of "electric utility" contained in 50.2, but describe which licensees may make use of the external sinking fund method of financial assurance for decommissioning. Further, the rule identifies additional financial assurance mechanisms which may be used for decommissioning. The rule adds a definition of "Federal licensee" to address the issue of which licensees may use statements of intent, and would require licensees to periodically report on the status of their decommissioning funds and changes in their external trust agreements. Lastly, the Commission would allow licensees to take credit for the earnings on decommissioning trust funds from the time of the funds' collection through the decommissioning period.

Sincerely,
Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure: *Federal Register* Notice

cc: Senator Bob Graham

ATTACHMENT 4

NRC ANNOUNCES CHANGES IN DECOMMISSIONING FUNDING RULE

The Nuclear Regulatory Commission is amending its regulations on decommissioning funding to reflect conditions expected from deregulation of the electric power industry.

The amended rule would:

- Identify which licensees may make use of the external sinking fund method of financial assurance for decommissioning.
- Describe additional financial assurance mechanisms which may be used for decommissioning.

- Define a "Federal licensee" as any licensee which has the full faith and credit backing of the United States government. Only such licensees could use statements of intent to meet decommissioning financial assurance requirements for power reactors.
- Require nuclear power plant licensees to report to NRC on the status of their decommissioning funds by March 31, 1999, and at least once every 2 years thereafter, and annually within 5 years of the planned end of operation, or where conditions have changed such that the plant will close within 5 years before the end of its licensed life, or has already closed. NRC's present rule contains no such requirements because state and Federal rate-regulating bodies actively monitor these funds. A deregulated nuclear utility would have no such monitoring.
- Permit nuclear power plant licensees to take credit on earnings for prepaid decommissioning trust funds and external sinking funds from the time the funds are set aside through the end of the decommissioning period. The present rule does not permit such credit because it is assumed that inflation and taxes would erode any investment return. NRC has decided, however, that this position is not borne out by historical performance of inflation-adjusted funds invested in U.S. Treasury instruments.

Further details are available in a notice published in the _____ edition of the *Federal Register*.

In preparing this final rule, NRC considered 650 comments received in response to an advance notice of proposed rulemaking on this subject published in April of 1996 and over 200 comments received in response to a proposed rulemaking published on September 10, 1997.

###

ATTACHMENT 5

**Regulatory Analysis on Decommissioning Financial Assurance
Implementation Requirements for Nuclear Power Reactors**

**Generic Issues and Environmental Projects Branch
Division of Reactor Program Management
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001**

ABSTRACT

On June 27, 1988, the U.S. Nuclear Regulatory Commission (NRC) published in the *Federal Register* (53 FR 24018) the final rule amendments to 10 CFR Part 50 entitled "General Requirements for Decommissioning Nuclear Facilities." These rule amendments specify the general requirements for methods that are considered acceptable for providing reasonable assurance of the availability of funds for decommissioning of nuclear power reactors.

The impact of deregulation of the electric utility industry has created potential uncertainty with respect to the availability of decommissioning funds and requires a modification of the financial mechanisms required to provide decommissioning funds when needed. In light of impending deregulation, NRC has determined that there is a need to update its financial assurance requirements for the decommissioning of nuclear power plants.

This document presents NRC's Regulatory Analysis of a rulemaking that would modify NRC's regulatory framework to help ensure that deregulatory activities in the electric utility industry do not jeopardize NRC licensees' financial assurance for decommissioning. The rulemaking would accomplish this by clarifying that additional financial assurances for decommissioning are required from any power reactor licensee that loses the ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body. In addition, the rulemaking would establish a reporting requirement to allow NRC to monitor the decommissioning funding status of each licensee, and would require licensees to submit periodically any modifications to their current financial assurance mechanisms for NRC's review and revision. The rulemaking also would update the financial assurance requirements to modify funding requirements to allow licensees to account for anticipated trust fund earnings from the time funds are deposited until withdrawn to pay decommissioning costs. Finally, the rulemaking would clarify which power reactor licensees may use statements of intent to provide financial assurance for decommissioning by defining the term "Federal licensee."

For each regulatory option included in the rulemaking, the analysis calculates the values (or benefits) of the rulemaking as any increase in the amount of financial assurance provided by the option and any cost savings to NRC or industry resulting from the option. Impacts are calculated as any decrease in the amount of financial assurance and any costs resulting from the option. In order to illustrate the effects of the various regulatory options as well as bound the analysis in terms of the range of values and impacts of the rule, the analysis models three alternative scenarios that differ regarding their assumptions about the deregulation of the electric utility industry.

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1. INTRODUCTION

NRC has initiated a rulemaking to address concerns related to its financial assurance requirements for nuclear power reactors. As discussed in detail below, most of these concerns are the result of ongoing deregulatory activities in the electric utility industry. In April 1996, NRC published an Advance Notice of Proposed Rulemaking (ANPR) requesting comments on several issues related to deregulation and NRC's financial assurance requirements (61 *FR* 15427, April 8, 1996). After considering the comments received on the ANPR, NRC published a Proposed Rule in September 1997 (62 *FR* 47588, September 10, 1997). NRC has now reviewed comments on the Proposed Rule and has studied a number of regulatory options. This document presents NRC's Regulatory Analysis of these options and their impact on 102 nuclear power reactors and the NRC itself.

The remainder of this introduction is divided into two sections. Section 1.1 states the problem and the objective of the rulemaking. Section 1.2 provides background information on the current regulation of financial assurance for decommissioning costs of power reactors.

1.1 Statement of the Problem and Objective of the Rulemaking

NRC's decommissioning financial assurance requirements for nuclear power reactors are based on the premise that the reactors are owned by regulated or self-regulating entities that recover their costs through a rate-setting process overseen by the applicable regulating body. Consequently, NRC defined the term "electric utility," in 10 CFR 50.2, in a manner that includes investor-owned utilities, public utility districts, municipalities, rural electric cooperatives, and State and Federal agencies. Typically such entities are regulated by State public utility commissions (PUCs) and/or the Federal Energy Regulatory Commission (FERC). Some publicly-owned utilities regulate their own rates through a process that is open to public participation and scrutiny. These regulatory processes effectively ensure that utilities can recover all costs that are prudently incurred, including reactor decommissioning costs.

In recent years, however, various parties have called for the electric utility industry to be deregulated just as the natural gas, telecommunications, and other industries were recently deregulated. FERC and numerous States have begun to study deregulation issues and, in some cases, have initiated deregulatory rulemakings or legislation. Many significant issues related to deregulation have yet to be resolved, however, including issues that will have considerable impact on NRC power reactor licensees, such as recovery or non-recovery of decommissioning costs. Consequently, it is possible that regulatory bodies may, in the future, be unable to ensure that utilities can recover decommissioning costs. In this more competitive environment, some utilities may not even remain financially viable, which could also jeopardize funding for decommissioning.

During the forthcoming period of economic deregulation and industry restructuring, increasing competition may force integrated power systems to separate (or "disaggregate") their systems into functional areas. Thus, some licensees may divest electrical generation assets, such as power reactors, from transmission and distribution assets by forming separate subsidiaries or even separate companies for generation. Disaggregation may involve utility restructuring, mergers, and corporate spin-offs that lead to changes in owners or operators of licensed power reactors and may cause some licensees, including owners, to lose their ability to recover their decommissioning costs through rates and fees established by a regulatory body. Such changes may also affect the licensing basis under which NRC originally found a licensee to be financially qualified to construct, operate or own its power reactor, as well as to accumulate adequate funds to ensure decommissioning at the end of reactor life.⁵

As the electric utility industry moves from an environment of substantial economic regulation to one of increased competition, NRC is concerned about the impacts of restructuring and rate deregulation. Approval of organizational and rate deregulation changes by other regulators may occur rapidly and without NRC's knowledge. The degree and pace of such changes could affect the factual underpinnings of NRC's previous conclusions that power reactor licensees can reliably accumulate adequate funds for operations and decommissioning over the operating lives of their facilities.

The main objective of the current rulemaking is to modify NRC's regulatory framework to help ensure that deregulatory activities in the electric utility industry do not jeopardize NRC licensees' financial assurance for decommissioning. The rulemaking would accomplish this by clarifying that additional financial assurances for decommissioning are required from any power reactor licensee that loses the ability to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body. The rulemaking would also establish a reporting requirement to allow NRC to monitor the decommissioning funding status of each licensee. Finally, the current rulemaking also would update the financial assurance requirements to modify funding requirements to allow licensees to account for anticipated trust fund earnings from the time funds are deposited until withdrawn to pay decommissioning costs.

1.2 Current Regulation of Decommissioning Financial Assurance

NRC requirements pertaining to financial assurance for the decommissioning of nuclear power reactors are contained in 10 CFR 50.75. As noted in NRC's regulations, funding for decommissioning of electric utilities is also subject to the regulation of FERC and State PUCs. Section 50.75(a) states that the NRC requirements "are in addition to, and not substitution for, [these] other requirements." Additional guidelines for NRC licensees are provided in NRC's *Regulatory Guide 1.159*,⁶ and in a related Standard Review Plan (SRP).⁷ Under 50.75(b), licensees must demonstrate decommissioning financial assurance in an amount at least equal to either a minimum "certification" amount (based on a formula specified at 50.75(c)) or a facility-specific decommissioning estimate (provided that the estimate is at least as great as the applicable certification amount). Licensees are required to update annually the minimum amount of decommissioning assurance required under the certification formula in 50.75(c) by applying an inflation-factor that is also described in 50.75(c). Licensees are not required to file this adjustment with NRC, however. Pursuant to 50.75(a), licensees are required to adjust collections from ratepayers in coordination with the appropriate PUCs or FERC.

Financial assurance must be demonstrated using one of the financial mechanisms described in 50.75(e). These mechanisms include "prepayment" mechanisms (trust funds, escrow accounts, government funds, certificates of deposit, deposits of government securities), external sinking funds, surety bonds, letters of credit, lines of credit, insurance, parent company guarantees, self-guarantees, and statements of intent.⁸ Prepayment mechanisms, in the case of non-electric utility licensees, must be either fully funded or, if being funded gradually in an external sinking fund, must be coupled with another mechanism (e.g., a surety bond) so that the total assurance provided by the licensee is at least equal to the required level of coverage.

In the case of electric utility licensees, however, external sinking funds are not required to be coupled with another financial assurance mechanism. Thus, electric utility licensees are not required to demonstrate the full minimum amount of decommissioning coverage (i.e., the full certification amount) until the permanent end of operations. NRC justified this difference in treatment between electric utility licensees and non-electric utility licensees on the ability of the electric utilities to collect funds through the rate-making process and on the added oversight provided by FERC and PUCs.

Payments to an external sinking fund (regardless of whether or not the licensee is an electric utility) must be made annually in amounts that will result in full funding by the time the facility ceases operation. Although NRC allows licensees to account for future earnings (i.e., until the reactor shuts down) on decommissioning trusts when calculating annual contributions to external sinking funds and prepayment amounts, this position is not reflected in regulations, but rather in guidance (i.e., in *Regulatory Guide 1.159* and the *SRP*). The guidance states that assumed rates of return should "reasonably approximate" the historical real rate of earnings obtained by a given type of investment, but it does not establish an upper limit for assumed rates of return. However, NRC does not allow licensees to take credit for earnings on the funds after the permanent shutdown of the reactor.

In practice, virtually all non-Federal government electric utility licensees use external sinking funds based on trusts.⁹ NRC requirements provide that trusts (or any mechanism used as an external sinking fund) must be segregated from licensee assets and outside the licensee's administrative control.¹⁰ Investment guidelines and other restrictions affecting trustees and/or licensees are not specified in NRC regulations. However, NRC guidance does (1) provide suggested investment guidelines,¹¹ (2) specify trustee qualifications,¹² and (3) state that licensees may make withdrawals from the fund only to pay for decommissioning activities.¹³

Regulatory Guide 1.159 offers detailed model wording for trust agreements (including numerous conditions that provide additional protections on behalf of NRC's interests) but states that this wording may be modified "as a licensee's specific situation warrants [provided that the agreement] complies with applicable state law" Licensees submitted financial mechanisms for NRC's review one time (in 1990). *Regulatory Guide 1.159* states that if licensees "either change or significantly modify the funding method," they must submit the changes or modifications to NRC within a "reasonable time."¹⁴ Licensees must also maintain an existing method of financial assurance "until the licensee has instituted a new method."¹⁵

NRC does not require licensees to report periodically on the status of their decommissioning funds. Rather, NRC views licensee compliance with the funding assurance requirements as a matter to be determined through the inspection process when necessary, as well as through monitoring by State PUCs and FERC of decommissioning funds of licensees under their jurisdiction as part of their rate regulatory responsibility. Reporting requirements of FERC and PUCs, along with other FERC and PUC requirements related to NRC's current rulemaking, were researched as part of this Regulatory Analysis and are discussed in Section 3.2.3.

2. IDENTIFICATION AND PRELIMINARY ANALYSIS OF ALTERNATIVE APPROACHES

The Rulemaking Plan for this rulemaking identified three issues (discussed in Section 1.1) that could be addressed by the rulemaking. These issues, along with the options analyzed in this Regulatory Analysis, are described below:¹⁶

Issue A. Is fully-funded assurance needed due to deregulation?

Option A-1: No action option.

Option A-2: Clarify the applicability of external sinking funds and other mechanisms under deregulation.

Issue B. Should NRC allow credit for earnings after the permanent shutdown of the reactor?

Option B-1: No action option.

Option B-2: Allow licensees to assume a positive real rate of return on decommissioning funds from the time contributed until the time withdrawn to pay for decommissioning.

Issue C. Should NRC monitor fund balances through regular periodic reporting?

Option C-1: No action option.

Option C-2: Implement a periodic reporting requirement.

NRC's April 1996 ANPR also drew attention to other issues that had not been emphasized in the Rulemaking Plan. These issues involve (1) the use of statements of intent by power reactor licensees, and (2) further review of decommissioning financial assurance mechanisms. The following options (and their corresponding no-action alternatives) have been added to this Regulatory Analysis to address these issues:

Issue D. Should NRC allow use of statements of intent by power reactor licensees?

D.

Option D-1: No action option.

Option D-2: Clarify which licensees may use statements of intent by defining the term "Federal licensee."

Issue E. Should NRC conduct additional review of decommissioning financial assurance mechanisms?

Option E-1: No action option.

Option E-2: Require periodic submission of any modifications to external trust agreements (and other financial assurance mechanisms) for detailed NRC review.

The remainder of this section presents a preliminary analysis of each of these options. The purposes of this discussion are to highlight the purpose of each regulatory revision, and to clarify what each option is and how it might work. Additional analysis of these options is presented in Section 3 of this Regulatory Analysis.

2.1 Need for Fully-Funded Assurance Due to Deregulation

Options A-1 and A-2 address NRC's concern that, as a result of ongoing deregulation, NRC's current financial assurance requirements may no longer be appropriate, at least in some instances.

2.1.1 OPTION A-1: NO ACTION

Under NRC's current requirements, power reactor licensees that do not meet the definition of an electric utility may use an external sinking fund only if the amount remaining unfunded in the external sinking fund is assured using an additional financial assurance mechanism (e.g., a surety bond or letter of credit). In contrast, licensees that meet the definition of electric utility may use an external sinking fund without providing any additional financial assurance for amounts not yet funded. As discussed in Section 1, NRC found this distinction reasonable because electric utilities historically have been able to collect needed funds through a regulated rate-making process and because of the additional oversight role provided by FERC and PUCs.

NRC continues to believe this approach is reasonable for licensees that continue to recover prudently-incurred costs through a regulated ratemaking process. Due to the ongoing deregulation in the electric utility industry, however, licensees in the future may recover costs not through rates but through other mandatory mechanisms (e.g., access fees, exit fees, line charges) established by their rate regulators. Although NRC believes these licensees can recover costs and should be considered electric utilities, NRC's current definition of "electric utility" could be interpreted otherwise. In addition, NRC is concerned that other licensees may be able to qualify as electric utilities under NRC's current definition despite being deregulated with respect to the recovery of prudently-incurred costs. 10 CFR 50.2 defines "electric utility" as follows:

Electric utility means any entity that generates or distributes electricity and which recovers the cost of this electricity, *either directly or indirectly, through rates established by the entity itself* or by a separate regulatory authority. Investor-owned utilities, including generation or distribution subsidiaries, public utility districts, municipalities, rural electric cooperatives, and State and Federal agencies, including associations of any of the foregoing, are included within the meaning of "electric utility." (italics added)

Public comments received in response to the ANPR and the Proposed Rule suggest that some licensees interpret NRC's current definition, because of the phrase "either directly or indirectly, through rates established by the entity itself," to encompass even non-regulated or fully deregulated entities that are free to set their own prices in the marketplace. This interpretation would, in effect, allow all licensees to qualify as electric utilities and, in turn, allow all licensees to use external sinking funds without combining them with other financial mechanisms. NRC, however, had included in its definition the phrase "either directly or indirectly, through rates established by the entity itself" merely to allow the definition to encompass those entities, such as some publicly-owned utilities, that regulate their own rates through a process that is open to public participation and scrutiny. Because virtually all NRC power reactor licensees are, currently, regulated to allow recovery of costs, this potential misinterpretation of the definition is of concern only to the extent that deregulation affects licensees in the future.

Under Option A-1, licensees would be allowed to use (or continue using) external sinking funds only if they continue to meet the current definition of "electric utility" as stated above. Some licensees inappropriately believe that, regardless of the outcome of deregulation, they would continue to meet the definition (i.e., despite having reduced recourse to decommissioning cost recovery through rates approved by PUCs or FERC) and, consequently, would not have to obtain more costly financial assurance mechanisms. Such licensees might continue to use external sinking funds to demonstrate financial assurance for decommissioning without also providing an additional financial mechanism to cover unfunded costs. This would be contrary to the assumptions underlying NRC's rationale for treating regulated electric utilities differently from other NRC licensees, and could result in shortfalls in funding for decommissioning if these licensees go bankrupt or their reactors close prematurely.

2.1.2 OPTION A-2: CLARIFY THE APPLICABILITY OF EXTERNAL SINKING FUNDS AND OTHER MECHANISMS UNDER DEREGULATION

Under this option, NRC would clarify the conditions under which licensees may use or continue to use external sinking funds without coupling them with other financial assurance mechanisms, stating that an external sinking fund may be used only as follows:

(A) By a licensee that recovers, either directly or indirectly, the cost of generating, transmitting, or distributing electricity through rates established by "cost-of-service" or similar ratemaking regulation. Public utility districts, municipalities, rural electric cooperatives, and State and Federal agencies, including associations of any of the foregoing, that establish their own rates and are able to recover their cost of service, are assumed to meet this condition.

(B) By a licensee whose source of revenues for its external sinking fund is a "non-bypassable charge," the total amount of which will provide funds estimated to be needed for decommissioning pursuant to 50.75(c), 50.75(f), or 50.82.

(C) By a licensee whose source of revenues for its external sinking fund is a contractual obligation(s) on the part of a licensee's customer(s), the total amount of which over the duration of the contract(s) will provide the licensee's share of uncollected funds estimated to be needed for decommissioning pursuant to 50.75(c), 50.75(f), or 50.82. To be acceptable to the Commission as a method of decommissioning funding assurance, the terms of the contract(s) shall include provisions that the electricity buyer(s) will pay for the decommissioning obligations specified in the contract(s), notwithstanding the operational status either of the licensed power reactor to which the contract(s) pertains or *force majeure* provisions. All proceeds from the contract(s) for decommissioning funding will be deposited to the external sinking fund. The Commission reserves the right to evaluate the terms of any contract(s) offered as assurance for decommissioning funding.

Option A-2 would also make the option of parent company guarantees and self-guarantees available to all licensees. Under NRC's current regulations in 10 CFR 50.75(e), only non-electric utility licensees may use these guarantee mechanisms. Another key distinction between Option A-2 and NRC's current regulations in 10 CFR 50.75(e) is that licensees would no longer be prohibited from using parent company guarantees or self-guarantees in combination with other financial assurance mechanisms. Consequently, licensees that must couple their existing external sinking funds with other mechanisms following deregulation may be able to avoid the costs associated with securing a surety mechanism or prepayment mechanism if they are able to secure a guarantee.¹⁷

Finally, in addition to the mechanisms in 10 CFR 50.75(e) and the mechanisms described above, Option A-2 would allow licensees to use any other mechanism, or combination of mechanisms, that provides decommissioning funding assurance equivalent to other allowable mechanisms. NRC would review and approve these other mechanisms or combinations based on an evaluation of the specific circumstances applicable to a particular licensee.

2.2 Credit for Earnings on Decommissioning Funds

Options B-1 and B-2 affect potentially any Part 50 licensee that uses an external sinking fund or prepayment mechanism, regardless of whether or not the licensee is an electric utility. The options impact how much money licensees must contribute into their funds by restricting their assumptions regarding future earnings.

2.2.1 OPTION B-1: NO ACTION

NRC guidance allows licensees to account for future earnings (i.e., earnings to be accrued until the reactor shuts down) on external decommissioning sinking funds when calculating annual contributions.¹⁸ (Users of prepayment mechanisms, such as funded trust funds, may also take credit for future

earnings.) NRC regulations (10 CFR 50.75(e)(1)(ii)) state that contributions to external sinking funds must be made periodically such that "the total amount of funds would be sufficient to pay decommissioning costs at the time termination of operation is expected." Given that external sinking funds are required to be fully-funded by the time facilities are expected to be permanently shut down, licensees are currently precluded from considering any investment returns they might expect to earn after the permanent shutdown of the reactor but before the commencement of decommissioning (e.g., while their reactors are in extended safe storage).

