

Draft Regulatory Analysis and Backfit Analysis

Proposed Rulemaking: Power Reactor Security Requirements (10 CFR Part 73)

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

Office of Nuclear Security and Incident Response



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Executive Summary

The Nuclear Regulatory Commission (NRC) is proposing to amend the current security regulations and add new security requirements pertaining to nuclear power reactors. Additionally, this rulemaking includes new security requirements for Category I strategic special nuclear material (SSNM) facilities for access to enhanced weapons and firearms background checks. The proposed rulemaking would: (1) make generically applicable security requirements imposed by Commission orders issued after the terrorist attacks of September 11, 2001, based upon experience and insights gained by the Commission during implementation, (2) fulfill certain provisions of the Energy Policy Act of 2005, (3) add several new requirements that resulted from insights from implementation of the security orders, review of site security plans, and implementation of the enhanced baseline inspection program and force-on-force exercises, (4) update the regulatory framework in preparation for receiving license applications for new reactors, and (5) impose requirements to assess and manage site activities that can adversely affect safety and security. The proposed safety and security requirements would address, in part, a Petition for Rulemaking (PRM 50-80) that requested the establishment of regulations governing proposed changes to facilities which could adversely affect the protection against radiological sabotage.

The analysis presented in this document examines the benefits and costs of the proposed security requirements relative to the baseline of existing security requirements, including current regulations and the relevant orders. The key findings of the analysis are as follows:

- **Total Cost to Industry.** The proposed rule would result in a total one-time cost to all nuclear power plant sites of approximately \$94.6 million, followed by total annual costs on the order of \$13 million. The total present value of these costs is estimated at \$287.5 million (using a 7-percent discount rate) and \$394 million (using a 3-percent discount rate) over the next 34 years.
 - **Average Cost per Site.** The average nuclear power plant site, which may include multiple units, would incur a one-time cost of approximately \$1.45 million followed by annual costs of approximately \$198,800.
 - **Value of Benefits Not Reflected Above.** With the exception of most of the direct monetary savings to industry, the cost figures shown above do not reflect the value of the benefits of the proposed rule. These benefits are evaluated qualitatively in Section 4.1. This regulatory analysis concluded the costs of the rule are justified in view of the qualitative benefits.
 - **Costs to NRC.** The rule would result in a one-time cost to NRC of approximately \$2.46 million, followed by annual costs of approximately \$7,600. The total present value of these costs is estimated at \$2.5 million (using a 7-percent discount rate) and \$2.62 million (using a 3-percent discount rate).
 - **Decision Rationale.** Although the NRC did not quantify the benefits of this rule, the staff did qualitatively examine benefits and concluded that the rule would provide safety and
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security-related benefits. The NRC believes that the rule is cost-justified for several qualitative reasons. First, the proposed rule would provide additional assurance of licensees' capability to protect the power reactor sites against an external assault defined by the DBT. Second, the proposed rule would require the central alarm station (CAS) and secondary alarm station (SAS) to be functionally equivalent such that a single act cannot simultaneously disable the function of both CAS and SAS. As such, electronic equipment used for detection and assessment must have uninterruptible backup power. The proposed rule would also result in the deployment of certain technological advances in intrusion detection systems that are necessary during a safeguards contingency event. Third, in recognition of advancing digital technology, a proposed rule would maintain the intent of the security orders by establishing the requirement for a cyber security program to protect any systems that can, if compromised, adversely impact safety, security or emergency preparedness. Fourth, the rule would increase licensees' security program effectiveness through additional training and procedures such as safety-security interface, on-the-job training and annual firearms familiarization. Fifth, the proposed changes would improve the integration of the access authorization requirements, fitness-for-duty requirements, and security program requirements by increasing the rigor for some elements of the access authorization program, clarifying the responsibility for the acceptance of shared information, adding requirements to allow NRC inspection of licensee information sharing records, and adding requirements that subject additional individuals, such as those who have electronic access via computer systems or those who administer the access authorization program, to the access authorization requirements. NRC believes that these factors represent a substantial increase in safety and that the proposed rulemaking has merit on the basis of these qualitative reasons.