This is a conservative funding approach for two reasons. First, by requiring the last financial assurance contribution to occur prior to facility shutdown, there are no subsequent financial assurance contributions that would depend on licensees' abilities to continue as viable entities after their nuclear plants have been shut down. Second, by not allowing any credit for projected earnings after permanent shutdown, there is less likelihood that poor investment returns (i.e., returns lower than those projected by the licensee in calculating financial assurance payments) would significantly impact decommissioning funding.¹⁹

Some licensees, however, have argued that they are able to earn a positive real rate of return on their decommissioning funds following shutdown (e.g., during safe storage), and that NRC, by requiring all decommissioning funds to have been collected or earned by shutdown, may force licensees to collect more funds from ratepayers than is absolutely necessary, given the potential for accrual of interest in the period following shutdown. This, they argue, would result in an unwarranted expense to licensees, their ratepayers, or their stockholders, and it could create inequities between generations of ratepayers.

With respect to the return that licensees should assume when accounting for future investment income earned on decommissioning funds set aside during the operating life of the facility, *Regulatory Guide 1.159* states that assumed rates of returns should "reasonably approximate" the historical real rate of earnings obtained by a given type of investment, but does not establish an upper limit for assumed rates of return. In practice, licensees assume a wide range of projected earnings rates, and many licensees assume rates that are fairly high (e.g., real rates of 6 to 8.7 percent).²⁰ (For example, a real rate of 8.7 percent exceeds the historical average real rate of return of 6.9 percent for a portfolio invested 100 percent in large company common stocks.²¹)

Under Option B-1, licensees using external sinking funds, when calculating annual contributions, would continue to account for future earnings projected through the end of the expected termination of operations. Licensees using the safe storage method of decommissioning still would not be allowed to take the safe storage period into account in their annual funding calculations. This option would also take no action to further restrict licensees' earnings rate assumptions for purposes of calculating annual contributions to sinking funds. Prepayment mechanisms also would be unaffected by this option.

2.2.2 OPTION B-2: ALLOW LICENSEES TO ASSUME A POSITIVE REAL RATE OF RETURN ON DECOMMISSIONING FUNDS FROM THE TIME CONTRIBUTED UNTIL THE TIME WITHDRAWN TO PAY FOR DECOMMISSIONING

Under Option B-2, licensees using external sinking funds, when calculating annual contributions, would account for both (1) future decommissioning fund earnings projected through the end of the expected termination of operations, and (2) future returns expected to be earned during the periods of safe storage (if applicable), final dismantlement, and license termination. The final annual contribution would still have to be made prior to termination of operations at the facility, but the balance in the decommissioning fund would then continue to grow following shutdown until it is fully funded by the time of final decommissioning. Option B-2 would also restrict the assumed earnings rate on external sinking funds to a real rate of return of up to 2 percent, regardless of whether or not a licensee will use safe storage, in those cases where a regulator (e.g., FERC) does not approve the assumed earnings rate.²²

Also under this option, licensees using *prepayment mechanisms* could reduce the amount that they must prepay to account for future earnings. As in the case of licensees using external sinking funds, licensees using prepayment mechanisms would be allowed to take credit for earnings expected to accrue from the time of prepayment through the decommissioning period. Thus, like an external sinking fund, a prepayment mechanism would not be adequate in amount to pay for decommissioning until sufficient earnings accumulated over the life of the facility and over its decommissioning period. The assumed earnings rate would also be restricted to a real rate of return of up to 2 percent in cases where a regulator does not approve the assumed earnings rate.

The 2 percent real rate of return threshold is a conservative assumption that provides reasonable protection to NRC.²³ In many cases, however, 2 percent is less than the rate currently assumed by licensees.²⁴ To the extent that earnings in a given year prove to be higher than 2 percent, the balance of the fund will be greater than anticipated. Licensees may take this higher balance into account in calculating subsequent contributions to their sinking funds. This means the size of subsequent contributions will decrease, even though these subsequent contributions will still be based on a 2 percent earnings assumption. (Similarly, if the actual real rate of return proves to be less than the assumed 2 percent rate, the size of subsequent contributions will increase, even though they will still be based on a 2 percent earnings assumption.) Thus, regardless of whether actual returns are greater or less than 2 percent, the amount ultimately collected from ratepayers and placed in the sinking fund should be appropriate.

This option would allow licensees to collect no more funds from ratepayers than is absolutely necessary given the potential for accrual of interest. For two reasons, however, this option seems unlikely to significantly impact most licensees.

- First, licensees can take best advantage of this option only if they pre-select the safe storage method of decommissioning relatively early during the funding period. Currently, however, licensees are required to make a preliminary determination of decommissioning methods only 5 years prior to termination of operations.²⁵ If safe storage is elected at that time, the benefit of this option would be fairly small because the decommissioning fund would already be largely funded.
- Second, the application of this option to prepayment mechanisms (the costliest method of financial assurance) is unlikely to have any impact on

nuclear power reactor licensees because licensees will not use this prepayment method until deregulation results in their no longer being able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body (in which case they would become ineligible to use external sinking funds except in combination with another mechanism).²⁶

A potentially greater concern, however, is that the option provides adequate financial assurance only under three conditions. First, the reactor must not close prematurely and the decommissioning period must last as long as anticipated. Otherwise, the invested decommissioning funds will not have adequate time to generate the needed funds. Second, realized rates of return must equal or exceed the assumed rate. This risk is reduced substantially for affected licensees by limiting the assumed rate to 2 percent (or less). Third, funding contributions calculated by licensees must account for the added costs (e.g., security) of a safe storage decommissioning relative to the lower cost of a prompt decommissioning. In particular, contributions based on NRC's certification amounts would be inadequate because the certification amounts assume prompt decommissioning. If safe storage costs are not reflected in the fund contributions, then actual spending on safe storage costs could result in inadequate funds remaining for the actual decommissioning.

2.3 Monitoring Fund Balances through Reporting

Options C-1 and C-2 address NRC's ability to monitor the status of power reactor licensees' decommissioning funding including, in particular, their progress in funding external sinking funds.

2.3.1 OPTION C-1: NO ACTION

NRC has not deemed it necessary to monitor licensee compliance with the current decommissioning funding assurance requirements. Currently, NRC views licensee compliance with the funding assurance requirements as a matter to be determined through the inspection process when necessary. NRC has also relied on FERC's and PUCs' monitoring of the decommissioning funds of licensees that fall under their jurisdiction (i.e., as part of their rate regulatory responsibility). This option would continue NRC's current practice of not requiring licensees to report on the status of their decommissioning funds.

2.3.2 OPTION C-2: IMPLEMENT A PERIODIC REPORTING REQUIREMENT

NRC is concerned that rapid changes (e.g., divestitures and restructuring) in the electric utility industry due to deregulation will make it difficult to monitor decommissioning funding effectively under its current approach. In particular, NRC's current practices may not provide sufficiently consistent, regular, and comprehensive information for all licensees. NRC also is concerned that its licensees may at some point no longer fall under the jurisdiction and oversight of FERC or PUCs.

Option C-2 would require all power reactor licensees to report to NRC by March 31 of the year after the effective date of the rule and at least once every 2 years thereafter on the status of their decommissioning funding. Licensees for plants within 5 years of the projected end of operations, or where conditions have changed such that the plant either will close within 5 years before operating license expiration or has already closed, would have to report annually. At a minimum, reports would need to include the following information:²⁷

- The amount of decommissioning funds estimated to be required pursuant to 10 CFR 50.75(b) and (c);
- The amount accumulated to the end of the calendar year prior to the date of the report;
- A schedule of the annual amounts remaining to be contributed;
- The assumptions used regarding rates of escalation in decommissioning costs, rates of earnings in decommissioning funds, and rates of other factors (e.g., discount rates) used in funding projections;
- Any modifications occurring to the licensee's current method of providing financial assurance since the last submitted report; and
- Information on any contracts upon which the licensee is relying for financial assurance.

This option would enable NRC to establish a stronger oversight role as necessary in the event that the oversight currently provided by FERC and State PUCs diminishes or ceases. Licensee reports also would provide NRC with a consistent, regularly-updated set of information from all licensees. Information in the reports could be used on a case-by-case basis as appropriate. For example, these reports would allow NRC to identify licensees that are not funding their sinking funds at an adequate pace and to take appropriate follow-up action. This information could also prove useful for other purposes, such as evaluating licensee notifications of restructuring and responding to related information requests from Congress and media organizations (over the past few years, NRC has been unable to fulfill such requests).

2.4 Use of Statements of Intent by Power Reactor Licensees

Options D-1 and D-2 address the issue of whether statements of intent should continue to be allowed as an acceptable financial mechanism for power reactor licensees.

2.4.1 OPTION D-1: NO ACTION

NRC regulations currently allow "Federal government licensees" that are electric utilities to use statements of intent to satisfy the financial assurance requirements of 10 CFR 50.75. In addition, all "Federal, State, and local government licensees" under Part 50 that are *not* electric utilities may also use statements of intent for financial assurance purposes. Statements of intent document a licensee's intention to request sufficient funding from the appropriate governing body far enough in advance of decommissioning to avoid delays in conducting decommissioning activities. Thus, statements of intent do not set aside any monies for decommissioning in the manner of prepayment mechanisms or sinking funds, nor do they provide a legally enforceable "guarantee" in the manner of surety bonds, letters of credit, or parent company guarantees. Nevertheless, NRC regulations allow the use of

statements of intent by government licensees in recognition of the unique characteristics of governmental bodies.

Although numerous Part 50 licensees (non-power reactors) currently use statements of intent to assure their decommissioning costs, the only power reactors eligible to use statements of intent are those owned by the Tennessee Valley Authority (TVA), a quasi-Federal entity that qualifies as an electric utility under NRC's current regulations. TVA is, in fact, the only power reactor licensee with decommissioning costs currently covered by statements of intent. Other governmental power reactor licensees, such as public utility districts, are ineligible to use statements of intent because they are not Federal licensees.

Under Option D-1, TVA could continue to use statements of intent to demonstrate financial assurance for decommissioning of its power reactors. The assurance provided by this option would continue to rely largely on the presumed financial backing of TVA by the Federal government.

2.4.2 OPTION D-2: CLARIFY WHICH LICENSEES MAY USE STATEMENTS OF INTENT BY DEFINING THE TERM "FEDERAL LICENSEE"

Recently, a report by NRC's Inspector General raised the question of whether TVA should be allowed to use a statement of intent, as allowed by 10 CFR 50.75(e)(3)(iv).²⁸ In particular, the report (1) raised concerns regarding TVA's financial condition, (2) noted that TVA's debts are neither obligations of the Federal government nor are they backed by the Federal government, and (3) questioned whether the Federal government would actually pay for TVA's decommissioning costs should the need arise. The report also indicated that although TVA had established a \$261 million internal decommissioning fund as of January 1996 (funded by ratepayers and earnings on invested funds), TVA later had depleted the fund completely (although it eventually re-funded into the fund all amounts collected from ratepayers). In addition, some public comments stated that TVA's use of costless statements of intent will give TVA a competitive advantage over other competitors in the increasingly competitive energy marketplace.

Option D-2 would define the term "Federal licensee" to mean "any NRC licensee, the obligations of which are guaranteed by and supported by the full faith and credit of the United States Government," thereby addressing the concerns raised by the NRC Inspector General and the commenters on the ANPR. Licensees that did not meet this test would be allowed to use any of the other financial mechanisms acceptable under the regulations. This analysis assumes that TVA would not meet the definition of a Federal licensee. However, assuming it continues to be able to recover its decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body, TVA could establish an external sinking fund using funds now held internally.

2.5 Additional Review of Decommissioning Financial Assurance Mechanisms

Options E-1 and E-2 discuss concerns that ongoing deregulation of the electric utility industry may expose weaknesses present in licensees' decommissioning financial assurance mechanisms. These concerns could be addressed through additional review of the financial mechanisms used by licensees.

2.5.1 OPTION E-1: NO ACTION

Power reactor licensees were required to submit financial assurance mechanisms (e.g., trust agreements, escrow agreements, statements of intent) for NRC's review and approval only once, when the financial assurance requirements first took effect in 1990. The submitted trust and escrow mechanisms were required to comply with several general conditions established principally in NRC guidance. Although NRC guidance provided licensees with detailed model wording for mechanisms (including trust agreements and escrow agreements) that included numerous additional conditions protective of NRC's interests, licensees were not required to use the model wording.²⁹

Since 1990, power reactor licensees (according to NRC guidance) have had to submit to NRC within a "reasonable time" any changes or "significant modifications" to "the funding method." Licensees have also been directed that they must maintain an existing method of financial assurance "until the licensee has instituted a new method."

NRC believes that the present requirements, as implemented, currently are sufficient to ensure that funds deposited in the decommissioning trusts or escrows of electric utilities will be available when needed to pay for decommissioning. This position is based largely on the belief that FERC and State PUCs currently provide significant regulatory oversight over decommissioning funds. NRC's belief is also based on the considerable market power that, to date, has ensured the financial viability of electric utilities and limited the likelihood that they might ultimately be unable to pay their obligations.

Option E-1 would not change the requirements, guidance, or review procedures applicable to decommissioning financial assurance mechanisms.

2.5.2 OPTION E-2: REQUIRE PERIODIC SUBMISSION OF ANY MODIFICATIONS TO EXTERNAL TRUST AGREEMENTS (AND OTHER FINANCIAL ASSURANCE MECHANISMS) FOR DETAILED NRC REVIEW

NRC is concerned that ongoing deregulation and restructuring in the electric utility industry may render the current financial assurance requirements, as implemented, inadequate to ensure the continued availability of funds that have already been deposited in decommissioning trusts or escrows. This concern is driven by several factors related to the deregulation of the electric utility industry. First, deregulation may lead to a diminished or non-existent oversight role for FERC and State PUCs over these decommissioning funds. Second, deregulation is intended to increase competition, and therefore seems certain to reduce the considerable market power that has until now ensured the financial viability of electric utilities. Third, deregulation may lead to significant corporate restructurings. As a result, financial mechanisms currently in place are likely in many cases to be amended, either to reflect new ownership or for a number of other potentially significant purposes (e.g., to clarify and limit the potential liability of various parties for decommissioning). In other cases, trusts or escrows might be terminated in response to changes in corporate structures or financial demands.³⁰

These factors reduce the level of confidence that, in the future, existing trusts and escrows will work as intended. Put another way, the financial mechanisms of power reactor licensees might pose a higher risk of failing than they would if no changes had occurred to the licensees' competitive situation and its FERC/PUC oversight status.³¹ It is also uncertain whether licensees, even in the current regulatory environment, have been complying with the guidance that they should submit changes or modifications of funding methods to NRC. If they have not, then NRC will not have conducted any

review of some mechanisms now in use.

Since NRC's 1990 review of the financial mechanisms submitted by power reactor licensees, NRC has gained considerable experience reviewing decommissioning financial assurance mechanisms submitted by materials licensees. Materials licensees are not generally subject to non-NRC regulations affecting decommissioning, and they generally do not have market power like that of today's electric utilities. For this reason, NRC's experience with materials licensees may be pertinent to a deregulated and restructured electric industry.

Decommissioning costs of materials licensees are typically several orders of magnitude less than decommissioning costs of power reactors. Nevertheless, materials licensees' financial assurance mechanisms, like those of power reactor licensees, are governed by several general conditions established primarily in NRC regulations and guidance. This guidance also provides detailed model wording for financial mechanisms. Although use of the model wording is not required, NRC has found it valuable to conduct a highly detailed review of licensees' financial mechanisms relative to the model wording. Relatively few mechanisms submitted by materials licensees are accepted by NRC without significant revisions, and all mechanisms must include a number of important protections to NRC's interests.³²

Under Option E-2, NRC would require power reactor licensees to submit any modifications to their current financial assurance mechanisms for NRC's review and revision at least once every 2 years and annually within 5 years of the projected end of operations (or where conditions have changed such that the plant either will close within 5 years before operating license expiration or has already closed), in light of potential changes in the electric utility industry's regulatory environment. Modifications to financial assurance mechanisms would be submitted with the reports required under Option C-2. NRC's rulemaking would also require licensees using contractual obligations to fund external sinking funds (as allowed under Option A-2) to report information on these contracts.

3. ANALYSIS OF VALUES AND IMPACTS

This section examines the values and impacts expected to result from NRC's rulemaking, and is presented in four subsections. Section 3.1 identifies attributes that are expected to be affected by the rulemaking. Section 3.2 discusses research and analysis on several topics that can affect the assessment of regulatory options. Section 3.3 describes the analytical model used to quantify values and impacts. Finally, the proposal's effects on values and impacts are presented in Section 3.4.

3.1 Identification of Affected Attributes

This section identifies and describes the factors within the public and private sectors that the regulatory alternatives (discussed in Section 2) are expected to affect. These factors were classified as "attributes," using the list of potential attributes provided by NRC in Chapter 5 of its *Regulatory Analysis Technical Evaluation Handbook*.³³ Each attribute listed in Chapter 5 was evaluated, and the basis for selecting those attributes expected to be affected by the proposed action is presented in the balance of this section.

The proposed requirements would revise the financial assurance requirements that support facility decommissioning requirements. The financial assurance requirements are designed to ensure that funds are available when needed to pay for necessary decommissioning activities. They do not create or define the decommissioning activities themselves. Therefore, some of the following attributes either are not consequences of the proposed action or are potential secondary consequences properly attributable not to the financial assurance requirements but to the decommissioning requirements that the assurance requirements support. The attributes in this group include:

- Public Health (Accident) -- No changes to radiation exposures to the public within 50 miles of a facility are expected due to changes in accident frequencies or accident consequences associated with the proposed action because the action is not designed or expected to address accident frequency or consequences.
- Public Health (Routine) -- No changes to radiation exposures to the public during normal facility operations are expected to be associated with the proposed action because the action does not affect routine facility operations in any manner that could result in radiation exposures to the public.
- Occupational Health (Accident) -- No changes to health effects, both immediate and long-term, associated with site workers as a result of changes in accident frequency or accident mitigation are expected to be associated with the proposed action because the action is not designed or expected to affect accident frequency or consequences.
- Occupational Health (Routine) -- No changes to radiological exposures to workers during normal facility operations are expected to be associated with the proposed action because the action is not designed or expected to affect routine facility operations in any manner that could result in radiation exposures to workers.
- Offsite Property -- No changes to monetary effects on offsite property, either through changes in accident frequency and consequences or in other direct or indirect forms, are expected to be associated with the proposed action. The action is not designed or expected to affect accident frequency or consequences. Effects on offsite property resulting from decommissioning are considered an attribute of the decommissioning requirements and not of the decommissioning financial assurance requirements.
- Onsite Property -- No changes to monetary effects on onsite property, either through changes in accident frequency and consequences or in other direct or indirect forms, are expected to be associated with the proposed action. The action is not designed or expected to affect the need for replacement power, decontamination, or refurbishment costs. Although decommissioning affects onsite property, the proposed action does not revise technical standards or requirements for decommissioning. The proposed action is intended to affect the adequacy of funds provided by

power reactor licensees to pay for decommissioning, but funds not provided by licensees for decommissioning are expected to be provided from other sources (e.g., taxpayers). Therefore the proposed action is not expected to have monetary effects on onsite property.

- Antitrust Considerations -- The proposed action is not expected to have any antitrust effects.
- Safeguards and Security Considerations -- The proposed action is not expected to have any effect on the existing level of safeguards and security.
- Environmental Considerations -- The proposed action is not expected to have any effect on the existing level of protection of environmental considerations.

The regulatory actions are expected to involve the following attributes:

- Industry Implementation -- No added industry implementation costs would be created by the no-action options (Options A-1, B-1, C-1, D-1, and E-1). The rule changes would result in both costs and savings for licensees. Specifically, industry implementation costs and savings would result in the following situations:
 - Under Option A-2: Given certain assumptions regarding the nature of deregulation, licensees that continue to be able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body would avoid the costs of obtaining a prepayment mechanism or a surety, insurance, or guarantee mechanism, as well as the implementation costs associated with the need to search for and identify a willing provider of such a mechanism, and to demonstrate to NRC that such a mechanism had been obtained.
 - Under Option C-2: Licensees required to prepare and submit periodic reports on decommissioning fund status to NRC could incur implementation costs to set up systems to ensure that they have adequate internal reporting procedures to collect and submit the required information.
 - Under Option D-2: Licensees that cannot make use of the statement of intent as an allowable financial assurance mechanism would incur implementation costs, such as costs to find a provider of a replacement financial assurance mechanism and costs to set up a replacement mechanism. A possible category of implementation costs not addressed in this analysis is the cost, potentially high, to secure compliance with the commitment represented by the statement of intent (e.g., meetings with Treasury and OMB staff, Congressional testimony) that licensees would not incur if they make use of other mechanisms.
 - Under Option E-2: Licensees required to submit modifications to external trust agreements and other financial assurance mechanisms on a periodic basis would incur additional implementation costs. A possible offsetting cost not addressed in this analysis is the cost of securing performance of the commitments represented by the financial mechanisms that would be avoided by early correction of errors and omissions.
- Industry Operation -- No added industry operation costs or savings would be created by the no-action options (Options A-1, B-1, C-1, D-1, and E-1). The rule changes would result in both costs and savings for licensees. Specifically, industry operation costs and savings would result in the following situations:
 - Under Option A-2: Given certain assumptions regarding the nature of deregulation, licensees that continue to be able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body would avoid the costs of maintaining a prepayment mechanism or a surety, insurance, or guarantee mechanism, such as payments, fees, and other expenses. The size of these cost savings could vary, depending on the type of mechanisms that would have been used in the absence of a rule change and the number of years that the licensee would have been required to maintain such mechanisms.
 - Under Option B-2: Licensees would incur savings if the size of their annual contributions decreases due to the credit for earnings following permanent shutdown. Licensees might also incur costs (savings) if, as a consequence of deregulation, they reduce (increase) their assumed earnings rate to 2 percent.
 - Under Option C-2: Licensees required to report periodically on decommissioning fund status to NRC would incur costs to prepare and submit such reports.
 - Under Option D-2: Licensees that cannot make use of the statement of intent as an allowable financial assurance mechanism would incur costs to maintain replacement financial assurance mechanisms (e.g., surety bond or letter of credit fees, opportunity costs of prepayments). Under the regulatory proposal, only the Tennessee Valley Authority could potentially face these expenses (i.e., if it is not able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body).
 - Under Option E-2: Licensees required to submit modifications to external trust agreements and other financial assurance mechanisms periodically to NRC would incur costs to submit such modifications.
- NRC Implementation -- No added NRC implementation costs or savings would be created by the no-action options (Options A-1, B-1, C-1, D-1,

and E-1). NRC would be expected to incur costs to put the proposed actions into operation. Specifically, NRC would incur implementation costs in the following situations:

- To implement Options A-2, B-2, C-2, and E-2, NRC would be required to develop or revise a Regulatory Guide or Branch Technical Position similar to *Regulatory Guide 1.159*.
- NRC Operation -- No added NRC operation costs or savings would be created by the no-action options (Options A-1, B-1, C-1, D-1, and E-1). The proposed rule changes would result in both costs and savings for NRC. Specifically, NRC operational costs and savings would result in the following situations:
 - Under Option A-2: Given certain assumptions regarding the nature of deregulation, NRC would avoid the costs of reviewing submitted mechanisms from licensees that are no longer able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body (and are also unable to recover costs through contractual obligations).
 - Under Option C-2: NRC would need to review periodic reports in order to assess the status of licensees' decommissioning funding.
 - Under Option D-2: NRC would incur costs to review replacement financial assurance mechanisms submitted by licensees formerly using statements of intent.
 - Under Option E-2: NRC would conduct a detailed review and analysis of submitted modifications to financial assurance external trust agreements and other financial assurance mechanisms to identify errors, omissions, or other problems and follow up to ensure their correction.
- Regulatory Efficiency -- The proposed requirements would result, in part, in enhanced regulatory efficiency, particularly in the avoidance of delays in decommissioning due to the lack of available funds that could cause potential health and safety problems. No change would be expected under the no-action alternatives. Under other options, regulatory efficiency may be affected as follows:
 - Under Option A-2: NRC will enhance regulatory efficiency through the proposed action by ensuring that decommissioning can be carried out in a safe and timely manner and that lack of funds does not result in delays that may cause potential health and safety problems.
 - Under Option C-2: NRC will be able to track licensees' financial assurance for decommissioning and monitor funds; obtain actions from licensees to correct financial assurance shortfalls in a more timely way; and respond to public inquiries about the status of decommissioning funding with detailed and complete information.
 - Under Option D-2: Clarifying which licensees may use statements of intent by defining the term "Federal licensee" would eliminate a potential future source of delay arising from disputes over whether the Federal government has assumed responsibility for decommissioning costs that may cause potential health and safety problems.
 - Under Option E-2: Detailed review of modifications to financial assurance mechanisms could eliminate a source of delay or failure of financial assurance arising from errors and omissions in the documents that may cause potential health and safety problems.

3.2 Research and Evaluation of Information on Selected Attributes

This section presents the results of background research into several topics that can affect the assessment of the regulatory options, either through qualitative judgments about the feasibility of implementing certain options or by the guidance this research and evaluation provides for the design of the quantitative modeling of the options.

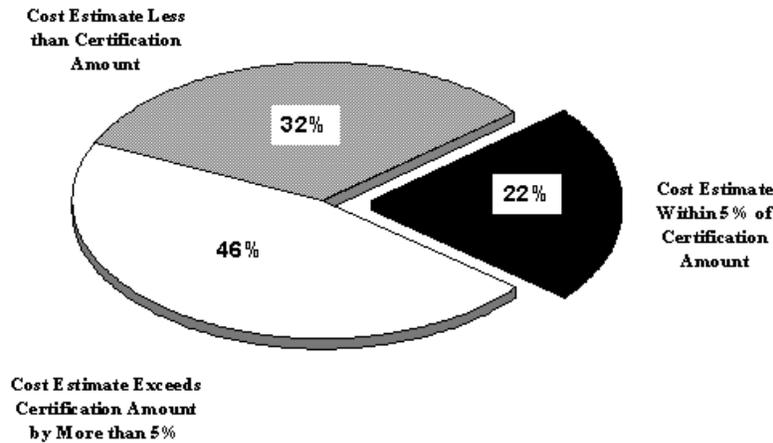
3.2.1 DECOMMISSIONING COST ESTIMATES USED AS BASIS FOR EXTERNAL SINKING FUNDS

NRC regulations at 10 CFR 50.75(b) establish minimum acceptable levels of financial assurance for nuclear power reactors based on the type of reactor (i.e., PWR, BWR) and its power level (in MWt). Although these "certification amounts" are stated in 1986 dollars, the regulations require licensees to update the amounts annually using a specific formula provided in the regulations. The regulations also allow nuclear power reactor licensees to base their financial assurance levels on facility-specific decommissioning cost estimates, *provided that* the estimates are at least as great as the current certification amounts. Thus, licensees must base financial assurance levels on an amount that may be higher, but not lower, than the applicable inflation-adjusted certification amount.

This study calculated the applicable certification amounts (updated to 1994) for substantially all nuclear power reactors currently operating. The analysis then compared these certification amounts to the cost estimates reportedly in use in 1994 by operating and non-operating licensees.³⁴ The reported estimates were then classified as less than, consistent with, or greater than the applicable certification amount. (Because the regulatory formula for updating certification amounts is fairly complex, licensee estimates were classified as "consistent with" the certification amounts if they were within 5 percent of the applicable certification amount.)

The results of this analysis, displayed graphically in Exhibit 3-1, suggest that current NRC certification amounts do not usually serve as the basis for funding levels:

Distribution of Utilities by Difference Between Certification Amounts and Cost Estimates



As Exhibit 3-1 illustrates:

- Only about 22 percent of licensees report cost estimates within 5 percent of the inflation-adjusted certification amounts. Any licensees using accurate certification amounts should be among these 22 percent, along with licensees that prepared site-specific cost estimates that happen to be close to the applicable certification amount.
- Almost half of licensees, 46 percent, report cost estimates *greater than* the certification amount. These cost estimates suggest the use of a facility-specific estimate that exceeds the certification amount. It is also possible, however, that cost estimates in this group may include costs of non-radiological work (work not required by NRC) in addition to the certification amount or, alternatively, in addition to a decommissioning cost estimate that may be higher *or lower* than the certification amount. (In fact, of 22 States where PUCs are known to require utilities to prepare cost estimates, 18 allow non-radiological "greenfield costs" to be included.)³⁵
- A full 32 percent of licensees report amounts that are more than 5 percent *less than* the applicable minimum certification amount. These cost estimates, if accurate, would seem to indicate licensees' non-compliance with 10 CFR 50.75(b). These amounts could be due to low site-specific cost estimates or to certification amounts that are not fully adjusted for inflation.

In general, these findings suggest that a significant majority of licensees (probably more than 78 percent) prepare facility-specific cost estimates and use these estimates to determine the required level of financial assurance.

3.2.2 PROJECTED FUNDING STATUS OF EXTERNAL SINKING FUNDS

This section reports on the adequacy of the amounts currently being collected in external decommissioning funds under NRC's current regulations. To comply with NRC requirements, external sinking funds must be fully funded by the time the associated nuclear power reactor shuts down. This study examined licensees' current decommissioning fund balances for their reactor(s) and their annual contributions to those funds. It then projected fund levels at the time of each reactor's license expiration, and evaluated the projected level relative to the required amount of financial assurance.³⁶ This analysis assumes that decommissioning costs remain constant (in inflation-adjusted dollars), that licensees continue making annual contributions that are equal to their current annual contributions (in inflation-adjusted dollars), and that the real earnings rate on invested funds each year equals the real rate that is currently being assumed by each licensee.³⁷

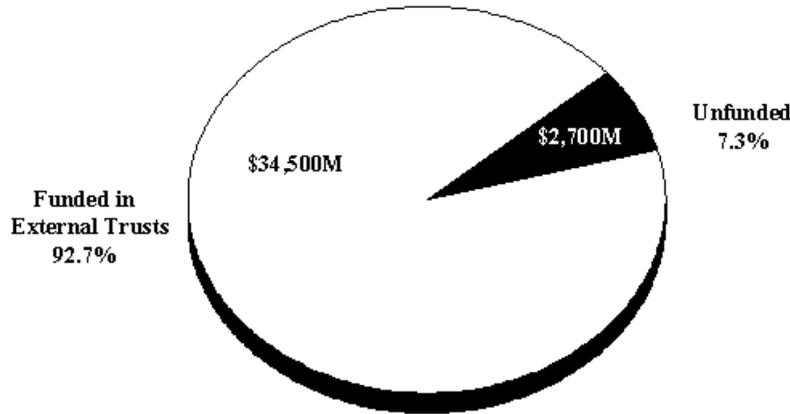
The results of this analysis, displayed graphically in Exhibit 3-2, indicate that approximately 7 percent - or more than \$2.7 billion - of decommissioning costs will be unfunded at license expiration, out of the more than \$37 billion in total decommissioning costs for all nuclear power reactors. This estimate may overstate the level of underfunding due to the assumption that licensees' funding rates will not change.³⁸ Alternatively, underfunding could be higher if licensees are unable to earn their assumed real rates on invested decommissioning funds.

3.2.3 REPORTING ON STATUS OF DECOMMISSIONING FUNDS

Licensees currently are not required by 10 CFR Part 50 to prepare and submit reports on decommissioning fund status to NRC following the submission of the initial decommissioning report specified in 10 CFR 50.33(k) indicating how reasonable assurance will be provided that funds will be available to decommission the facility. Section 50.75 ("Reporting and recordkeeping for decommissioning planning") requires licensees to keep records of information important to the safe and effective decommissioning of the facility in an identifiable location until the license is terminated. Such records include records of the cost estimate performed for the decommissioning funding plan or of the amount certified for decommissioning and records of the funding method used for assuring funds. Section 50.75(f) provides that at or about 5 years prior to the projected end of operation the licensee must submit a preliminary decommissioning plan containing a cost estimate for decommissioning and an up-to-date assessment of the major technical factors that could affect planning for decommissioning. The section also provides that "If necessary, this submittal shall also include plans for adjusting levels of funds assured for decommissioning to demonstrate that a reasonable level of assurance will be provided that funds will be available when needed to cover the costs of decommissioning."

Exhibit 3-2

Projected Funding at Time of License Expiration (If Current Funding Patterns Are Maintained)



Section 50.75 also notes explicitly that funding for decommissioning of electric utilities is also subject to the regulation of agencies such as the Federal Energy Regulatory Commission (FERC) and State public utility commissions (PUCs). In addition, NRC has noted elsewhere that accounting standards, such as the standards of the Financial Accounting Standards Board (FASB), and rules pertaining to Federal taxation lead to the collection and reporting of information by licensees on the status of their financial assurances for decommissioning. This section examines the extent to which the information prepared by licensees for any or all of the purposes described above are likely to provide information that can be used by licensees to satisfy NRC reporting requirements or can be used to substitute for such reporting requirements.

FERC Reporting

FERC's jurisdiction extends to the interstate transmission and delivery of electric power. Under rules promulgated by FERC on June 30, 1995, utilities that are subject to FERC jurisdiction ("Commission-jurisdictional") are required to set up trust funds to provide for the decommissioning of their nuclear power plants. FERC uses both the phrase "nuclear power plant" and the phrase "nuclear unit," without stipulating if funds must be plant-specific or reactor-specific. (Plant-specific reporting could combine information about more than one reactor.) FERC's rules provide that if a public utility has elected to provide for the decommissioning of a nuclear power plant through a nuclear plant decommissioning fund, that fund must meet certain criteria specified by FERC. (Such funds may be, but are not required to be, "qualified" Nuclear Decommissioning Reserve Funds under 26 USC 468A (the Internal Revenue Code). A utility may establish both qualified and non-qualified funds with respect to its interest in the same nuclear plant.) Utilities are required to deposit at least quarterly all amounts included in Commission-jurisdictional rates to fund nuclear power plant decommissioning.

The utility is required to provide the fund's investment manager with essential information about the nuclear unit, including the following:

- the nuclear unit's description and location;
- the expected remaining useful life of the unit;
- the expected decommissioning plan;
- the utility's liquidity needs once decommissioning begins; and
- any other information that the fund's investment manager would need to construct and maintain a sound investment plan.

The utility is mandated by FERC rules to submit annual reports to FERC, suggesting that FERC expects the utility to receive annual reports from its trustee(s). The rule requires submission "by April 1, 1996 and by March 31 of each year thereafter, a copy of the financial report furnished to the utility by the Fund's Trustee. . . ." The information reported to FERC must include the following:

- Fund assets and liabilities at the beginning of the period;
- Activity of the fund during the period, including amounts received from the utility, purchases and sales of investments, gains and losses from investment activity, disbursements from the fund for decommissioning activity and payment of fund expenses, including taxes; and
- Fund assets and liabilities at the end of the period.

The rules explicitly state, however, that the report "should not include the liability for decommissioning" in its description of fund liabilities, because FERC considers the decommissioning expense to be a liability of the utility and not of the fund.

The usefulness of the FERC reporting requirements as a model for potential NRC reporting requirements pertaining to the amount and adequacy of decommissioning financial assurance or as a substitute for them is affected by the following factors:

- The FERC standards provide support for the conclusion that even a requirement that *annual* reports be submitted by licensees would not create a large additional reporting burden on those licensees that are already required to report to FERC. Moreover, all of the key items of information that would be needed for satisfying an NRC reporting requirement should already be collected for purposes of preparing the FERC report. FERC annual report information could provide inputs for even the biennial reports being proposed.
- For some licensees, however, the FERC reporting requirement may not continue to exist after deregulation. A company engaged exclusively in generation, separate from companies engaged in wholesale transmission or end-user distribution, would probably no longer fall under FERC jurisdiction and therefore would not be required to prepare FERC reports.
- FERC reporting will address only that component of decommissioning that is "Commission-jurisdictional." If only a portion of a plant's power is sold at wholesale, FERC will have jurisdiction only over that proportion of the plant's decommissioning costs. Therefore, the reports will not be likely to include information that is fully adequate for NRC's purposes, because they will not cover the full amount of the plant's decommissioning obligation.
- For utilities owned by more than one company, a separate report may be prepared by each company's trustee. The full picture of the FERC "Commission-jurisdictional" decommissioning funding for a plant might need to be put together from several reports.
- The extent of compliance with FERC reporting requirements over an extended period cannot yet be estimated, since the initial reports were required to be submitted by April 1, 1996. FERC has found that the initial group of reports presented some problems. Some utilities presented information only on their "Commission jurisdictional" decommissioning funds; others apparently provided information on all of their decommissioning financial assurance, whether required by FERC or by NRC. Some utilities provided information about every transaction entered into with respect to their decommissioning funds over the preceding year, while others provided more summary information.
- The level of review and scrutiny given these reports by FERC cannot yet be determined because FERC's requirements have only recently been implemented. FERC has concluded that requiring annual reports will provide "greater flexibility" for monitoring funds, suggesting that every report might not be reviewed every year. In addition, FERC has not made the reports part of the structured format for its electronic filing requirements.

In summary, FERC reports provide a good model for the types of information that could be secured from NRC licensees on a periodic basis. FERC's reporting system cannot be expected, however, to provide a fully adequate source of information that could substitute for reports to NRC because FERC's jurisdiction is limited and deregulation might end FERC's jurisdiction over NRC licensees, and because FERC reports cover only a portion of the complete decommissioning obligation.

Reporting to State PUCs

All State PUCs require some type of reporting on the status of decommissioning financial assurance. The scope, level of detail, the frequency of reporting, and the degree of scrutiny of the reports by the various PUCs, however, can differ substantially from State to State. In July 1994, the staff subcommittee on accounts of the committee on finance and technology of the National Association of Regulatory Utility Commissioners (NARUC) presented the results of a survey of State PUCs examining how nuclear decommissioning cost estimates were currently being treated and the review given those estimates by State PUCs.

According to the NARUC survey,³⁹ the level and frequency of scrutiny given by PUCs to cost estimates is not particularly high. Although site-specific cost estimates are more frequently used than NRC certification amounts in the reporting States, most of the PUCs in those States conduct somewhat infrequent reviews of the cost estimates. Three State PUCs reported in 1994 that they had not yet reviewed cost estimates; six PUCs reviewed every 3 years; three every 4 years; and two every 5 years. At least thirteen State PUCs reviewed cost estimates only as part of a rate case.

Some State PUCs clearly require a detailed study of expected decommissioning costs to be performed frequently. Texas law, for example, specifies that electric utilities are required to perform or update a study of the decommissioning costs of each nuclear generating unit that it owns or in which it leases an interest at least every 5 years (Substantive Rule 23.21(b)(1)(F)). Public notice and an opportunity for public comment are frequently provided for such decommissioning cost updates. New Jersey, for example, requires updates every 5 years, offers a 60-day public comment period on the updates, and may, if necessary, convene a formal proceeding to review the present funding level (N.J.A.C. 14:5A-3.1 and 3.2). Illinois, in contrast, considers the status of decommissioning funds not to be public information. Connecticut (which did not respond to the NARUC survey) first required submission of a decommissioning funding plan as of January 1, 1993, with updates every 5 years, or more frequently if it finds that more frequent review is desirable. The State PUC is required to hold a public hearing on the plan. The Connecticut PUC is empowered to review the estimated date of closing of the nuclear power generating facility, the estimated cost of decommissioning, the reasonableness of the method selected for cost estimate purposes, and the adequacy of plans for financing the decommissioning and any shortfall resulting from premature closing. After conducting a review, the PUC may, after a hearing, order any changes to the decommissioning financing plan that it deems necessary to ensure that the estimated time of closing and estimated cost of decommissioning the facility are reasonable; that the licensee and owners can adequately fund the decommissioning; that plans for financing any shortfall resulting from a premature closing are adequate and reasonable; and that the owners are legally bound. Michigan's procedures call for review of cost estimates every 3 years, and the PUC reviews the adequacy of funding for decommissioning in the course of ratemaking actions.

The information collected by NARUC in its survey indicated that all or almost all of the utilities with nuclear power plants were relying on external sinking funds to demonstrate financial assurance for decommissioning (with some noting the incentive that the Internal Revenue Service's 468A requirements

gave for the use of external funds). (NARUC did not examine whether each owner of a utility had set up its own sinking fund, and, if so, State PUCs reviewed each fund separately.) However, the survey also suggested that there was not a high degree of PUC oversight of those external sinking funds. At least twelve States reported that they did not review the performance of the trust fund investments on a routine or periodic basis. Maryland, for example, did not claim to do annual reviews, stating that "no performance review is done of the trust fund except for the cursory review based on annual reporting." Only four States reported annual reviews, with two more reviewing even more frequently (monthly and quarterly). Texas reported that companies were required to report fund balance, deposits, and breakdown of trust assets semi-annually, but because the trust funds were relatively small and because of limited staff resources, they were not being closely monitored. Three more States reviewed every 3 years, and two more every 5 years. Two States reported that they reviewed fund performance during rate actions. Even for those States that reported reviewing the performance of the external sinking funds, the NARUC survey provided no information about whether the State PUC checked to ensure that annual contributions were being made in the correct amounts. There was no suggestion that the PUCs carefully reviewed the text of the external trust fund agreements, to ensure that they did not contain provisions threatening the security of the assurance being provided. At least sixteen State PUCs reported that they did not impose investment restrictions on the decommissioning funds (although at least one State that did not impose restrictions did place a cap on the market value of investments that could be included with a particular investment manager). New York, which did not itself place any restrictions on investments, noted that the IRS imposed investment restrictions for qualification as a nuclear decommissioning fund under 468A. Twenty-one State PUCs reported that they did not "approve or oversee the selection" of the decommissioning fund's trustee and investment manager, while Illinois reported that the PUC approved trustee selection only.

In summary, because of the variations in scope, frequency, and level of review given reports by utilities to State PUCs, such reports cannot be expected to provide a fully adequate source of information that could substitute for reports to NRC. Furthermore, following deregulation, any nuclear power generators that no longer fall under the jurisdiction of State PUCs might not be required to continue reporting to the PUCs.

FASB Reporting Standards

The Financial Accounting Standards Board (FASB) is currently considering financial accounting standards for obligations that are incurred for the closure or removal of long-lived assets, such as nuclear reactors. On February 7, 1996, FASB issued an exposure draft (No. 158-B) for comment. The draft includes standards for recognizing and measuring closure or removal obligations (decommissioning of nuclear facilities is explicitly included in the scope of the standard), methods of accounting, and standards on reporting and disclosures.