1. Introduction

This document presents a draft regulatory analysis of proposed revisions to the power reactor security requirements as set forth by the U.S. Nuclear Regulatory Commission (NRC) in Title 10, Part 73, of the Code of Federal Regulations (10 CFR Part 73). This introduction is divided into three sections. Section 1.1 states the problem and the reasons for the proposed rulemaking, Section 1.2 provides background information on the Part 73 rulemaking, and Section 1.3 discusses regulatory objectives related to adoption of the proposed revisions to the Part 73 rule.

1.1 Statement of the Problem and Reasons for the Rulemaking

Following the terrorist attacks on September 11, 2001, the Nuclear Regulatory Commission (NRC) conducted a thorough review of security to ensure that nuclear power plants and other licensed facilities continued to have effective security measures in place given the changing threat environment. Through a series of orders, the Commission specified a supplement to the Design Basis Threat (DBT), as well as requirements for specific training enhancements, access authorization enhancements, security officer work hours, and enhancements to defensive strategies, mitigative measures, and integrated response. Additionally, in generic communications, the Commission specified expectations for enhanced notifications to the NRC for certain security events or suspicious activities.

Most of the requirements in this proposed rulemaking are derived directly from, or through implementation of, the following four security orders:

- EA-02-026, "Interim Compensatory Measures (ICM) Order," dated February 25, 2002, 67 FR 9792 (March 4, 2002)
- EA-02-261, "Access Authorization Order," dated January 7, 2003, 68 FR 1643 (January 13, 2003)
- EA-03-039, "Security Personnel Training and Qualification Requirements (Training) Order," dated April 29, 2003, 68 FR 24514 (May 7, 2003) and
- EA-03-086, "Revised Design Basis Threat Order," dated April 29, 2003, 68 FR 24517 (May 7, 2003).

Nuclear power plant licensees revised their security plans, training and qualification plans, and safeguards contingency plans in response to these orders. The NRC completed its review and approval of all of the revised security plans, training and qualification plans, and safeguards contingency plans on October 29, 2004. These plans incorporated the enhancements instituted through the orders. While the specifics of these changes are Safeguards Information, in general the changes resulted in enhancements such as increased patrols, augmented security forces and capabilities, additional security posts, additional physical barriers, vehicle checks at greater standoff distances, enhanced coordination with law enforcement and military authorities, augmented security and emergency response training, equipment, and communication, and more restrictive site access controls for personnel, including expanded, expedited, and more thorough employee background checks.

The Energy Policy Act of 2005 (EPA 2005), signed into law on August 8, 2005, is another source of some of the proposed requirements reflected in this rulemaking. Section 653, for instance, allows the NRC to authorize licensees to use, as part of their protective strategies, an expanded arsenal of weapons, including machine guns and semi-automatic assault weapons. Section 653 also requires that all security personnel with access to any weapons undergo a background check that would include fingerprinting and a check against the FBI's National Instant Criminal Background Check System (NICS) database. These provisions of EPA 2005 would be reflected in the newly proposed §§ 73.18 and 73.19, and the proposed NRC Form 754. Though this rulemaking primarily affects power reactor security requirements, to implement the EPA 2005 provisions efficiently, the NRC expanded the rulemaking's scope in newly proposed §§ 73.18 and 73.19 to include facilities authorized to possess formula quantities or greater of strategic special nuclear material, i.e., Category I SSNM facilities. Such facilities would include: production facilities, spent fuel reprocessing facilities, fuel processing facilities, and uranium enrichment facilities. Additionally, Section 651 of the EPA 2005 requires the NRC to conduct security evaluations at selected licensed facilities, including periodic force-on-force exercises. That provision also requires the NRC to mitigate any potential conflict of interest that could influence the results of force-on-force exercises. These provisions would be reflected in proposed § 73.55.

Through implementing the security orders, reviewing the revised site security plans across the fleet of reactors, conducting the enhanced baseline inspection program, and evaluating force-on-force exercises, the NRC has identified some additional security measures that provide additional assurance of licensees' capability to protect against the DBT. This regulatory analysis focuses on the costs and benefits associated with these new requirements.