Under the proposed FASB standard, an entity that reports a liability for its decommissioning obligations should disclose the following information (in this description, the word "decommissioning" has been substituted for the term "closure or removal obligations" used in the proposed standard):

- A description of the obligation and of the related long-lived assets;
- The liability for decommissioning (stated as the present value of the estimated future cash outflows required to satisfy the obligation) must be recognized in the entity's financial statements, either on the face of the statement of financial position or in the notes to the financial statements;
- All assumptions that are critical to estimating the future cash outflows and the liability must be recognized in the financial statements. These include:
 - The current cost estimate for decommissioning;
 - The estimated long-term rate of inflation used in computing the liability;
 - The estimated total future cost of decommissioning;
 - The discount rate(s);
 - The general estimated timing of decommissioning activities;
- The funding policy for decommissioning;
- The fair value of assets, if any, dedicated to satisfy the decommissioning obligations;
- The effects on the reported liability and capitalized costs of decommissioning activities resulting from changes in the current reporting period in the estimated future costs of decommissioning;
- The individual components of the costs of decommissioning recognized in the statement of operations (depreciation, changes in the present value of the liability due to the passage of time, and investment earnings on any dedicated assets) and the total of those costs; and
- The caption or captions in the statement of operations in which the costs listed immediately above are aggregated if those costs have not been presented as a separate caption or reported parenthetically on the face of the statement.

The FASB's goal, in seeking these disclosures, is to ensure that companies "provide information that will be useful in understanding the effects of closure or removal obligations on a particular entity. . ." The disclosures can be prepared, in the Board's opinion, "without encountering undue complexities or

significant incremental costs."⁴⁰

Several important additional points should be noted concerning the FASB standards:

- FASB states that the costs to store spent nuclear fuel that are incurred after closure of a nuclear power plant until the spent fuel is ready for final storage should be included in the liability recognized pursuant to the standard. However, the costs of temporary storage of spent fuel that result from the absence of a facility for final storage of the spent fuel should not be included. Unless fuel storage costs are reported separately, which the FASB standards would not require, distinguishing them from decommissioning costs for NRC's analysis would be difficult.
- The draft standard does not change the existing general principle that trust funds established for nuclear decommissioning are not eligible for offsetting against the liability for decommissioning on the financial statement. FASB explained that offsetting trust funds set up for decommissioning against the decommissioning obligation for nuclear plants had been held in a 1996 FASB opinion to be inappropriate because the right of offset is not enforceable at law and the payees for costs of decommissioning activities generally have not been identified at the reporting date. However, FASB asked for comments on this point in the 1996 Exposure Draft.⁴¹
- FASB intends the standard to apply to rate-regulated entities, such as utilities subject to State PUCs or FERC, as well as to non-regulated companies.
- The FASB standard would apply to financial statements. Firms that are not publicly held or traded on public exchanges will not be obligated to adopt FASB accounting principles, although they could do so.
- Although the draft standard refers to "an entity," the standard apparently would allow an affiliated group of firms that prepares a consolidated financial report to disclose consolidated information about the group's decommissioning obligations, as long as the report addressed differences in timing and discount rates applicable to separate facilities.

FASB indicated it is reconsidering aspects of its exposure draft on November 26, 1997, but continues to consider the issue of accounting for decommissioning. FASB standards, if approved, would help to establish uniform standards for financial reports by publicly traded businesses, but may not directly provide that information in a format that is uniformly well-suited to NRC's use because information on more than one reactor or even more than one affiliated subsidiary may be consolidated. Nevertheless, licensees may readily be able to comply with NRC's reporting requirements if licensees must collect non-consolidated information as a prerequisite to meeting the FASB standards.

Tax Reports

For a number of reasons, detailed below, tax reports for a qualified Nuclear Decommissioning Reserve Fund or for a non-qualified grantor trust do not appear likely to provide information that a licensee could submit to NRC without extensive revisions to satisfy the proposed reporting requirement, or that NRC could use without extensive analysis to supplement information reported by a licensee. Such tax reports could involve (a) reports on payments into a fund, (b) reports on the current size of the fund, and (c) reports on income to and/or expenditures from a fund.

Section 468A Nuclear Decommissioning Reserve Fund Reports

If a licensee elects to set up a Nuclear Decommissioning Reserve Fund under 468A of the Internal Revenue Code, payments into the fund are deductible in that tax year (in contrast to the general rule that payments to such a trust are not deductible). Therefore, the tax code includes explicit rules respecting such payments. The amount that the licensee may pay into the fund is limited to the lesser of either (1) the amount of nuclear decommissioning costs which is included in the taxpayer's cost of service for ratemaking purposes for that taxable year, or (2) an amount (the "ruling amount") specified on a schedule developed by the IRS that essentially provides for level funding of the amount remaining to be paid when the fund is established and the schedule is prepared.

Gross income of a Nuclear Decommissioning Reserve Fund is taxed (at a rate of 20 percent) so reports of income must be made. In general, amounts distributed from the fund to pay for decommissioning are to be included in the gross income of the taxpayer, but expenditures from the fund to accomplish decommissioning are also treated as deductible costs to the taxpayer. Thus, the IRS requires reports of earnings and distributions from the fund.

The following points address the usefulness of these tax filings as a source of potential information on the size and adequacy of the decommissioning financial assurance:

- (1) Section 468A apparently allows a taxpayer with a power plant containing more than one nuclear reactor to use the same Nuclear Decommissioning Reserve Fund for the entire plant. The Code states in 468A(e)(1) that "Each taxpayer who elects the application of this section shall establish a Nuclear Decommissioning Reserve Fund with respect to each nuclear powerplant to which such election applies." Section 468A(f) also specifies that "the term 'nuclear powerplant' includes any unit thereof." Section 468A(e)(4)(A) says that the fund may be used for "satisfying, in whole or part, any liability of any person contributing to the Fund for the decommissioning of a nuclear powerplant (or unit thereof)." Thus, tax-related information provided by a taxpayer owning a plant with more than one reactor might not provide usefully disaggregated data about decommissioning funds with respect to particular reactors.
- (2) Section 468A apparently requires a taxpayer with several powerplants to set up a separate Decommissioning Fund for each plant. Although the phrase in 468A(e)(1) cited above is ambiguous, it would probably say "with respect to all nuclear powerplants to which such election

applies" if a single consolidated fund were permissible.

- (3) If several taxpayers are jointly responsible, through co-ownership, for a nuclear plant, Section 468A apparently requires each of them to set up a separate Decommissioning Fund for their shares of the decommissioning costs. Information collected from several taxpayers might be necessary to develop a complete report on the status of all funds pertaining to a particular plant.
- (4) Contributions to decommissioning funds must be made within the tax year, including a period extending 2 months after the end of the tax year. Thus, taxpayers with different taxable years could make payments into their decommissioning funds at different times, even with respect to the same co-owned plant, over a 14 month period, making comprehensive summary data more difficult to put together.
- (5) The Internal Revenue Service has the authority to review and revise the schedule of ruling amounts "at least once during the useful life of the nuclear powerplant (or, more frequently, at the request of the taxpayer)" (26 USC 468A(d)(3)). A taxpayer who could derive no additional tax benefits from larger deductions might not request the Service to amend the schedule of ruling amounts, even if its decommissioning cost estimate increased.

Grantor Trust Reports

If a licensee elects to set up an external sinking fund segregated from its assets and outside its administrative control (but not qualified as a Nuclear Decommissioning Reserve fund under 468A), NRC's *Regulatory Guide 1.159* does "not require that an external trust fund be established as a separate tax-paying entity. Thus, a grantor trust may be used" (p. 1.159-4). Payments into such a fund would not be deductible in that tax year, so reports to or by the IRS involving payments would not need to be prepared.

Regulatory Guide 1.159 specifies that annual reports of the current status of a trust (or escrow) are desirable. The language provided for the trust (as well as the escrow agreement) in *Regulatory Guide 1.159* is entitled "Annual Valuation." The suggested language, which specifies that "the Trustee [or escrow agent] shall . . . furnish to the Grantor a statement confirming the value of the Trust," also offers the alternatives of monthly, quarterly, or annually for the frequency of such reports. However, NRC also states that "Licensees may add, delete, or modify sample provisions as their circumstances warrant" (p. B-1). Thus, licensees apparently could specify longer than annual periods between reports.

Trustees of grantor trusts are required by IRS rules to submit to the grantor annual statements showing all items of income, deduction, and credit of the trust for the taxable year so that the grantor can take the items into account in computing its own taxable income and credits. The rules specifically provide that the trustee of a grantor trust is not required to file any type of return with the IRS (26 CFR 1.671-4). Thus, licensees who have set up grantor trusts will receive annual reports of certain information from the trustee, even if no full accounting is prepared by the trustee on an annual basis.

3.2.4 AVAILABILITY AND SECURITY OF FINANCIAL ASSURANCE MECHANISMS TO SUPPLEMENT OR REPLACE EXTERNAL SINKING FUNDS
NRC's financial assurance regulations in 10 CFR 50.75 currently distinguish between two categories of licensees, "an electric utility" and "a licensee other than an electric utility." The financial assurance mechanisms authorized for use by each differ. Under 50.75(e)(3), an electric utility may provide financial assurance for decommissioning by means of (1) prepayment, (2) an external sinking fund in which deposits are made at least annually until it has built up to the appropriate amount, (3) a surety method or insurance, or (4) a statement of intent (Federal government licensees only). Under 50.75(e)(2), a licensee other than an electric utility may provide financial assurance for decommissioning by means of (1) prepayment, (2) an external sinking fund, (3) a surety, insurance, or other guarantee method, including a parent company guarantee or self-guarantee, or (4) a statement of intent (Federal, State, or local government licensees only). A key distinction in the current rule is made between electric utility licensees and licensees that are not electric utilities with respect to the external sinking fund option. Electric utilities are allowed to use an external sinking fund that builds up over time; licensees that are not electric utilities must couple their external sinking fund with a surety method or insurance, the value of which may decrease by the amount being accumulated in the sinking fund.

As discussed in Section 2.1.2, the regulatory proposal would allow licensees unable to recover their costs through rates, other mandatory charges established by a regulatory authority, or contractual obligations to use external sinking funds only in conjunction with other mechanisms. One effect of deregulation of the electric power industry, therefore, could be to limit or reduce the applicability of external sinking funds as stand-alone mechanisms for some nuclear power generator licensees if their access to funds through regulated ratemaking is limited or ended.

This section addresses qualitative issues associated with the use of these financial mechanisms by licensees that no longer can recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body (and are also unable to recover costs through contractual obligations). In particular, it discusses issues relating to the availability of certain categories of financial mechanisms (e.g., surety, insurance, and guarantee mechanisms); problems of implementation and security associated with certain categories of mechanisms (e.g., certifications from state PUCs and statements of intent); and issues relating to the development and implementation of certain categories of mechanisms not now in existence (e.g., parent company and self-guarantees for electric utilities and/or nuclear power generators).

Availability of Surety and Third-Party Guarantee Mechanisms

There are likely to be limits on the availability of surety bonds and other third-party guarantee financial mechanisms, such as letters of credit and lines of credit, to nuclear reactor licensees that, following the onset of deregulation, are required to obtain such mechanisms to demonstrate financial assurance for the difference between their external sinking funds and the full amount of required assurance. These limits may be created by the possibility, on the one hand, that the nuclear reactor licensees will no longer have recourse to the asset base of the utility, and that, on the other hand, providers of such financial mechanisms will require high levels of collateral and security before they will make such mechanisms available.

NRC has noted that electric utilities may create generating subsidiaries to operate nuclear power plants. These subsidiaries may be separated from

affiliates providing bulk transmission services and distribution to end-use customers, with the corporate group owned by a common parent.⁴² NRC has received commitments that licensees will notify NRC when significant assets are transferred from a licensee to its non-licensed parent company. However, trends in deregulation and utility reorganization may cause power reactor licensees to have smaller asset bases, potentially consisting primarily of the nuclear generating plant and contractual commitments for sales of power, while other significant assets are owned by the generating subsidiary's parent company or other affiliates.

At the same time, the providers of financial mechanisms such as surety bonds and letters of credit have frequently required collateral for a portion or the full amount of the mechanism, and there is no reason to expect that they will relax this requirement for mechanisms assuring the very large decommissioning costs of nuclear generating facilities. In addition, mechanism providers may view some deregulated licensees as financially risky ventures given their restructured operations and financial characteristics (e.g., licensees may no longer have guaranteed service areas). Generating subsidiaries without access to substantial assets other than a nuclear plant may find it difficult to provide the necessary collateral and may be unable to obtain a surety mechanism or other third-party guarantee mechanism.

Availability and Security of Insurance

Decommissioning insurance is not likely to be available from a traditional insurer. However, licensees may seek to demonstrate financial assurance using decommissioning insurance purchased from a "captive" insurer. (A captive insurance company is defined as a separately incorporated insurance company that is owned by the party(ies) that it insures.) For example, as electric utilities divest nuclear power generation facilities into separately incorporated subsidiaries, the parents of the corporate groups may set up captive insurance companies to provide financial assurance to the nuclear generation subsidiaries or a subsidiary may even set up its own captive. Currently, 10 CFR Part 50 does not specify any requirements that must be satisfied by companies insuring decommissioning costs for NRC licensees, but *Regulatory Guide 1.159* states that the insurance company "must be licensed by State regulatory authorities to transact business as an insurer in one or more States" (2.3.3). *Regulatory Guide 1.159* also states that insurance used to provide financial assurance for decommissioning "would be similar to surety bonding . . . in that it would guarantee that decommissioning costs will be paid to a trustee should the licensee default."

The degree of regulatory scrutiny afforded a captive insurer before licensing is usually not as high as the scrutiny afforded other types of insurers. Although captive insurers may be subject to certain state regulations and licensing requirements, several States have special licensing laws applying to captives that are somewhat less stringent than those applied to commercial insurers, particularly with respect to minimum capitalization requirements. In addition to the levels of capitalization required, captive insurers are frequently allowed to capitalize their operations using a letter of credit rather than with cash and/or securities. In addition, the captive's parent supplies the collateral to support such a letter of credit. The captive's financial strength thus is linked closely to the financial strength of its parent.

Captive insurers also can be domiciled outside the United States. In fact, the majority of captive domiciles are located "off-shore," primarily in the Caribbean. For domestic captives, Vermont is home to nearly 70 percent of all captives licensed in the U.S., Hawaii has about 12 percent, and Colorado, 5 percent.⁴³

Even a captive registered outside the United States may be admitted for the limited purpose of transacting business with its corporate affiliate as a so-called "alien insurer" in the State where the affiliated company is located. Under some State alien insurer statutes, review of the company's financial situation by the National Association of Insurance Commissioners (NAIC) would be sufficient for it to obtain approval to provide excess or surplus lines coverage as an alien insurer, if the captive does not sell coverage to any entities other than its affiliate(s).

Because captive insurance companies rely upon the assets of their parents or affiliates in the same corporate group, a captive insurer will not afford the same degree of assurance as an independent third party source of insurance. The assurance provided by a captive insurer, rather than resembling the assurance provided by a surety, more closely resembles the assurance provided by a parent company guarantee or even the assurance that would be provided by a so-called cross-stream guarantee (a guarantee of one subsidiary in a corporate group by another subsidiary in that corporate group).

Availability and Security of Certifications from FERC or State PUCs

In its Advance Notice of Proposed Rulemaking on Financial Assurance Requirements for Decommissioning Nuclear Power Reactors (61 *FR* 15427, April 8, 1996), NRC raised the possibility of relying on certifications from State PUCs and/or FERC pertaining to licensees that had formerly been fully subject to ratemaking but that, due to deregulation, now had limited access to funds from ratepayers. This PUC/FERC certification would provide assurance to NRC that all unfunded decommissioning obligations of the licensee would be collected.

NARUC and a number of State PUCs have raised several arguments against the feasibility or desirability of such certifications:

- Neither FERC's current commissioners nor the current members of State PUCs can completely bind their successors. The actions of current commissioners create precedents and expectations that are frequently difficult to overturn, but changed political or economic conditions could lead in the future to abrogations of certifications, and NRC would be unlikely to have any effective method of enforcing them.
- The jurisdiction (and even the continued existence) of FERC or State PUCs in their current form might change in the future, and certifications would not outlast the entities giving the certification.
- The certification commitment that FERC or State PUCs would establish mechanisms sufficient to fund all unfunded decommissioning obligations might not be implemented. State PUCs, in particular, could face tensions between accomplishing retail electric rate reductions through deregulation and the need to set access fees, system exit fees, or other similar charges high enough to fund decommissioning, as well as other

costs that might be addressed through such mandatory fees. Without new Federal legislation, NRC would not have the power to force FERC or State PUCs to implement certification commitments.

- Finally, unlike other financial assurance alternatives, such certifications are not an option that most utilities or power reactor owners or operators can obtain in the marketplace. Federal or State legislation would probably be needed to allow FERC or State PUCs to provide such commitments. There is little or no evidence that States are planning to seek such certification authority as part of their deregulation activities.⁴⁴

Availability and Security of Statements of Intent

The proposed amendments to 10 CFR 50.75 would limit the use of statements of intent by Federal Part 50 licensees by defining the term "Federal licensee." Some of the same issues raised by certifications by State PUCs also arise with statements of intent.

As it was proposed in 1985, the statement of intent was "a certification that the appropriate government entity will be a guarantor of decommissioning funds" (50 FR 5619, February 11, 1985, emphasis supplied). Although the supplementary information to the final rule discussed the statement of intent in terms of a "guarantee that a government agency will assume financial responsibility for decommissioning the facility" (53 FR 24036, June 27, 1988), the rule language provides only that the statement of intent must be a statement "containing a cost estimate for decommissioning, and indicating that funds for decommissioning will be obtained when necessary." (53 FR 24050, June 27, 1988, currently codified in 10 CFR 50.75)

Regulatory Guide 1.159 further specifies that the statement of intent must contain "an indication that funds for decommissioning will be requested and obtained sufficiently in advance of decommissioning to prevent delay of required activities." *Regulatory Guide 1.159* also provides slightly more detail about who may sign a statement of intent, specifying that it must contain "Evidence of the authority of the official of the government entity to sign the statement of intent."

The statement of intent could present the following issues:

- Persons signing the statement of intent may be unable to bind their governmental entities over time. While their commitments may create a precedent and expectation that funds will be sought, the commitments cannot be binding on their successors or governmental superiors under different political or economic conditions. Federal statutes, such as the Anti-Deficiency Act, prohibit certain types of financial commitments. For States, the legal and financial relationship between the entity on whose behalf the statement of intent is being issued and the State may not create any binding obligation on the part of the State. State laws generally create precise standards defining when obligations of related or subsidiary entities are obligations of the State, and prohibiting the creation otherwise of any debts, liabilities, loans, or pledges of credit of the State. This mechanism may, therefore, indicate only that the State is on notice that a claim may be asserted sometime in the future against it.
- Persons signing the statement of intent may in fact lack the authority to make a commitment. States in some cases have enacted statutes similar to the Federal Anti-Deficiency Act, prohibiting officials from entering into financial commitments outside the legislative appropriation and allocation process.
- The commitment provided may, in fact, resemble a weak self-guarantee. Statements of intent signed by officials (e.g., trustees, executive officers, financial officials, or administrators) of the entity required to provide financial assurance that they will provide funds, reallocate funds, or seek and secure funds when necessary, do not appear to represent the same degree of assurance as financial mechanisms issued by third-party providers such as banks and surety companies or the assurance provided by a licensee that has obtained a written guarantee from a parent or passed a test for self-guarantee. No such test must be passed to use the statement of intent.
- TVA points to a number of reasons why its commitment to fund decommissioning when necessary is supported by its legal or financial situation.⁴⁵ TVA is a corporate agency that is wholly owned by the United States, and whose real property is held in title by the United States. Congressional appropriations are the primary source of funding for TVA's nonpower programs, although TVA has indicated that it may decline Congressional funding for certain programs in the future. Income from the TVA power program comes from the generation, transmission, and sale of electricity. (In 1994, gross generation was approximately 70 percent coal, 16 percent hydro, and 14 percent nuclear.) Although the service area of TVA is defined by law, competition in the electric power market can occur from other electric utilities and from the natural gas industry. TVA considers itself to be required by Federal law to set its electric power rates high enough to produce revenues sufficient to meet operating expenses, including expenses of decommissioning TVA's nuclear units.⁴⁶ TVA's electric power rates are subject only to the authority of the TVA Board of Directors, and are not subject to review by State PUCs, FERC, Congress, or the judiciary, although TVA's power system budget is sent to the President and Congress for informational purposes. TVA has sought to protect its revenue stream from power generation through the execution of requirements contracts with its distributor wholesale customers that contain rolling 10-year minimum termination provisions, and in FY 1995 about 87 percent of its total power revenues were received from such contracts.⁴⁷ Currently, one municipal customer accounts for approximately 9 percent of total power sales and four other municipal customers account for an additional 20 percent of total power sales. All five of these customers have contracts that in no event would terminate in less than 10 years. TVA has the authority to issue debt instruments, and in FY 1994 had outstanding long-term debt of about \$22 billion; however, TVA is currently taking steps to reduce its debt. TVA's bonds currently have a very high (AAA) rating.⁴⁸ Finally, TVA's decommissioning obligations, although large, represent a comparatively small proportion of its annual operating revenues of over \$5 billion, and TVA has established a decommissioning investment fund of over \$350 million.

Availability of Parent Guarantees and Self-Guarantees

Reliance on a parent company guarantee or a self-guarantee through passing a financial test similar in scope to the test contained in 10 CFR Part 30,

Appendices A and C, to ensure power reactor licensee decommissioning would pose a number of potential issues, such as the following:

- A utility that has spun off its nuclear power reactors into separately incorporated companies might be reluctant to issue a guarantee obligation for decommissioning those plants. One of the effects of creating a generating subsidiary is to shield the transmission and distribution components and/or the owner of the corporate group from direct liability for the generating subsidiary.
- Even if a corporate parent or affiliate is willing to undertake a guarantee for its nuclear generating subsidiary, the financial test included in 10 CFR Part 30 Appendix A may not be an appropriate measure of its financial ability to do so for at least three reasons. First, that financial test was initially developed close to two decades ago to measure the financial ability of waste management firms to assure costs that are substantially smaller than nuclear reactor decommissioning costs are likely to be. Second, consideration should be given to escalating some of the elements of the test (e.g., the \$10 million net worth requirement) to reflect current dollars. Third, when the test was developed the financial ratios were not considered appropriate for evaluating the financial structure of utilities.
- A self-guarantee by a nuclear generating firm responsible for substantial unfunded decommissioning costs could pose particular problems. The firm's large liabilities might make it unable to satisfy the current financial test for self-guarantees in 10 CFR Part 30 Appendix C. In addition, such licensees are poor candidates for self-guarantees if they do not have significant unencumbered assets in addition to the nuclear plant that itself is creating the decommissioning obligation.

3.2.5 POTENTIAL INDUSTRY RESTRUCTURING

Economic deregulation and restructuring in the electric utility industry, which is expected to lead to increased competition in the industry, may have, as one of its consequences, the disaggregation of integrated power systems into their functional components. In particular, electrical generation may be separated from transmission and distribution, either by being spun off into separate subsidiaries, sold, or merged into new entities. In some cases, particular generation plants may prove to be noncompetitive and be retired early. This industry restructuring, and possible plant closures associated with it, will be closely linked to the pace of deregulation.

This analysis did not attempt to develop a precise forward-looking estimate of how, when, and where industry deregulation will occur or of the number of utility restructurings or premature closures of generating plants that might be associated with deregulation. A review of typical State plans for deregulation, summaries of the status of deregulation across the country, and commentary by industry representatives, however, was used to develop the modeling scenarios described in Section 3.3.2.

Phase-In Periods for Deregulation

State PUCs, legislators, consumer and business groups, and utilities have all proposed a broad range of time periods within which electrical industry deregulation could be carried out, and there is some possibility that Federal legislation could preempt State timetables. The pace of future deregulation will in part be determined by political as well as technical factors, varying from State to State. In New York, for example, large consumers of electricity favor rapid deregulation, with phase-in periods as short as 3 to 5 years; residential and small commercial consumers support a variety of timetables; and some utilities urge delaying action until several outstanding issues have been resolved.⁴⁹ In 1996 the New York State PUC adopted early 1997 as its goal for wholesale competition and early 1998 as its goal for getting retail access underway.⁵⁰ A law restructuring California's electric industry was passed and signed in late 1996, with implementation goals beginning as early as January 1998. Several other States are seeking to deregulate, at least in the wholesale market, in the 1998 to 2001 period.⁵¹ The Pennsylvania PUC in July 1996 recommended a phase-in plan leading to full retail access to competitive generation by 2004,⁵² and Commonwealth Edison and several other major utilities and industry groups have proposed draft legislation to the Illinois PUC that would provide direct access for residential customers by 2005.⁵³

In contrast, a survey undertaken by the National Regulatory Research Institute (NRRI) indicates that at least 27 States have no current plans to undertake deregulation at the retail level. Many of these States are in the initial stages of investigating the issue. Fewer than six have concluded that deregulation would not be desirable in the State, according to surveys undertaken by NARUC and NRRI, but a number of other States are proceeding slowly and haltingly.⁵⁴ The States that are hesitant about deregulation tend to be less populated and urbanized, located in the South, Northwest, Southwest, and Midwest.

Although a number of utilities and State PUCs that commented on NRC's Advance Notice of Proposed Rulemaking stated that the likely timetable for deregulation could not be estimated, several others, including the Nuclear Energy Institute, projected that approximately a decade would be needed for industry restructuring and deregulation.

State PUC Plans to Address Decommissioning Costs During Deregulation

Beyond the possibility of Federal legislative initiatives, it is still too early to specify exactly how decommissioning costs will be addressed in States where deregulation is likely to occur or is underway. In New York, for example, mandatory access fees or distribution charges are under consideration, but the State PUC expects to reassess its initial rate structure after the competitive market has been in effect for a few years.⁵⁵ The California PUC's decision on electric utility restructuring provides utilities 100 percent recovery of their transition costs, including the difference between the book value and the market value of their generation assets and costs of regulatory obligations,⁵⁶ and legislation enacted in September 1996 also provides for recovery of stranded investments.⁵⁷ Both California and the Pennsylvania PUC, which apparently modeled its deregulation plan closely on California's, have proposed using Competition Transition Charges to recover stranded costs (including about \$14 billion of nuclear stranded costs in California).⁵⁸ A majority of the commenters on NRC's Advance Notice of Proposed Rulemaking also predicted that regulatory mechanisms, such as mandatory wire charges/transmission

charges, exit fees, or other non-bypassable fees, will be developed and used to enable prudently-incurred stranded costs, including decommissioning costs, to be recovered, although the mechanisms used will differ from jurisdiction to jurisdiction.

Utility Restructuring and Premature Closure

The National Regulatory Research Institute has collected information about restructuring of the electric industry that, among other topics, notes instances when utilities have submitted plans to their State PUCs that include divestitures or spinoffs of generating assets; utility mergers; and other similar actions. This information, which is incomplete, suggests that a moderate degree of such activity is currently underway, although all of it does not involve nuclear generating facilities. The following summary provides examples of the types of activities that are occurring. In California, Pacific Gas & Electric has filed plans to divest 3000 MW of gas-fueled plants over a 2-year period. Because of the transmission pricing provisions in California's restructuring bill, signed in September 1996, purchases of out-of-State power are expected that would lead to the closing of California plants, and California's deregulation plans include substantial closures of fossil-fueled plants. In Oregon, Portland General recently purchased assets of Enron. In Georgia, SPA has proposed to sell some of its generating facilities. In Kansas, Kansas City Power and Light sought unsuccessfully to merge with Utilicorp in 1995-96. In Massachusetts, Boston Edison is considering selling some of its nuclear capacity, and the New England Electric System has proposed full divestiture of its generating assets in Massachusetts, New Hampshire, and Rhode Island. In Texas, the Central and South West Corporation (which owns Central Power & Light Company, Public Service Co. of Oklahoma, Southwestern Electric Power Co., and West Texas Utilities Company) is considering merging with American Electric Power Company (which owns the Indiana Michigan Power Company). In Michigan, the legislative study group on deregulation studied the possibility of a merger between Northern States Power and Wisconsin Energy. In Missouri, Union Electric and Central Illinois Power have merged. In New York, Consolidated Edison proposed a corporate restructuring in October 1996 that would create an unregulated generation company and a regulated transmission and delivery company out of the existing utility. In addition, Long Island Lighting Company (Lilco) is seeking to merge with Brooklyn Union Gas, in an arrangement in which the Long Island Power Authority would assume Lilco's debt for the Shoreham nuclear plant.⁵⁹

The information summarized above, although incomplete and qualitative in nature, provides support for the assumption in the scenarios described below, particularly the "managed deregulation" scenario, that full retail deregulation is unlikely in the immediate future in all States but will occur within about a decade; that recovery of decommissioning costs will occur through measures implemented by State PUCs or similar regulatory agencies; and that generation facilities will not uniformly or completely be spun off into separately-incorporated entities susceptible to premature closure.

3.3 Model Design

The results presented in this analysis (see Section 3.4) are based on quantitative analysis of cost and financial data for nuclear power reactors and their owners. This section describes the general methods used to structure the analysis and calculate results. The discussion is divided into three parts. Section 3.3.1 summarizes the development of the database used in the analysis. Section 3.3.2 describes the three basic scenarios that are modeled. Section 3.3.3 addresses how each regulatory option was examined within the model. Finally, Section 3.3.4 discusses a few key assumptions.

3.3.1 DEVELOPMENT OF THE DATABASE

To help quantify the effects of the proposed rule, a database was developed containing decommissioning cost data for nuclear power reactors and decommissioning funding data for the licensees that own these reactors. The database includes a variety of data from the following sources:

- **Nuclear Regulatory Commission Information Digest.**⁶⁰ The *Information Digest* provided reactor-specific information including unit name and type, location, operating status, operating license expiration date, and licensed MWt.
- **Annual Survey of Nuclear Decommissioning Cost Estimates and Funding Policies, Public Utility Survey.**⁶¹ The *Annual Survey* reports the following information for most companies with full or partial ownership of one or more nuclear power reactor units: unit name, percentage share ownership of each unit, share of estimated decommissioning costs for the unit, total estimated decommissioning costs for the unit, license expiration date, expected year decommissioning will commence, the amount of funds set aside in external decommissioning funds (qualified and non-qualified) as of year-end 1994, the 1994 contribution to external decommissioning funds, and the assumed rate of earnings on collected decommissioning funds.⁶²
- **Licensee Annual Financial Statements from SEC Form 10K Filings and Annual Reports.** For a few licensees, the *Annual Survey* data were incomplete. For these licensees, the necessary data were obtained from licensee SEC Form 10K filings or from the financial statements included in licensee annual reports. (A broader review of the annual financial statements of many licensees suggests that the financial statement data are consistent with, and possibly the source for, the data included in the *Annual Survey* report.) Form 10K filings and annual reports also provided data on licensees' operating revenues and total assets.
- **Nuclear Plant Owners and Operators.**⁶³ This document was used to confirm licensee ownership for individual power reactors.

The database also includes information on each reactor's certification amount. These amounts were calculated using information on unit type (i.e., PWR or BWR) in accordance with 10 CFR 50.75(c)(1). To account for inflation since 1986, these amounts were then adjusted using the adjustment formula specified in 10 CFR 50.75(c)(2), along with data from NRC's *Report on Waste Burial Charges*⁶⁴ and regional data on labor rates and energy prices from the U.S. Department of Labor.

Although the database accounts for all operating nuclear power reactors,⁶⁵ it does not account for 100 percent ownership of all reactors (due to data limitations) but rather accounts for approximately 88 percent ownership. As a result, the analysis will proportionately understate all aggregated results

(i.e., total results for all licensees) that are stated in dollars (as opposed to percent). Also, if the licensees in the missing 12 percent are financially smaller than other licensees, then the results of the analysis may be biased toward larger licensees.

Note: Because the most recent decommissioning funding data available were stated in 1994 dollars, other amounts used in the analysis were converted to 1994 dollars as necessary. Conversions of financial data were based on inflation factors derived from GDP deflators. Decommissioning certification amounts and cost estimates were adjusted using the formula specified in 10 CFR 50.75(c)(2).⁶⁶ Therefore, all dollar values reported in this study are 1994 dollars.

3.3.2 MODELED SCENARIOS

The analysis builds on the database described above to model each option under three alternative scenarios that differ regarding their assumptions about the deregulation of the electric utility industry. Despite significant study of deregulation issues by FERC, PUCs, industry groups, and others, it remains uncertain how deregulation will eventually unfold, which set of companies and facilities will be affected, and, in particular, what the implications will be for nuclear power plant decommissioning costs. Consequently, the scenarios described below have been selected and designed to show the possible *range* of effects of each option. Like any models, they are useful simplifications of reality. They consider aspects of deregulation that are most relevant to decommissioning financial assurance. They are *not* intended, however, to model or reflect other aspects of deregulation.

In particular (and as discussed in Section 3.2.5), this analysis does not attempt to address the significant issue of premature closures of nuclear power plants as a result of deregulation (rather than as a result of NRC's rulemaking), or any corporate restructuring that may result. Other studies have analyzed issues related to deregulation-induced premature closures by combining significant assumptions about deregulation with complex models that examine the competitiveness of the costs of power generation at different facilities. Such an analysis was beyond the scope of this study. By excluding from the model the uncertain impact of deregulation on premature closures, this analysis may overestimate (but should not underestimate) the values and impacts of NRC's rulemaking.⁶⁷ Similarly, the analysis does not attempt to model the restructuring that may occur as a result of deregulation, and which might consolidate or disperse ownership of power reactors among current licensees or entities that are not currently licensees.

No Retail Deregulation This scenario assumes deregulation at the wholesale level consistent with FERC rulemakings, but at the retail level assumes regulatory conditions as they exist today (i.e., prior to deregulation).

Managed Deregulation This is perhaps the deregulatory scenario that is most likely to come to pass (see Section 3.2.5). The specific details would likely vary by region or State (or both), and might even include traditional regulation of utilities in some areas. Where deregulation is implemented, however, the managed deregulation scenario assumes that regulators will allow all current electric utility licensees (or, in the event of restructuring, their power reactor licensee successors) to recover all costs prudently incurred, including future decommissioning costs associated with power reactors built prior to deregulation. Costs may be recovered either directly through traditional "cost of service" regulation or indirectly through non-bypassable mechanisms such as mandatory transmission access fees, system exit fees, and distribution line charges. Reactor decommissioning costs would not be "stranded" under this scenario. For modeling purposes, deregulation is assumed to occur (simultaneously for all licensees) in 2006, 10 years after NRC's Advanced Notice of Proposed Rulemaking for the current rule.

Stranding Deregulation Under stranding deregulation, licensees are assumed to be completely deregulated with respect to cost recovery through rates, charges, and exit fees. Upon the arrival of deregulation, regulators would no longer be in position to assure that licensees can recover any unfunded decommissioning costs. Thus, decommissioning costs that are unfunded at the time of deregulation would be "stranded." For modeling purposes, deregulation is assumed to occur (simultaneously for all licensees) in 2006.

It bears repeating that these or any other scenarios are necessarily simplifications of the innumerable possible outcomes of the deregulatory process. However, these scenarios should adequately illustrate the effects of the various regulatory options as well as bound the analysis in terms of the range of values and impacts of the rule.

3.3.3 MODELING OF REGULATORY OPTIONS

This section describes how each pair of options has been modeled to quantify values and impacts associated with the options' financial assurance implications. Before beginning the sequential discussion of each option pair, however, several aspects of the modeling are noted here because they are generally applicable. First, the model assumes that deregulation affects every licensee in the same way and at the same time, in 2006 (see the previous discussion of the scenarios). Second, although the issue of premature closures of nuclear power reactors in general has not been analyzed in this study, this analysis does consider whether the rulemaking itself is likely to lead to any premature closures. To accomplish this, the model calculates incremental licensee financial assurance costs assuming that each licensee continues to operate as a viable entity and can continue to comply with applicable financial assurance requirements; these cost results will be used later to assess the likelihood of premature closures due to the current rulemaking (see Section 3.4).

Options A-1 and A-2

Under NRC's current regulations, non-electric utility licensees may not use external sinking funds unless the external sinking funds are coupled with other financial mechanisms to assure the unfunded portions of their sinking funds.⁶⁸ NRC believes that, at this time, virtually all power reactor licensees meet the current definition of electric utility. As a result of deregulation, however, licensees may evolve into entities that will not qualify as electric utilities but would be able, with the approval of FERC and/or PUCs, to recover the costs of decommissioning from ratepayers under the managed deregulation scenario. Under Option A-1, the no-action alternative, the model assumes that such partially deregulated licensees would no longer be able to use external sinking funds as stand-alone financial assurance mechanisms and would have to immediately obtain additional financial assurance for all amounts not yet funded. Under Option A-2, however, NRC would continue to allow licensees to use external sinking funds as they currently do, if appropriate (i.e., if they recover costs directly through traditional "cost of service" regulation or indirectly through non-bypassable mechanisms such as

mandatory transmission access fees, system exit fees, and distribution line charges).

In the no retail deregulation scenario (i.e., the absence of deregulation) neither Option A-1 nor Option A-2 would have any cost or impact. Licensees would continue exactly as they are throughout the operating life, shutdown, and decommissioning of their facilities.

Under the managed deregulation scenario, the model assumes that all licensees would be able to continue using their existing external sinking funds as stand-alone mechanisms under Option A-2, but would not be able to do so under Option A-1.⁶⁹

- Under Option A-1, therefore, licensees are assumed to cease annual decommissioning trust contributions when they are deregulated in 2006 and to choose at that time between (1) prepaying the unfunded portion of their sinking fund,⁷⁰ and (2) obtaining a letter of credit or surety bond on the same unfunded portion.⁷¹ The cost of financial assurance using prepayment is calculated as the licensee's opportunity cost incurred by putting aside money for decommissioning in advance of when the funds otherwise would have been required. The model calculates this opportunity cost by, first, calculating the present value⁷² to the licensee of its unfunded decommissioning costs and, second, subtracting this value from the prepayment amount. The cost of financial assurance using letters of credit and surety bonds equals the present value of the annual fees (assumed to be 1.5 percent of the face value of the credit or bond).
- Option A-2, in contrast, would allow licensees to avoid the costs arising under Option A-1 by letting them continue to use external sinking funds in the manner that they are currently used.

In the stranding deregulation scenario, subsequent to deregulation, licensees will not be able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body.⁷³ Consequently, licensees will not be allowed to use external sinking funds except in combination with other financial mechanisms. This situation is analogous to, and has been modeled the same as, Option A-1 under managed deregulation.

Options B-1 and B-2

Two aspects of Options B-1 and B-2 require modeling: (1) the allowance of additional funding credits for earnings on prepayment mechanisms and external sinking funds following permanent shutdown, including the periods of safe storage (if applicable), final dismantlement, and license termination, and (2) the use of an assumed real rate of return of up to 2 percent. Each of these features affects licensees' calculation of annual contributions to decommissioning funds, thereby generating costs or savings that are attributable to the option:

- **Credit for Earnings Following Permanent Shutdown.** Currently, the total amount of licensees' sinking funds must be sufficient at the time of reactor shutdown to pay for estimated decommissioning costs at that time. Annual contributions to the fund must be sufficient such that, with earnings on the fund during facility operation, the necessary value will be reached. Option B-2 would permit the level of the decommissioning fund at shutdown to be less than the decommissioning cost estimate at shutdown. The funded amount at shutdown, however, would have to be sufficient such that, with earnings on the funds (at the assumed rate of return) during the periods of safe storage, final dismantlement, and license termination, it would provide adequate funds to pay for decommissioning activities. This additional earnings credit would reduce the annual contributions made by licensees, thereby generating savings attributable to the rule. A similar credit would be allowed for prepayment mechanisms.
- **Assumed Real Rate of Return of up to 2 Percent.** The proposed rule would allow licensees to assume a real earnings rate of up to 2 percent, except where a regulatory authority (e.g., FERC or PUCs) specifically allows otherwise. NRC believes that all power reactor licensees currently fall under the jurisdiction of a regulatory authority and, therefore, that all rate of return assumptions currently in use by licensees meet with the approval of the applicable regulatory authority. Therefore, it follows that, in the no retail deregulation scenario, the 2 percent threshold will not apply to any licensees. Similarly, it will not apply under the managed deregulation scenario because regulators will continue providing oversight of the assumed earnings rate.⁷⁴ Under the stranding deregulation scenario, licensees' earnings rate assumptions no longer fall under the jurisdiction of an appropriate regulatory authority, and licensees will not be able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body. In these cases, NRC regulations will not permit continued use of an external sinking fund (unless coupled with another financial mechanism). Thus, the assumed earnings rate of up to 2 percent would be applied by the model only in calculating amounts not yet funded by the sinking fund (allowing for earnings of up to 2 percent) and by licensees using prepayment mechanisms to assure such unfunded amounts.⁷⁵

Options B-1 and B-2 are modeled as follows. First, to avoid mis-stating impacts in cases where licensees are presently underfunding or overfunding their sinking funds, the analysis adjusts projected annual contributions of licensees such that the contributions, if continued through the facility's operating life, would be sufficient (with interest at an assumed pre-tax rate of return of 4.3 percent)⁷⁶ to fully fund the external sinking fund without overfunding or underfunding. Next, the model calculates the value of each licensee's external sinking fund at the beginning of 1998, when the rule is presumed to take effect. Annual contributions prior to 1998 are as just described, and the funds are assumed to earn a pre-tax return of 4.3 percent. (Consistent with IRS rules applicable to "qualified" decommissioning trusts, this analysis assumes a 20 percent tax on all fund earnings.) In 1998, the model assumes that all licensees will recalculate annual contributions to take advantage of the earnings credit allowed following permanent shutdown. Assumed earnings rates are not revised to 2 percent or lower because, as discussed above, licensees remain as regulated electric utilities at least until 2006 under all scenarios. Therefore, annual contributions beginning in 1998 decrease for all licensees that have reported plans to delay commencement of decommissioning activities beyond the expiration of their operating license (even if the licensees have not specified that the delays are the consequence of selecting the safe storage method of decommissioning).⁷⁷ Under the no retail deregulation and managed deregulation scenarios, each licensee

continues these contributions until license expiration. Savings to licensees/ratepayers equal the present value of the reduced annual payments that result from the option.