Finally, Petition for Rulemaking (PRM 50-80), requested the establishment of regulations governing proposed changes to facilities which could adversely affect their protection against radiological sabotage. This petition was partially granted on November 17, 2005 (70 FR 69690), and the proposed new § 73.58 contains requirements to address this area.

1.2 Background

1.2.1 Current Regulations Governing Power Reactor Security (10 CFR Part 73)

NRC's regulatory requirements for the physical protection of plants and materials are contained in 10 CFR Part 73. Part 73 distinguishes between requirements applicable to power reactors and to special nuclear material at fixed sites and in transit. Requirements for fixed sites vary depending on the type of site and the relevant "design basis threat" (DBT) as described in § 73.1(a). The physical protection requirements for nuclear power reactors are contained in § 73.55 and focus on guarding against the DBT of radiological sabotage.

To protect against this DBT, the requirements in § 73.55 begin by establishing the following general objective (§ 73.55(a)):

The licensee shall establish and maintain an onsite physical protection system and security organization which will have as its objective to provide high

assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. The physical protection system shall be designed to protect against the design basis threat of radiological sabotage as stated in § 73.1(a).

In §§ 73.55(b)-(h), the regulation establishes detailed requirements addressing the following aspects of licensees' physical protection systems:

- Physical security organizations,
- Physical barriers,
- Access requirements,
- Detection aids,
- Communications,
- Testing and maintenance procedures, and
- Response requirements.

Some of the provisions within the paragraphs identified above are particularly relevant to this analysis and are briefly described or summarized below.

Security Plans

Under 10 CFR 50.34(c), each nuclear power reactor licensee must develop a security plan. 10 CFR 73.55(b), paragraphs (1)(i) and (3)(i) require licensees to maintain safeguards in accordance with their security plans and procedures. The security plan describes how the applicant will meet the requirements of Part 73 (including the requirements for barriers, access requirements, systems, and equipment as required in §§ 73.55(b)-(h)).

Safeguards Contingency Plans

Under 10 CFR 50.34(d), each nuclear power reactor licensee is required to develop a safeguards contingency plan in accordance with the criteria set forth in Appendix C to 10 CFR Part 73. The safeguards contingency plan must include plans for dealing with threats, thefts, and radiological sabotage. Under § 73.55(h)(1), licensees must maintain and follow their NRC-approved safeguards contingency plan. In accordance with 10 CFR Part 73, Appendix C, the goals of this plan are (1) to organize the response effort at the licensee level, (2) to provide predetermined, structured responses by licensees to safeguards contingencies, (3) to ensure the integration of the licensee response with the responses by other entities, and (4) to achieve a measurable performance in response capability.

Training and Qualification Plan

Under § 73.55(b)(4)(ii), licensees are required to establish, maintain, and follow an NRC-approved training and qualifications plan outlining the processes by which security personnel will be selected, trained, equipped, tested, and qualified, in accordance with Appendix B to 10 CFR Part 73.

1.2.2 Commission Orders

The Commission imposed several security orders on all operating power reactor licensees following September 11, 2001:

- EA-02-026, "Interim Compensatory Measures (ICM) Order," dated February 25, 2002, 67 FR 9792 (March 4, 2002)
- EA-02-261, "Access Authorization Order," dated January 7, 2003, 68 FR 1643 (January 13, 2003)
- EA-03-039, "Security Personnel Training and Qualification Requirements (Training) Order," dated April 29, 2003, 68 FR 24514 (May 7, 2003) and
- EA-03-086, "Revised Design Basis Threat Order," dated April 29, 2003, 68 FR 24517 (May 7, 2003).

Nuclear power plant licensees revised their security plans, training and qualification plans, and safeguards contingency plans in response to these orders. The NRC completed its review and approval of all of the revised security plans, training and qualification plans, and safeguards contingency plans on October 29, 2004. These plans incorporated the enhancements instituted through the orders. While the specifics of these changes are Safeguards Information, in general the changes resulted in enhancements such as increased patrols, augmented security forces and capabilities, additional security posts, additional physical barriers, vehicle checks at greater standoff distances, enhanced coordination with law enforcement and military authorities, augmented security and emergency response training, equipment, and communication, and more restrictive site access controls for personnel, including expanded, expedited, and more thorough employee background checks.