Under the stranding deregulation scenario, however, licensees are assumed to obtain a prepayment mechanism or a letter of credit or surety bond in 2006 to assure any costs not yet assured by the external sinking fund. Prepayment amounts would be calculated to reflect both the post-shutdown earnings credit and the 2 percent earnings assumption. (As noted in Section 2.2.2 above, the analysis assumes that licensees without an earnings rate approved by a regulator - as would be the case under stranding deregulation - would use a rate of exactly 2 percent.) Finally, because currently-reported safe storage periods are typically very brief (see previous footnote) and currently-reported earnings assumptions are, on average, higher than 2 percent, Option B-2 generates net costs under this scenario.

Options C-1 and C-2

Option C-1 would not impose a new reporting requirement, and NRC's ability to monitor funding would not improve. The model assumes that, under Option C-1, any underfunding that is currently projected (see Section 3.2.2) will not be corrected prior to decommissioning.

Option C-2 would require licensees to report periodically to NRC on the status of their decommissioning funds. NRC would use the data to ensure that licensees' external sinking funds are adequately funded by the time required. NRC's specific methods for making use of the data could be as discussed below.

NRC might choose to focus its attention only on a specific subset of licensees (e.g., those closest to decommissioning, those that have relatively poorer funding status than other licensees, those undergoing corporate restructuring, those in questionable financial condition, those having operational difficulties). NRC would evaluate funding levels for these licensees on a case-by-case basis.

Alternatively, NRC could ensure, at the time of each periodic report, that each external sinking fund was appropriately funded relative to certain milestones in a reactor's life. (This approach may require additional rulemaking.) For example, the fund associated with a facility that is 30 percent through its operating life should be 30 percent funded (including assumed earnings on the amount currently funded). If the fund is not 30 percent funded, NRC could require the licensee to either (1) make an additional contribution to catch the fund up to the milestone, or (2) increase future annual contributions as necessary to ensure the fund reaches the full amount of decommissioning costs. Under a more lenient milestone, NRC might require action of the licensee only if the fund is not within some specified percentage of expected funding (e.g., within 5 percent of the 30 percent funding level). This more lenient milestone may pose considerable risk, however, because even a small percentage of decommissioning costs can represent a very significant underfunding problem, particularly if the facility life is almost over and the underfunding must be corrected immediately or in a short amount of time.

The analysis assumes that, under either of these methods, NRC's review of reports would be adequate both to ensure that licensees' cost estimates are at least as great as the appropriate certification amounts, as required by 10 CFR 50.75, and to correct any underfunding problems by the time of decommissioning. NRC might also use the data for informational purposes (e.g., to respond to Congressional or media inquiries).

The requirements would impose a reporting burden on licensees and a corresponding administrative burden on NRC to process the reports. They would also reduce the burden on NRC's inspectors at licensed facilities, who previously had to review analogous information at licensees' facilities, and also reduce the corresponding burden on licensees to prepare for the inspection, assist NRC personnel, and respond to inspection results.

Options D-1 and D-2

Currently, Federal licensees that are electric utilities may use statements of intent, though there is only one power reactor license, the Tennessee Valley Authority (TVA), that the NRC has considered to fall within this category. Consequently, modeling of Options D-1 and D-2 was specific to TVA.

Under Option D-1, TVA would continue to use statements of intent to demonstrate financial assurance. NRC would bear the risk described in the report from the Inspector General, i.e., that the statements of intent may not provide any meaningful financial assurance.⁷⁸ Option D-1 results in no change from the status quo, and therefore it generates no incremental costs or savings.

Option D-2 would eliminate statements of intent as an acceptable financial mechanism for use by power reactor licensees unless they meet the definition of "Federal licensee," which the NRC is proposing for inclusion in its regulation. Under Option D-2, this analysis assumes that TVA's use of statements of intent, which are virtually costless to TVA, would no longer be acceptable. Instead, TVA would have to obtain another financial mechanism. This analysis assumes TVA would establish an external sinking fund.⁷⁹ Although TVA would be required to make significant annual payments into the fund, these payments are not costs of the rulemaking. Rather, these are advance payments for decommissioning activities for which the licensee is already responsible. Because Option D-2 results in the licensee paying these costs earlier than it would otherwise, the primary cost to the licensee consists of the opportunity cost of not being able to use the annual contributions from the time contributed until the time the funds otherwise would have been required. The model determines this opportunity cost by, first, calculating the present value to the licensee (assuming a 7 percent discount rate) of its future decommissioning costs and, second, subtracting this value from the present value of the annual contributions required (assuming level payments, a 4.3 percent assumed pre-tax rate of return, and a 7 percent discount rate).

Under the stranding deregulation scenario, the model assumes that in the year 2006 TVA prepays enough additional funds so that, with assumed earnings (of 4.3 percent), the fund grows to the full decommissioning cost by the time of license expiration. To address the possibility that NRC may apply Option B-2's 2 percent earnings threshold along with Option D-2, the model repeats the calculation just described, but the prepayment amount is calculated under the 2 percent earnings assumption.⁸⁰ The financial assurance cost to TVA, calculated for each earnings assumption, is the opportunity

cost of paying for decommissioning prior to the commencement of decommissioning (see discussion in the preceding paragraph).

Options E-1 and E-2

Option E-1 is the no-action alternative. Under Option E-2, NRC would require power reactor licensees to submit periodically any modifications to their currently effective financial mechanisms for NRC's review in light of potential changes in the electric utility industry's regulatory environment.⁸¹ These options address the possibility that certain provisions or flaws in licensees' decommissioning trust or escrow agreements could cause the mechanisms to wholly or partially fail. (A financial assurance mechanism is said to "fail" when it is not capable of providing decommissioning funds when needed.) By reviewing specific modifications to financial mechanisms and requiring revisions to problematic provisions, Option E-2 can impact the amount of funds the mechanisms will provide for decommissioning.

Option E-2 would generate administrative burdens both for licensees and for NRC, but it would provide the benefit of increasing the *effective level of* financial assurance that licensees already have in place without increasing the *actual level of* or the *annual contributions* to external sinking funds. Under Option E-1, there would be no added administrative burden, but the amount of financial assurance ultimately available for decommissioning could be less than anticipated.

Options E-1 and E-2 were modeled as follows. For a given licensee, the financial assurance risk is assumed to equal the decommissioning cost estimate times the joint probability that (1) the licensee's trust or escrow agreement contains a potentially "critical" flaw (i.e., a provision that circumvents or leaves open the future circumvention of protections important to NRC's interests), and (2) the licensee seeks to use funds for non-decommissioning purposes. In a highly-competitive environment, for example, officials at newly-deregulated electricity generating companies may succumb to temptation to "borrow" capital from a large decommissioning fund. One NRC licensee, the Tennessee Valley Authority, did in fact recently tap into internal decommissioning funds to pay off a significant amount of debt. (Internal decommissioning funds are similar to flawed trust and escrows in that they are not governed by effective restrictions on the use of funds.) Similar problems have been encountered with corporate pension funds that firms have used to pay operating expenses.

Based on experience reviewing hundreds of financial assurance mechanisms submitted by NRC's materials licensees (initial submissions as well as subsequent iterations) that were developed using guidance similar to the guidance available to Part 50 licensees, the probability that a given trust or escrow agreement contains a critical flaw is estimated to be in the range of 50 percent. The probability that the licensee and/or trustee might intentionally or inadvertently take advantage of the flaw and use the funds inappropriately is much more difficult to estimate, but will probably vary by scenario. For purposes of this analysis, the probabilities are estimated as follows: 0 percent under the no retail deregulation scenario (i.e., current regulation of licensees by FERC and PUCs), 5 percent under the more competitive managed deregulation scenario (i.e., no stranded decommissioning costs but diminished regulation), and 10 percent under the most competitive stranding deregulation scenario. These probabilities attempt to recognize the impact of increased competition on licensees' need for both working capital and investment capital.

3.3.4 ASSUMPTIONS

Several assumptions are worth noting. First, with the exception of Options D-1 and D-2, which affect only one licensee, the model assumes that all licensees are regulated in an identical fashion by FERC, PUCs, and other regulators as applicable, and will continue to be regulated, or deregulated, in an identical fashion under the managed deregulation scenario and/or the stranding deregulation scenario. In reality, deregulation is not likely to affect every single licensee in the same way or to take effect at the same time (in 2006) for all licensees. This assumption tends to overstate the effect of each option relative to the alternative option and it imbues an "all or nothing" quality to the results. The approach is effective in showing how NRC's options will function under each of the three regulatory scenarios (i.e., no retail deregulation, managed deregulation, and stranding deregulation) and seems reasonable in the absence of more sophisticated analysis of the substantial uncertainty surrounding future deregulation and how electric utilities might evolve. Nevertheless, ongoing deregulation is likely to be a blend of (at least) the three scenarios modeled in this analysis. Actual values and impacts, therefore, are likely to fall in between the different amounts reported in this analysis.

Second, the analysis implicitly assumes that no premature closures of reactors will occur as a result of restructuring or deregulation. This topic has not been analyzed in this study (see Section 3.3.2), although the analysis did consider whether the rulemaking itself would lead to any premature closures of nuclear power reactor licensees (see Section 3.4).

Third, with the exception of Options C-1 and C-2 (reporting requirements), the model assumes compliance of all licensees with respect to total financial assurance levels and, in particular, annual contributions to external sinking funds. This assumption serves to isolate the effects of each option without the obfusatory effects of overfunding or underfunding. This assumption was implemented by adjusting the size of licensees' projected annual contributions to external sinking funds to be the precise amount needed to achieve the appropriate funding level (assuming a 4.3 percent real rate of return on the funds).

Fourth, in calculating the portion of a newly-deregulated licensee's decommissioning cost that, at the time of deregulation in 2006, is unassured by the licensee's external sinking fund and which must therefore be assured by a surety bond, letter of credit, prepayment, or other allowable mechanism, the analysis gives credit to the licensee for future earnings (i.e., until license expiration) on the amount of funding as of 2006. This assumption seems consistent with NRC's current policy of allowing electric utilities to take credit for earnings on their external sinking funds. Neither NRC regulations or guidance, however, explicitly state whether NRC would allow credits in the situation described above. If NRC would not allow such credits, then the results will understate costs of financial assurance in any option or scenario where licensees become deregulated.

Fifth, the methodology used to estimate licensees' costs of using surety bonds and letters of credit to cover amounts that are not assured by their sinking funds at the time of deregulation assumes that licensees will not continue to make annual contributions to the sinking funds. This assumption was used to simplify the analysis. In reality, however, licensees may continue funding sinking funds each year and this, in turn, would reduce the fees

that must be incurred for surety bonds and letters of credit. Thus, the cost results related to use of surety bonds and letters of credit are upper bound costs.

Sixth, the analysis assumes the accuracy of the data described in Section 3.3.1 and, in particular, the reported decommissioning costs. If these reported costs are low, the analysis will tend to understate all results.

Finally, the following assumptions were used in the analysis of implementation and operation costs under each of the options: (1) Wage rates for NRC staff and licensee staff were calculated from 1996 wage rates developed by NRC for use in regulatory analysis of \$67.50 per hour for NRC staff and \$72.72 for licensee staff. The 1996 wage rates were converted to 1994 dollars to be compatible with the use of 1994 dollars in the balance of the analysis. The rates used (in 1994 dollars) were \$64.55 for NRC staff and \$69.54 for licensee staff. (2) The number of licensees used was 132, and was derived from the information in *Nuclear Plant Owners and Operators (Attachment 2 to SECY-94-280)*, November 18, 1994. (3) The initial reports required under Option C were assumed to be submitted by all licensees in 1999, with subsequent reports being submitted every 2 years through 2013 and every year between 2015 and 2019.⁸² (4) Follow-up, when conducted, was assumed to be effective after one iteration. For example, follow-up for the reports submitted in 1999 was assumed to be effective for the reports submitted in 2001, and no follow-up was assumed for the 2001 reports or subsequent reports. (5) Review of submissions under Option A was assumed to take place at deregulation, assumed to be in 2006. (6) Review of modifications to financial assurance mechanisms under Option E was assumed to require a complete and detailed review of each mechanism currently in use, with all mechanisms being submitted and reviewed in 1999, and with follow-up for each mechanism in 2000. For this analysis, the level of effort required of licensees and NRC in submitting and reviewing subsequent modifications is assumed to be minimal. (7) All future costs were discounted to 1998, at a 7 percent discount rate.

3.4 Results

This section describes the results of the value-impact analysis. The values (or benefits) of the rule are calculated as any increase in the amount of financial assurance provided by an option and any cost savings to NRC or industry resulting from an option. Impacts are calculated as any decrease in the amount of financial assurance and any costs resulting from the option. Costs and savings include those related to financial assurance costs (such as surety fees, letter of credit fees, or the opportunity cost of prepaid decommissioning costs) and administrative burdens (such as reporting, preparation of financial mechanisms, review of financial mechanisms, guidance development, recordkeeping).

Before reviewing the values and impacts of each option, it is worth noting several points to place these results in the appropriate context. The three modeled scenarios (i.e., no retail deregulation, managed deregulation, and stranding deregulation) are necessarily simplifications of the many possible outcomes of the deregulatory process. These scenarios, however, were designed to highlight the effects of the various regulatory options on the range of values and impacts of the rule. For example, it seems unlikely that the stranding deregulation scenario will come to pass for all licensees, but this scenario effectively demonstrates the possible outcome to NRC if other regulators (i.e., FERC and PUCs) cease to be relevant. In general, the model's identical treatment of licensees under the various scenarios tends to overstate the effects of each option relative to the alternative option and to imbue an "all or nothing" quality to the results. Nevertheless, the approach is effective in showing how NRC's options will function under each of the three regulatory scenarios and seems reasonable in the absence of more sophisticated analysis of the substantial uncertainty surrounding future deregulation and how electric utilities might evolve. Ongoing deregulation is likely to result in a blend of these and other scenarios. Consequently, actual values and impacts are likely to fall in between the different amounts reported in this analysis.

The analysis has not attempted to address the issue of reactors or licensees that may cease operations prematurely (see Section 3.3.2), but it does consider the possibility that the rulemaking itself could lead to premature closures. To accomplish this, incremental costs of the rulemaking were calculated for each licensee under the assumption that each continues to operate as a viable entity and can continue to comply with applicable financial assurance requirements. The resulting costs were then compared to licensee financial data. Based on this analysis, it appears that the incremental costs generated by this rulemaking are unlikely to lead to premature closures (i.e., not accounting for the unknown effect of deregulation and increased competition). Accepting this preliminary conclusion that this rulemaking will not itself generate premature closures, the analysis focuses on how NRC's financial assurance program can best prepare for the uncertainties of deregulation.

3.4.1 ESTIMATED VALUES AND IMPACTS OF OPTIONS A-1 AND A-2

The discussion of values and impacts is divided into two subsections. The first subsection addresses financial assurance values and impacts. The second subsection addresses implementation and operation values and impacts.

Financial Assurance Values and Impacts

In the no retail deregulation scenario, licensees would continue to be able to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body. Consequently, licensees would continue using external sinking funds under Option A-1 and Option A-2. Therefore, in this scenario, neither option would generate any financial assurance costs or savings.

Under managed deregulation, all licensees would be able to continue using their external sinking funds as stand-alone mechanisms under Option A-2. However, under the no-action option (Option A-1), licensees would not be allowed to continue using an external sinking fund unless another financial mechanism is also used to assure amounts not yet funded. The cost for all licensees to obtain another mechanism to assure the unfunded decommissioning costs is estimated at between \$704-\$1,051 million, depending on whether licensees can obtain surety bonds or letters of credit or whether they must instead use prepayment mechanisms.⁸³ This cost is attributable to deregulation rather than to the rule. Selection of Option A-2 would mean these costs are never incurred, thereby generating savings of \$704-\$1,051 million.

Under stranding deregulation, all licensees would be unable to recover decommissioning costs. Therefore, under either option, licensees would incur costs of obtaining another mechanism to assure their unfunded decommissioning costs. These costs, for all licensees, are estimated at between \$704-

\$1,051 million (the same as in the managed deregulation scenario), depending on whether licensees can obtain surety bonds or letters of credit or whether they must instead use prepayment mechanisms. Again, however, these costs are attributable to deregulation rather than to the rule.

These results are sensitive to the assumption that deregulation occurs in 2006. Specifically, the savings generated by Option A-2 under managed deregulation would be much higher (\$1,704-\$2,375 million) if deregulation occurred in 2001. Conversely, savings would be much lower (\$250-\$400 million) if deregulation occurred in 2011.

In all scenarios, licensees are assumed to comply with NRC's financial assurance requirements even if they must demonstrate financial assurance using methods other than external sinking funds. These other methods would be more costly to licensees than would external sinking funds (see discussion of impacts above), but they would provide the same level of financial assurance.

These values and impacts are summarized in Exhibit 3-3.

**Exhibit 3-3
Financial Assurance Values and Impacts Under Options A-1 and A-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option A-1: No action			
<i>Values/Impacts</i>	-	-	-
Option A-2: Clarify the applicability of external sinking funds and other mechanisms under deregulation			
<i>Values</i>			
- Decrease in financial assurance costs (2006 - 2033)	-	\$704M-\$1,051M	-

Implementation and Operation Values and Impacts

The implementation and operation costs that could result from Option A are described in

Exhibit 3-4. Under Option A-1, NRC would continue to rely on review of licensees' financial assurance status by State PUCs and FERC and would incur no additional burden. Under Option A-2, NRC would need to prepare a component of guidance for licensees similar to *Regulatory Guide 1.159* explaining the conditions under which licensees may use or continue to use external sinking funds as stand-alone financial assurance mechanisms. Such guidance would be needed even if, in fact, no licensees cease to be regulated as utilities, because NRC cannot know in advance that this will occur. Under both the managed deregulation and the stranding deregulation scenarios of Option A-2, the analysis assumes that NRC carries out a review of the financial assurance submissions prepared by licensees that no longer can rely solely on their external sinking funds. In the most extreme case, no utilities would remain in regulated status, even in the managed deregulation scenario, and all reviews would be conducted by NRC rather than State PUCs or FERC. This review would begin with the onset of deregulation, assumed to be in 2006. Two alternatives were examined for this review:

- Under the first alternative, the review would be limited to a check of the key elements of the submission, at about two hours per submission, with follow-up only in a few cases of very serious errors or omissions.
- Under the opposite alternative, the review would be a detailed examination of the text of the submitted financial mechanisms, requiring up to 40 hours to complete. Follow-up could be required for an estimated 50 percent of the submissions requiring up to an additional 40 hours.

Licensees were assumed to require up to 40 hours to prepare submissions for either a limited or a detailed review. In the case of a detailed review, licensees could require up to an additional 40 hours to respond to problems.

**Exhibit 3-4
Implementation and Operation Costs Under Options A-1 and A-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option A-1: No action			
<i>NRC/Licensees</i>	-	-	-
Option A-2: Clarify the applicability of external sinking funds and other mechanisms under deregulation			
<i>NRC</i>			
- Preparation of part of new <i>Regulatory Guide</i> (1998)	\$10,000	\$10,000	\$10,000
- Review of submissions and follow-up (2006)	-	(\$9,900-\$285,100)	-

Licensees

- Submission for review (2006)

-

(\$93,500-\$307,200)

-

3.4.2 ESTIMATED VALUES AND IMPACTS OF OPTIONS B-1 AND B-2

Financial Assurance Values and Impacts

In the no retail deregulation scenario, under Option B-2, licensees can reduce annual contributions to external sinking funds due to the additional earnings credit allowed under this option. The 2 percent return threshold does not apply because licensees remain regulated utilities. The savings to licensees is estimated to be at least \$481 million. Savings could be substantially higher if licensees begin selecting the SAFSTOR method of decommissioning early enough to take greater advantage of the earnings credit during the safe storage period.⁸⁴ These savings would not be incurred under Option B-1.

The estimated impacts of Option B-2 under managed deregulation are the same as in the no retail deregulation scenario, assuming that NRC also implements Option A-2.⁸⁵

Under the stranding deregulation scenario, however, the impacts of Option B-2 would differ. In particular, savings from the allowance of credits for earnings following permanent shutdown (\$322 million) would, in aggregate, be outweighed by the new costs to licensees of having to apply NRC's 2 percent earnings assumption on amounts funded to date plus any additional prepayments made at the time of deregulation. (Use of a 2 percent real rate of return would require increased annual contributions for those licensees that currently assume a higher rate, and decreased contributions for licensees that currently assume a lower rate.⁸⁶ The overall effect, however, is an increase in costs to licensees because the average real rate assumed by licensees is 3.7 percent.) The costs to licensees of Option B-2 assuming stranding deregulation are estimated at between \$323-\$1,511 million, depending on whether licensees can obtain surety bonds or letters of credit or whether they must instead use prepayment mechanisms.⁸⁷ Selection of Option B-1 would result in no costs being incurred.

These results are sensitive to the assumption that deregulation occurs in 2006. Specifically, if deregulation occurred in 2001, the savings generated by Option B-2 under stranding deregulation would be lower (\$141 million) and the costs would be higher (\$539-\$2,946 million). Conversely, if deregulation occurred in 2011, savings would be higher (\$450 million) and costs would be lower (\$150-\$640 million).

These values and impacts are summarized in Exhibit 3-5. Licensees are assumed to comply with NRC's financial assurance requirements regardless of whether or not (1) NRC allows credits for earnings following permanent shutdown, or (2) licensees use the 2 percent earnings assumption required by NRC (i.e., in the event that FERC or PUCs no longer oversee their assumed rates of return). Therefore, Options B-1 and B-2 may affect costs or savings to licensees (see discussion of impacts above), but they would provide the same level of financial assurance.

**Exhibit 3-5
Financial Assurance Values and Impacts Under Options B-1 and B-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option B-1: No action			
<i>Values/Impacts</i>	-	-	-
Option B-2: Allow licensees to assume a positive real rate of return on decommissioning funds from the time contributed until the time withdrawn to pay for decommissioning (assuming Option A-2 is also implemented)			
<i>Values</i>			
-Decrease in financial assurance costs (1998 - 2033)	\$481M	\$481M	\$322M
<i>Impacts</i>			
-Increase in financial assurance costs (2006 - 2033)	-	-	\$323M-\$1,511M

Implementation and Operation Values and Impacts

Except for preparation of the component of guidance addressing the rules on calculation of annual contributions to decommissioning funds, there are no additional implementation and operation costs that result from either Option B-1 or Option B-2. Although Option B-2 would require licensees to recalculate the size of annual contributions to sinking funds (or prepayment mechanisms) in the year the rule takes effect (or when deregulation occurs), licensees are assumed to already calculate such contributions each year (i.e., under Option B-1). No additional burden would be imposed on NRC because NRC does not review licensees' calculation of annual contributions. Exhibit 3-6 summarizes the implementation and operation costs for NRC and licensees of Option B.

Exhibit 3-6

Implementation and Operation Costs Under Options B-1 and B-2

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option B-1: No action			
<i>NRC/Licensees</i>	-	-	-
Option B-2: Allow licensees to assume a positive real rate of return on decommissioning funds from the time contributed until the time withdrawn to pay for decommissioning			
<i>NRC</i>			
-Preparation of part of new <i>Regulatory Guide</i> (1998)	\$4,000	\$4,000	\$4,000
<i>Licensees</i>			
-Calculation of annual contributions to sinking fund (or prepayment)	-	-	-

3.4.3 ESTIMATED VALUES AND IMPACTS OF OPTIONS C-1 AND C-2

Financial Assurance Values and Impacts

Assuming that NRC uses the reports to address potential underfunding of external sinking funds, then Option C-2 would eliminate any underfunding of external sinking funds by the time of shutdown both under the no retail deregulation scenario and under the managed deregulation scenario. In this case, the value of Option C-2 would equal the amount of the corrected underfunding, or \$2.7 billion (see discussion in Section 3.2.2).

Impacts for Option C-2 under the stranding deregulation scenario (or for the managed deregulation scenario if Option A-1 is implemented) would vary depending on the level of oversight NRC provides during the transition to other financial mechanisms. In general, however, impacts would be reduced in these cases relative to the amounts already discussed (which assume either the no retail deregulation scenario, or managed deregulation with Option A-2). Although financial assurance costs incurred by licensees would increase under Option C-2, the added costs would not be attributable to this rulemaking, but rather would be attributable to current financial assurance requirements. The values and impacts of Options C-1 and C-2 are summarized in Exhibit 3-7.

Exhibit 3-7

Financial Assurance Values and Impacts Under Options C-1 and C-2

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option C-1: No action			
<i>Values/Impacts</i>	-	-	-
Option C-2: Reports used to ensure adequate funding			
<i>Values</i>			
- Increase in financial assurance coverage levels (1999 onward)	\$2,700M	\$2,700M	\$2,700M

Implementation and Operation Values and Impacts

Under Option C-1, the no-action alternative, no additional implementation and operation costs would be incurred by NRC or licensees. Licensees would continue, as they do under the current rule, not to be required to report on the status of their decommissioning funds until approximately 5 years before the projected end of operation (10 CFR 50.75(f)). Records of the cost estimate or certification amount and of the funding mechanism used for assuring funds also would continue to be kept in an identified location where they may be reviewed in the inspection process if necessary.

Option C-2, in which licensees would be required to submit periodic reports on decommissioning fund status, will impact NRC implementation and operation and industry implementation and operation. Option C-2 would substantially eliminate implementation and operation costs, both to NRC and to licensees, associated with compliance inspections that may otherwise be required under Option C-1.

NRC implementation and operation costs are expected to include development of a component of a *Regulatory Guide* describing the reporting requirement (this will be part of a more extensive regulatory guide addressing each of the new actions included in the rule); development and implementation of a report tracking system; and review and analysis of reports beginning in 1999.

The analysis assumes NRC would follow-up on about 50 percent of the reports received in 1999. The frequency of follow-up necessary was assumed to be zero after the initial series of reports.

Industry implementation and operation costs are expected to include development of procedures to ensure that information required to be reported is collected and the report prepared in a timely manner, following promulgation of the regulation in 1998; recordkeeping, making use of existing records systems; report preparation; and report follow-up, to respond to NRC inquiries concerning the contents of the report, assumed to occur for about 50 percent of the reports submitted, generally consisting of a telephone inquiry with follow-up letter, if NRC uses the reports to ensure adequate funding.

Exhibit 3-8 summarizes implementation and operation costs of Options C-1 and C-2.

**Exhibit 3-8
Implementation and Operation Costs Under Options C-1 and C-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option C-1: No action			
<i>NRC/Licensees</i>	-	-	-
Option C-2: Reports used to ensure adequate funding			
<i>NRC</i>			
- Preparation of part of <i>Regulatory Guide</i> (1998)	\$4,000	\$4,000	\$4,000
- Development of a report tracking system (1998)	\$2,500	\$2,500	\$2,500
- Detailed review of reports to verify adequacy of funding and follow-up (1999 - 2019)	\$140,000	\$140,000	\$140,000
<i>Licensees</i>			
- Reporting and follow-up (1999 - 2019)	\$475,000	\$475,000	\$475,000

3.4.4 ESTIMATED VALUES AND IMPACTS OF OPTIONS D-1 AND D-2

Financial Assurance Values and Impacts

Option D-1 would allow the continued use of statements of intent by Federal nuclear power reactors. Significant questions have arisen, however, regarding the security of funds assured by statements of intent (see related discussion in Sections 2.4 and 3.3.3). Consequently, under Option D-1, the \$1.66 billion in financial assurance that statements of intent were providing may be, in effect, unassured. Option D-2 (under all scenarios) would eliminate the statement of intent as an acceptable mechanism for power reactor licensees unless they also qualify as "Federal licensees." This would require the one licensee that currently uses statements of intent, TVA, to obtain alternative financial assurance (e.g., external sinking funds) for the full amount of its decommissioning obligations (i.e., approximately \$1.66 billion) in order to comply with current NRC financial assurance requirements.

In the no retail deregulation scenario, TVA would incur no costs under Option D-1. Under Option D-2, however, TVA would have to establish an alternative financial mechanism. The cost of this assurance equals the opportunity cost to TVA of committing decommissioning funds to its external sinking funds before the commencement of decommissioning. This cost is estimated at \$124 million.⁸⁸

The estimated impacts under managed deregulation are the same as in the no retail deregulation scenario, because TVA is likely to continue to recover decommissioning costs through regulated rates and fees or other mandatory charges established by a regulatory body (and hence to be allowed to use external sinking funds).

Because of TVA's unique status among power reactor licensees, it is unclear whether stranding deregulation would have the same effect on TVA as it would on other power reactor licensees. Assuming, however, that TVA funds an external sinking fund until 2006 but then no longer is able to recover its decommissioning costs as described above, TVA would have to obtain alternative assurance for amounts not yet funded. This cost of Option D-2 is estimated at \$153-243 million,⁸⁹ depending on whether NRC has also implemented Option B-2. (Option D-2 costs are higher if Option B-2 has been implemented because TVA would then be limited to an assumed earnings rate of 2 percent or less.) Under Option D-1, TVA would continue using statements of intent and would incur no financial assurance costs.

These values and impacts are summarized in Exhibit 3-9.

**Exhibit 3-9
Financial Assurance Values and Impacts Under Options D-1 and D-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option D-1: No action			
<i>Values/Impacts</i>	-	-	-

Option D-2: Clarify which licensees are eligible to use statements of intent by defining the term "Federal licensee"			
<i>Values</i>			
- Increase in financial assurance coverage levels (1998 - 2017)	\$1,663M	\$1,663M	\$1,663M
<i>Impacts</i>			
- Increase in financial assurance costs (1998 - 2017)	\$124M	\$124M	\$153M-\$243M

Implementation and Operation Values and Impacts

Exhibit 3-10 summarizes the implementation and operation costs for Option D. Under Option D-1 there would be no implementation and operation costs for NRC or for the licensee, TVA, because TVA would continue to be able to use the statement of intent. Under Option D-2, NRC was assumed to incur costs to review the new financial assurance arrangements submitted by TVA to replace the statement of intent. NRC costs could vary depending on the type of review and on whether follow-up is required, but should not exceed \$2,600. The licensee would incur costs to set up a new method of financial assurance to replace the statement of intent, to prepare a submission to NRC demonstrating the new method, and potentially to respond to NRC's follow-up. These costs should not exceed \$4,200.

**Exhibit 3-10
Implementation and Operation Costs Under Options D-1 and D-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option D-1: No action			
<i>NRC/Licensees</i>	-	-	-
Option D-2: Clarify which licensees are eligible to use statements of intent by defining the term "Federal licensee"			
<i>NRC</i>			
- Review replacement financial assurance (1998)	\$2,600	\$2,600	\$2,600
<i>Licensees</i>			
- Secure and submit replacement financial assurance (1998)	\$4,200	\$4,200	\$4,200

3.4.5 ESTIMATED VALUES AND IMPACTS OF OPTIONS E-1 AND E-2

Financial Assurance Values and Impacts

Under Option E-1, the amount of financial assurance ultimately available at the time of decommissioning may be less than anticipated because the terms of the financial mechanism are assumed not to adequately protect NRC's interests. Under Option E-2, NRC would seek to minimize the risk of inadequate financial mechanisms by (1) requiring licensees to submit periodically any modifications to their financial mechanisms to NRC for a detailed review, and (2) requiring revisions as needed to eliminate problematic provisions in the mechanisms. (Licensees would also be required to submit information on any contracts being used as sources of revenue for external sinking funds.) For a variety of reasons discussed in Section 2.5 and Section 3.3.3, flawed financial mechanisms are unlikely to actually fail until and unless deregulation occurs. Thus, in the no retail deregulation scenario, there is no difference in the value of licensees' financial assurance regardless of whether Option E-1 or Option E-2 is implemented.

As deregulation and increasing competition occur, however, the risk associated with flawed mechanisms becomes more significant. Under managed deregulation, the effective level of financial assurance provided by licensees is estimated to be in the range of \$930 million less than the nominal value of that assurance due to the potential use by licensees of flawed financial mechanisms. Under stranding deregulation, the effective level of financial assurance is estimated to be in the range of \$1,860 million less than the nominal value of that assurance. In order to ensure that benefits are realized under this option, NRC would need to conduct, in the first reporting period, a complete and detailed review of each mechanism currently in use.

There are no additional financial assurance costs (i.e., fees on surety bonds or letters of credit, or opportunity costs of funded amounts) estimated to result from either Option E-1 or Option E-2 because neither the amount nor the method of licensees' financial assurance demonstrations is assumed to change under either option. Rather, under Option E-2, licensees will work with NRC to perfect their current financial mechanisms (see implementation and operation discussion below).

These values and impacts are summarized in Exhibit 3-11.

**Exhibit 3-11
Financial Assurance Values and Impacts Under Options E-1 and E-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option E-1: No action			
<i>Values/Impacts</i>	-	-	-
Option E-2: Require modifications to mechanisms to be submitted periodically for detailed review			
<i>Values</i>			
- Increase in financial assurance coverage levels (1999 onward)	-	\$930M	\$1,860M

Implementation and Operation Values and Impacts

Option E-1, the no-action alternative, would involve no implementation and operation costs for NRC or licensees. Option E-2 involves a detailed review by NRC of any modifications to the currently existing financial assurance mechanisms, with examination of the modified text of trust funds or other financial instruments, investigation of the current levels of funding, and follow-up to ensure licensees with problems understand and correct the deficiencies in their financial assurance. This option would involve costs to NRC. Licensees would also incur costs to prepare periodic submissions of any modifications to their current mechanisms and respond to follow-up from NRC. Exhibit 3-12 summarizes the estimated costs of this option.

**Exhibit 3-12
Implementation and Operation Costs Under Options E-1 and E-2**

	No Retail Deregulation	Managed Deregulation	Stranding Deregulation
Option E-1: No action			
<i>NRC/Licensees</i>	-	-	-
Option E-2: Require modifications to mechanisms to be submitted periodically for detailed review			
<i>NRC</i>			
- Detailed review and follow-up (1999 - 2000)	\$470,000	\$470,000	\$470,000
<i>Licensees</i>			
- Preparation of submission of modifications to current financial assurance and follow-up to resolve problems (1999 - 2000)	\$500,000	\$500,000	\$500,000

4. BACKFIT ANALYSIS

The regulatory analysis for the proposed rule also constitutes the documentation for the evaluation of backfit requirements, and no separate backfit analysis has been prepared. As defined in 10 CFR 50.109, the backfit rule applies to "modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility. . . ." resulting from new or amended provisions in Commission rules. Such backfitting can be plant-specific or apply to multiple facilities ("generic backfitting").

The proposed amendments to NRC's requirements for the financial assurance of decommissioning of nuclear power plants address generic requirements. The proposal would clarify the applicability of external sinking funds and other mechanisms under deregulation, and add several definitions that are generic in nature; amend generically the requirements pertaining to the use of prepayment and external sinking funds; and impose generic new reporting requirements for power reactor licensees on the status of decommissioning funding that specify the timing and contents of such reports.

NUREG-1409, NRC's *Backfitting Guidelines*, lists several criteria (provided below in italics) for determining whether a particular proposed rule falls within the scope of the backfit rule. The criteria, proposed actions, and a description of whether the actions meet each criterion follow:

- *The positions or requirements would bring about improvements in safety of nuclear power reactors.*

The current proposal would enhance the safety provided by NRC's reactor decommissioning requirements, by helping to ensure that the reactor decommissioning is adequately financed and that delays or shortfalls do not occur in the funding of decommissioning that could create threats to health or safety.

- *The positions or requirements impose changes in hardware, procedures, or organization of nuclear power reactors.*

The current proposal would require no changes in hardware or organization of nuclear power reactors. However, the proposal could result in

changes in the procedures for operation of facilities in that (1) external sinking funds, by themselves, would not remain as an acceptable decommissioning funding option for some licensees, (2) TVA might no longer qualify for use of a statement of intent, and (3) a specified rate of return on decommissioning funds during operation and the decommissioning period would be used in the absence of a different rate approved by a PUC or FERC.

- *The backfit rule does not cover NRC actions that merely request information and do not impose changes in hardware, procedures, or organization.*

The current proposal includes revisions to reporting requirements that constitute a request for information.

- *The backfit rule does not apply to purely administrative matters.*

The proposed rule is not purely administrative. It involves changes to the jurisdictional definitions pertaining to licensees and also affects the regulatory options available to licensees.

The NRC has determined that the proposed action is a backfit for the reasons described above. However, in order for NRC to maintain assurance of adequate funding during the changing uncertainties of deregulation, this action is an "adequate protection" backfit. Consequently, the proposed change to the regulations is required to satisfy section 50.109(a)(5) and a full backfit analysis is not required pursuant to section 50.109(a)(4)(ii).

5. DECISION RATIONALE

1. Option A-2 would clarify the conditions under which nuclear power reactor licensees may use an external sinking fund that builds up to the required level of decommissioning funding, and under which such owners must provide "up-front" financial assurance for the full amount of decommissioning. Under Option A-2, entities that are no longer able to recover the cost of decommissioning through electricity rates or mandatory fees (and are also unable to recover costs through contractual obligations) will be required to provide financial assurance for the full amount of their decommissioning obligation immediately. Without the clarification that would be made under Option A-2, entities that no longer can recover costs of decommissioning through rates, but which are receiving decommissioning funds through non-bypassable system exit fees, line charges, or other means established in the course of industry deregulation, would still be required to incur costs, in total, of up to \$704 million to \$1,051 million (or more if deregulation occurs prior to 2006) for establishing financial assurance to supplement their external sinking funds (Exhibit 3-3). (Under both the existing requirements and the new requirements, entities that cannot recover the costs of decommissioning through rates, mandatory fees, or other means will be required to provide full assurance immediately.) Option A-2 therefore is justified both as a cost saving measure and as a response to uncertainty about how electric industry deregulation will affect the recovery of decommissioning costs through rates and mandatory fees.
2. Implementation and operation costs of reviewing financial assurance submissions by entities that no longer are certain to recover decommissioning costs, as well as industry costs to prepare the submissions, will be incurred only when electric industry deregulation occurs that affects a nuclear power reactor licensee, and only if that deregulation causes the licensee to cease to be able to recover with certainty some or all of its decommissioning costs. Option A-2 would allow NRC and licensees to avoid implementation and operation costs in cases where licensees are receiving decommissioning funds through mandatory system exit fees, line charges, or other means established in the course of industry deregulation.
3. For the reasons stated in (1) and (2) above, Option A-2 is superior to Option A-1, the no-action alternative.
4. Option B-2, allowing licensees credit for earnings following permanent shutdown but requiring use of an assumed real rate of return of up to 2 percent in cases where neither FERC nor PUCs approve of other assumed rates, would allow savings of \$481 million (Exhibit 3-5) over Option B-1, the no-action alternative, if either no retail deregulation occurs or retail deregulation occurs that allows nuclear reactor licensees to continue to receive decommissioning funds through regulated rates and fees or other mandatory charges established by a regulatory body (as described in Option A-2). Under those conditions licensees could continue to use their own assumed rates of return (which may be reviewed and approved by State PUCs and/or FERC) until funds are spent on decommissioning. Savings could be substantially higher if licensees begin selecting the SAFSTOR method of decommissioning early enough to take greater advantage of the earnings credit during the safe storage period.
5. Option B-2 would result in net costs to nuclear reactor licensees under scenarios where licensees may not continue to use their own assumed rates of return but must instead use the required 2 percent (or lower) rate of return established under Option B-2. In this case, the savings resulting from the extended earnings credit described in (4) would, on balance for all licensees, be offset by higher costs associated with the lower earnings assumption. Specifically, if nuclear reactor licensees cannot receive decommissioning funds from rates or mandatory fees (and therefore are presumed not to be supervised by State PUCs and/or FERC), Option B-2 would limit them to an assumed 2 percent (or lower) rate of return both before and after permanent shutdown. The net effect of the 2 percent rate and the extended earnings credit could increase financial assurance costs by \$1 million to \$1,189 million (or more if deregulation occurs prior to 2006), although these costs may be mitigated by additional savings as discussed in (4).
6. Option B-2 is superior to Option B-1, the no-action alternative, under any assumption about the form of electric industry deregulation. If retail deregulation does not occur, or occurs in the form hypothesized in (4), licensees will realize substantial savings (at least \$481 million). If deregulation occurs in the form hypothesized in (5), licensees will incur net financial assurance costs under Option B-2 (\$1 million to \$1,189 million). The net costs will vary, depending on whether the licensees use prepayment or a third-party financial assurance mechanism to provide financial assurance for the difference between their existing external sinking funds and the full amounts of financial assurance that they must

provide. The net costs will also vary, depending on the difference between estimated real rates of return the licensees had previously been using for their external sinking funds and the more conservative rate that they will be required to use by Option B-2 if they are no longer under the supervision of State PUCs and/or FERC. However, both components of the increased costs will reduce the potential for significant underfunding of decommissioning.

7. Option C-2, requiring periodic reports by licensees to NRC on the status of decommissioning financial assurance, would allow NRC to address whether adequate decommissioning funds have been set aside to date. Option C-2 would impose implementation and operation costs on NRC and licensees (Exhibit 3-8). However, a reporting requirement coupled with strong follow-up action to address any cases of underfunding identified through the analysis of the reports received could result in avoidance of up to \$2,700 million in unfunded decommissioning that could be experienced under the no-action alternative or if a reporting requirement is coupled with limited follow-up (Exhibit 3-7).
8. Option C-2 also has non-quantifiable benefits for regulatory efficiency, because it would allow NRC to develop and provide to Congress and the public detailed information about the current status of decommissioning funding.
9. For the reasons stated in (7) and (8) above, Option C-2 is superior to Option C-1, the no-action alternative.
10. Option D-2, defining the term "Federal licensee" to restrict the use of statements of intent by Federal power reactor licensees, would require TVA and NRC to incur limited implementation costs to secure and approve an alternative financial mechanism. TVA also would be required to incur costs of from \$124 million to \$243 million to provide alternative financial assurance, depending on the type of assurance that is used. However, qualitative analysis suggests (Section 3.2.4) that the statement of intent has inherent flaws that make it a weak form of financial assurance. It may provide only a promise by the licensee to seek and obtain funds at some future time when they are needed. TVA's statement of intent apparently was not the equivalent of a parent guarantee provided by the Federal government; NRC's Office of Inspector General has uncovered reasons to believe that the Federal government does not in fact intend to provide any guarantee that it will provide funding for TVA's decommissioning costs. TVA's statement of intent thus most closely resembles a self-guarantee, based on its commitment to set rates or issue bonds, notes, or other indebtedness sufficient to provide funds for decommissioning. Option D-1, the no-action alternative, represents the situation if TVA cannot meet this self-guarantee commitment. Under Option D-1, unfunded decommissioning costs of up to \$1,663 million could be incurred. Option D-2 therefore is the preferable alternative.
11. Option E-2 would involve a detailed examination of changes to licensees' financial assurance arrangements, particularly any modifications to their financial assurance mechanisms such as trust funds and other contractual instruments, that were last examined in 1990 when they were initially set up. Under Option E-2, both NRC and licensees would incur implementation costs to conduct and follow up on such an examination, primarily in the first reporting period after the rulemaking. However, flaws in financial assurance mechanisms putting at risk the ability of NRC to draw on the funds when necessary are expected to become more critical as the electric utility industry is deregulated, due to increased pressures on working capital and investment capital of firms in a competitive environment, and the possibility that such capital might be taken from funds supposedly set aside for decommissioning. The estimated shortfalls in decommissioning funds that could result from Option E-1, the no-action alternative, are sensitive to estimates concerning the proportion of financial assurance mechanisms that currently contain or may in the future contain problematic provisions, and the estimates of the proportion of cases in which attempts might be made to use the funds for other purposes. NRC has obtained information, based on experience in review of financial assurance mechanisms by non-reactor licensees, that approximately half of all unreviewed mechanisms may contain flaws; NRC has no information about use of decommissioning funds for other purposes. NRC and licensees could incur combined implementation costs for a detailed review of modifications to mechanisms with follow-up of approximately \$1.0 million (Exhibit 3-12). Such a review could avoid unfunded decommissioning costs of from \$930 million to \$1,860 million (Exhibit 3-11).

6. IMPLEMENTATION

This action has been enacted through an Advance Notice of Proposed Rulemaking and public comment, a Proposed Rule Notice and public comment, and a Final Rule. Implementation can begin immediately following the enactment of the final rulemaking. No impediments to implementation of the recommended alternatives have been identified. Regulatory Guides for licensees would be required to provide an explanation of the financial assurance mechanisms allowed under the rulemaking, the regulatory requirements and methods for applying NRC's assumed 2 percent (or lower) real rate of return, the periodic reporting requirements, and the requirements for regulatory compliance for licensees seeking to use external sinking funds or to apply the definition of "Federal licensee."

1. "*Force majeure*" refers to items largely beyond the control of the contracting parties (e.g., recession, inflation, severe market changes) that make it equitable to terminate or renegotiate contract terms.
2. In addition, firms providing guarantees must pass an underlying financial test which is not "divisible" under the regulations. For example, parent company guarantors must meet a criterion that they have tangible net worth at least equal to six times "the current decommissioning cost estimates (or prescribed amount if a certification is used)." Either a potential guarantor passes this criterion (and other similar and related criteria) in its entirety or the guarantor fails the test. If the guarantor cannot pass the criteria, then it is ineligible to provide a guarantee in any amount. In this case, combining the guarantee with another mechanism would not be an option. This final rule amends the financial test sections in Appendices A and C to 10 CFR Part 30 to address, in part, this issue.
3. NUREG/BR-0058 generally calls for the use of a 7 percent discount rate, which is the rate recommended by the Office of Management and Budget (OMB), in the estimation of values and impacts of a regulatory action. NUREG/BR-0058 also suggests use of an alternative discount rate of 3 percent for

sensitivity analysis purposes and for cases in which costs occur over a period of more than 100 years.

4. Copies of NUREG-0586 are available for inspection or copying for a fee from the NRC Public Document Room at 2120 L Street NW. (Lower Level) Washington, DC 20555-0001; telephone (202) 634-3273; fax (202) 634-3343. Copies may be purchased at current rates from the U.S. Government Printing Office, P.O. Box 370892, Washington, DC 20402-9328; telephone (202) 512-2249; or from the National Technical Information Service by writing NTIS at 5285 Port Royal Road, Springfield, VA 22161.

5. In 1984, NRC eliminated financial qualifications reviews at the operating license stage for those licensees that met the definition of "electric utility." This decision was based on NRC's assumption that "the rate process assures that funds needed for safe operation will be made available to regulated electric utilities" (49 FR 35750, September 12, 1984).

6. *Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors,"* U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, August 1990.

7. *Draft Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance,* NUREG-1577, U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, January 1997.

8. NRC's current regulations in 10 CFR 50.75(e) do not allow electric utility licensees to use parent company guarantees or self-guarantees. Also, under 10 CFR 50.75(e)(2)-(3), statements of intent are allowable mechanisms for Federal government electric utility licensees, and for Federal, State, and local government non-electric utility licensees.

9. In 1990, NRC reviewed the financial mechanisms originally submitted by licensees to comply with the then-new decommissioning financial assurance requirements. Most of these mechanisms were trusts, but the submittals also included three sinking funds based on escrows, one prepaid escrow, one "restricted deposit agreement," and one "city sinking fund." More recent information on mechanisms being used by licensees is not available.

10. 10 CFR 50.75(e)(1)(ii).

11. *Regulatory Guide 1.159*, p. 14, states that "Any trust investments complying with IRS Code Section 468A or with approval of or guidance from a utility's State PUC, other State agency, or from FERC would be acceptable to NRC staff. Licensees not eligible or willing to use decommissioning trusts established under IRS Code Section 468A or not subject to PUC or FERC jurisdiction should limit trust investments to "investment-grade" securities. Investment-grade bonds and preferred stocks are those rated at least "BBB" or equivalent by a national rating service. Speculative issues of common stocks should be avoided."

12. *Regulatory Guide 1.159*, p. 14, states that "The trustee of a fund should be an appropriate State or Federal government agency or an entity that has the authority to act as a trustee and whose trust operations are regulated or examined by a State or Federal agency."

13. *SRP*, p. 27. Many licensees that have established decommissioning trust funds for their power reactors are making deposits into their trust accounts both for decommissioning costs as defined under 50.2 and for other decommissioning-associated costs such as interim spent fuel management and storage and "greenfield" costs.

14. *Regulatory Guide 1.159*, Section 2.1.6.1, p. 13. The *SRP* (in Section III.2.d) notes that licensees are also required to submit these changes and modifications to NRC in accordance with 10 CFR 50.9. (10 CFR 50.9 requires licensees to notify NRC within 2 working days if the licensee identifies information having a significant implication for public health and safety or common defense and security, unless this information is covered by other reporting or updating requirements.) It is unclear whether licensees have been submitting modifications of financial mechanisms to NRC for review.

15. *Regulatory Guide 1.159*, Section 2.1.6.1, p. 13.

16. "Rulemaking Plan for Amending Nuclear Power Reactor Decommissioning Financial Assurance Implementation Requirements," included in SECY-95-223 (Nuclear Power Reactor Decommissioning Financial Assurance Requirements), September 1, 1995.

17. Based on the research and analysis discussed later (in Section 3.2.4), this analysis assumes that parent company guarantees and self-guarantees, although allowable under Option A-2, are unavailable to licensees.

18. *Regulatory Guide 1.159*, p. 14.

19. In contrast, insufficient returns earned on decommissioning funds prior to permanent shutdown are of less concern. The reason for this is that licensees' nuclear power reactors would still be generating revenue in this situation. Therefore, licensees would be better able (all else equal) to make up the difference with added contributions to the fund.

20. *Annual Survey of Nuclear Decommissioning Cost Estimates and Funding Policies, Public Utility Survey*, Table 32. Goldman Sachs, August 1995.

21. *Stocks, Bonds, Bills and Inflation 1995 Yearbook: Market Results for 1926-1994*, Table 6-7, Ibbotson Associates, 1995.

22. Although the rulemaking allows licensees that do not have an earnings rate approved by a regulator to use a real rate of return of up to 2 percent, this analysis assumes that these licensees would use a rate of exactly 2 percent.

23. Although actual returns may exceed 2 percent on average, rates in the short term (e.g., the 5 or 10 years prior to decommissioning) may be below average (or even negative).

24. The average rate currently assumed by licensees is 3.7 percent.
25. This study could identify only two operating nuclear reactors that have already elected safe storage as the method of decommissioning.
26. Licensees could continue using external sinking funds in this case only by coupling them with another financial mechanism (e.g., a surety bond or letter of credit) to cover costs that are not yet funded by the sinking fund. This option may have greater impact on non-power reactor licensees, who already are ineligible to use external sinking funds except in combination with another financial mechanism.
27. Values and impacts associated with reporting the last two items in this list are addressed under Option E-2 rather than Option C-2.
28. *Audit Report: NRC's Decommissioning Financial Assurance Requirements for Federal Licensees May Not Be Sufficient*, OIG/95A-20, U.S. Nuclear Regulatory Commission, Office of the Inspector General, April 3, 1996.
29. Licensees were expected to modify the wording "as a licensee's specific situation warrants [provided that the mechanism] complies with applicable state law" (*Regulatory Guide 1.159*, p. 14)
30. In the event that a corporate restructuring results in a change of licensee, the former licensee may neglect to follow (or may elect not to follow) NRC guidance, which states that "an existing method of financial assurance is to be maintained until the licensee has instituted a new method." (*Regulatory Guide 1.159*, p. 13)
31. A financial assurance mechanism is said to "fail" when it is not capable of providing funds when needed for the purposes intended. Failure of a decommissioning trust, for example, might occur for a wide variety of reasons, including (1) funds have been inappropriately removed from the trust for unintended uses (e.g., non-decommissioning expenses of the licensee or trustee), (2) funds are tied up a result of legal disputes involving the trustee and/or the licensee and/or NRC and/or other creditors, (3) NRC cannot access the funds in the event of the default of the licensee, (4) funds have been lost through mismanagement or fraud on the part of the trustee or licensee, and (5) the trust is inadequately funded.
32. For example, materials licensees' decommissioning trust and escrow agreements must, like the model wording, ensure that they cannot be amended to add provisions that are unacceptable to NRC. The relevant provisions in acceptable mechanisms submitted by licensees may differ from the model wording in how they are worded and even in how they work, but the protection of NRC's interest must be present and effective.
33. *Regulatory Analysis Technical Evaluation Handbook, Draft Report*, NUREG/BR-0184, Office of Nuclear Regulatory Research, August 1993.
34. This analysis is based primarily on 1994 data reported in *Annual Survey of Nuclear Decommissioning Cost Estimates and Funding Policies, Public Utility Survey*, Goldman Sachs, August 1995. In the case of a few licensees considered in this Regulatory Analysis, however, the *Annual Survey* did not provide data. For these licensees, the necessary data for the same point in time were obtained from licensee SEC Form 10K filings or from the financial statements included in licensees' annual reports. Additional review of 10K forms for other licensees indicated that the 10K data were consistent with (and probably the source for) the data included in the Goldman Sachs report.
35. *Nuclear Decommissioning Accounting Briefing Paper Presented to the Committee on Finance and Technology By the Staff Subcommittee on Accounts*, National Association of Regulatory Utility Commissioners, July 1994.
36. The required amount of financial assurance is assumed to be the higher of the licensee's reported decommissioning cost estimate or the appropriate certification amount for the reactor as called for under 10 CFR 50.75(c).
37. Real rates assumed by licensees range from 0-8.7 percent, with an average rate of 3.7 percent. Source: *Annual Survey*, Goldman Sachs, 1995.
38. Licensees may choose to modify funding rates for a variety of reasons. In particular, licensees may increase the rate of funding whenever current funding is deemed to be inadequate. This may be likely to occur as a result of the requirement that power reactor licensees must evaluate their decommissioning costs and associated funding levels approximately 5 years prior to termination of operations.
39. *Nuclear Decommissioning Accounting Briefing Paper Presented to the Committee on Finance and Technology By the Staff Subcommittee on Accounts*, National Association of Regulatory Utility Commissioners, July 1994. The survey consisted of a written questionnaire containing sixteen questions, submitted to each of the fifty States and the District of Columbia. Thirty-three responses were received. Within this group, only five State PUCs reported that none of their regulated utilities had ownership or responsibility over any portion of a nuclear power plant. Of the 18 non-responding PUCs, nine could be expected to have regulated utilities with nuclear power plants in the State. The survey's results thus represent about 75 percent of the pertinent PUCs.
40. Financial Accounting Standards Board, *Exposure Draft: Proposed Statement of Financial Accounting Standards, Accounting for Certain Liabilities Related to Closure or Removal of Long-Lived Assets*, No. 158-B, February 7, 1996, 99, p. 32.
41. *Id.*, 84, p. 28.
42. Consolidated Edison, for example, has notified the New York PUC that it is proposing to unbundle its generation company from its transmission and distribution assets. NRRI, "Status of Electric Industry Restructuring," December 3, 1996.
43. *Captive Insurance Company Directory 1996*, Tillinghast-Towers Perrin.

44. See, for example, Pennsylvania Public Utility Commission, *Report and Recommendation to the Governor and General Assembly on Electric Competition*, July 1996; State of New York Public Service Commission, *Opinion and Order Regarding Competitive Opportunities for Electric Service*, Opinion No. 96-12, Cases 94-E-0952 et al., May 20, 1996; and NARUC, *Summary of Each State's Restructuring Activities*, March 1, 1996, none of which identifies any ongoing attempts to secure approval from State legislatures for State PUC certifications.
45. "Decommissioning Funding Assurance Requirements Affecting TVA as a Federal Government Licensee," Enclosure, TVA Comments on NRC Advance Notice of Proposed Rulemaking, June 24, 1996. See also, Tennessee Valley Authority 1994 Annual Report, "Charting A Course for the 21st Century."
46. TVA has noted that even prior to decommissioning funding requirements from NRC, TVA was taking action to ensure that funds would be available to decommission its nuclear units.
47. According to TVA's comments on the proposed rule, TVA's current business plan recommends an offer to its distributor customers to change their power contracts after 5 years from a rolling 10-year term to a rolling 5-year term.
48. Moody's Investor Services and Standard & Poor's ratings for TVA are highly dependent on TVA's status as an agency of the U.S. government.
49. State of New York Public Service Commission, Opinion No. 96-12, Cases 94-E-0952 et al., *In the Matter of Competitive Opportunities Regarding Electric Service; Opinion and Order Regarding Competitive Opportunities for Electric Service*, May 20, 1996, pp. 15-18.
50. *Id.* p. 72.
51. *The New York Times*, "The Nuclear Power Puzzle: Deregulation Raises Questions Over Construction Debt," D1, D3, January 3, 1997.
52. Pennsylvania Public Utility Commission, *Report and Recommendation to the Governor and General Assembly on Electric Competition (From the Investigation into Retail Competition at Docket No. 1-940032)*, July 1996, p. 27.
53. NRRRI, "Status of Electric Industry Restructuring," December 3, 1996, p. 16; *The New York Times*, January 3, 1997.
54. NARUC, "Summary of Each State's Restructuring Activities (3/1/96)"; NRRRI, "Status of Electric Industry Restructuring," December 3, 1996.
55. State of New York Public Service Commission, Opinion No. 96-12, Cases 94-E-0952 et al. *In the Matter of Competitive Opportunities Regarding Electric Service, Order and Opinion Regarding Competitive Opportunities for Electric Service*, May 20, 1996, pp. 52-53.
56. NARUC, "Summary of Each State's Restructuring Activities (3/1/96)."
57. NRRRI, "Status of Electric Industry Restructuring," December 3, 1996, p. 7.
58. NRRRI, "Status of Electric Industry Restructuring," December 3, 1996.
59. *The New York Times*, "Bonus for Lilco Stockholders if State Takes Over Debt," January 1, 1997, p. 45.
60. *Nuclear Regulatory Commission Information Digest*, NUREG-1350, Volume 7, U.S. Nuclear Regulatory Commission, Office of the Comptroller, March 1995.
61. *Annual Survey of Nuclear Decommissioning Cost Estimates and Funding Policies, Public Utility Survey*, Goldman Sachs, August 1995, Table 32. (A more recent version of this survey is not currently available.)
62. In some cases where data are reported on an aggregated basis (e.g., total decommissioning funds collected for all the reactors owned by the company), the data were apportioned to individual units in proportion to the amount of each facility's certification level and the percentage of operating life remaining.
63. *Nuclear Plant Owners and Operators (Attachment 2 to SECY-94-280)*, U.S. Nuclear Regulatory Commission, November 18, 1994.
64. *Report on Waste Burial Charges: Escalation of Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities, Rev. 5*, NUREG-1307, U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, August 1995.
65. Reactors of the Tennessee Valley Authority, however, are analyzed only with respect to Options D-1 and D-2.
66. In a few cases, decommissioning cost estimates were stated in future dollars. These estimates were brought back to 1994 dollars using an annual rate of 3.26 percent, which is the average annual increase in the U.S. Gross Domestic Product (GDP) deflators over the period 1986-1995 (as reported in the U.S. Department of Commerce publication *Economic Indicators*).
67. For example, premature closures that occur prior to the effective date of NRC's rule would reduce the number of licensees affected by the rule, thereby reducing the values and impacts of the rule.
68. The unfunded portion of a sinking fund is assumed to equal the amount projected to remain unfunded (i.e., after accounting for projected earnings on funds invested as of the time deregulation occurs) at the time of license expiration, as opposed to the total unfunded amount at the time deregulation occurs. In other words, licensees are given credit for future earnings on funds collected to date.

69. For simplicity, the analysis assumes the collection of external sinking funds under a parent guarantee would be deferred and does not include the cost of money over the period in of the guarantee.
70. Prepayment is the most costly method of financial assurance. Therefore, licensees are unlikely to use prepayment unless other mechanisms are unavailable or unless, in the case of surety bonds and letters of credit, the amount of collateral required approaches the prepayment amount.
71. It is also possible that some licensees may be able to use other financial mechanisms (e.g., parent guarantees).
72. Unless otherwise noted, all present value calculations were made using a discount rate of 7 percent, in accordance with NRC's *Regulatory Analysis Technical Evaluation Handbook*, August 1993, page B-2.
73. To the extent that licensees are able to continue using external sinking funds funded by guaranteed contractual obligations, the model will overstate values and impacts.
74. In setting the rates, fees, or mandatory charges through which licensees would be able to recover the costs of decommissioning, regulators would (at least implicitly) approve or accept an earnings rate assumption. Because regulatory authorities such as FERC and State PUCs are responsible to their ratepayers, it seems unlikely that they would then give up oversight over monies collected in advance from the ratepayers to pay for decommissioning.
75. In reality, licensees would also apply the 2 percent (or lower) rate in calculating post-deregulation contributions to the sinking fund.
76. This analysis has incorporated the relatively simple assumption that pre-tax real rates of return on decommissioning funds will average 4.3 percent annually. This rate represents the historical average real rate on an investment portfolio that evenly balances high quality stocks and bonds. (This portfolio is representative of the actual investment policies applied to external decommissioning trusts, as reported in *Annual Survey of Nuclear Decommissioning Cost Estimates and Funding Policies, Public Utility Survey*, Goldman Sachs, August 1995, Table 31.) The average real rate of return for long-term government bonds is 1.7 percent, and the average real rate of return on large company stocks is 6.9 percent. Thus, 4.3 percent equals the average rate on a hypothetical portfolio consisting of 50 percent long-term government bonds and 50 percent large company stocks. (Interest rates are historical geometric means as reported in *Stocks, Bonds, Bills and Inflation 1995 Yearbook: Market Results for 1926-1994*, Table 6-7, Ibbotson Associates, Chicago, IL, 1995.)
77. Many licensees currently report plans to delay commencement of decommissioning activities beyond the expiration of their operating licenses. The reported delays, however, are typically fairly brief (e.g., less than 5 years). Licensees may yet elect to extend their safe storage periods as allowed by NRC regulations.
78. *Audit Report: NRC's Decommissioning Financial Assurance Requirements for Federal Licensees May Not Be Sufficient*, OIG/95A-20, U.S. Nuclear Regulatory Commission, Office of the Inspector General, April 3, 1996.
79. This is consistent with the fact that all or virtually all non-Federal electric utilities, who are ineligible to use statements of intent, have selected external sinking funds to demonstrate financial assurance for decommissioning.
80. Due to lack of information on whether TVA will use the safe storage method of decommissioning at its reactors, the modeling for Option D does not account for Option B's credit for earnings during safe storage.
81. As discussed in Section 2.5.2, NRC's rulemaking would also require licensees using contractual obligations to fund external sinking funds to report information on these contracts. This scenario is not modeled due to uncertainty over the use of such contracts in the future.
82. The reporting requirement is modeled through the year 2019, which is the average year of decommissioning across all reactors included in the analysis.
83. Further details on modeling assumptions are provided in Section 3.3.3.
84. Licensees are required to make a preliminary determination of decommissioning methods only 5 years prior to termination of operations. Many licensees currently report plans to delay decommissioning activities beyond the expiration of their operating licenses. The reported delays, however, are fairly brief (e.g., less than 5 years).
85. If NRC were to implement Option A-1, however, then the values and impacts of Options B-1 and B-2 under managed deregulation would be the same as under the stranding deregulation scenario (as discussed above).
86. As discussed in Section 3.3.3, licensees' earnings rates are assumed not to be regulated by FERC/PUCs under stranding deregulation.
87. Further details on modeling assumptions are provided in Section 3.3.3.
88. This excludes the opportunity costs to TVA related to \$365 million that it has already contributed to external decommissioning trusts.
89. This assumes TVA prepays remaining decommissioning costs in the year 2006. TVA's costs would decrease if it is able to obtain and use a surety bond, letter of credit, or self-guarantee instead of a prepayment mechanism.