1.2.3 Energy Policy Act of 2005

The Energy Policy Act of 2005 (EPAct 2005), signed into law on August 8, 2005, is another source of some of the proposed requirements reflected in this rulemaking. Section 653, for instance, allows the NRC to authorize licensees to use, as part of their protective strategies, an expanded arsenal of weapons, including machine guns and semi-automatic assault weapons. Section 653 also requires that all security personnel with access to any weapons undergo a background check that would include fingerprinting and a check against the FBI's National Instant Criminal Background Check System (NICS) database. These provisions of EPAct 2005 would be reflected in the newly proposed §§ 73.18 and 73.19, and the proposed NRC Form 754. Though this rulemaking primarily affects power reactor security requirements, to implement the EPAct 2005 provisions efficiently, the NRC expanded the rulemaking's scope in the newly proposed §§ 73.18 and 73.19 to include facilities authorized to possess formula

quantities or greater of strategic special nuclear material, i.e., Category I SSNM facilities. Such facilities would include: production facilities, spent fuel reprocessing facilities, fuel processing facilities, and uranium enrichment facilities. The NRC plans to address separately whether the deployment of enhanced weapons is appropriate for other types of facilities, radioactive materials, or other property. Additionally, Section 651 of the EPAct 2005 requires the NRC to conduct security evaluations at selected licensed facilities, including periodic force-on-force exercises. That provision also requires the NRC to mitigate any potential conflict of interest that could influence the results of force-on-force exercises. These provisions would be reflected in proposed § 73.55.

1.3 Regulatory Objectives

The NRC has five objectives for the current rulemaking. The first objective is to make generically applicable security requirements imposed by Commission orders issued after the terrorist attacks of September 11, 2001, based upon experience and insights gained by the Commission during implementation.¹ The second objective is to fulfill certain provisions of the Energy Policy Act of 2005. The third objective is to add several new requirements that resulted from insights from implementation of the security orders, review of site security plans, and implementation of the enhanced baseline inspection program and force-on-force exercises. The fourth objective is to update the regulatory framework in preparation for receiving license applications for new reactors. The fifth objective is to impose requirements to assess and manage site activities that can adversely affect safety and security. The proposed safety and security requirements would address, in part, a Petition for Rulemaking (PRM 50-80) that requested the establishment of regulations governing proposed changes to facilities which could adversely affect the protection against radiological sabotage.

2. Identification and Preliminary Analysis of Alternative Approaches

This section presents preliminary analysis of the alternatives that the staff considered to meet the regulatory goals identified in the previous section. (Section 4 presents a more detailed analysis of the proposed rule option.) The staff considered two alternatives for revising Part 73's power plant security provisions as discussed below.

2.1 Option 1: No Action

Under Option 1, the no-action alternative, NRC would not amend the current regulations regarding power reactor security. Licensees would continue to comply with the Commission's security orders. This option would avoid certain costs that the proposed rule would impose. However, taking no action would not improve security measures as authorized by the EPAct 2005 or establish regulatory requirements for lessons learned. Additionally, taking no action would present a problem for establishing appropriate security measures for new reactors that did not receive orders.

¹ Specific details related to requirements that are safeguards information (SGI) will not be specified in regulations but will be available only to those with appropriate clearance and need to know.

2.2. Option 2: Amend Regulations to Enhance Power Reactor Security Operations

Under Option 2, NRC would conduct a rulemaking to address changes in several sections of 10 CFR Part 73 to enhance security operations at power reactors. These changes entail: (1) amending 10 CFR 73.2 to add definitions; (2) revising 10 CFR 73.55, 73.56, 73.71, Appendix B, Appendix C, and Appendix G; (3) adding 10 CFR 73.58 to introduce “safety/security interface” requirements, and (4) adding § 73.18, § 73.19, and Form 754 to implement EAct 2005 provisions for background checks and authorization for use of enhanced weapons.

A comprehensive rulemaking would provide a means of addressing the identified issues and concerns with respect to Part 73. Through a comprehensive revision, the NRC could (1) ensure that all licensees would consistently implement measures to enhance security and safety at nuclear power plants; (2) modify current requirements to provide licensees with some flexibility; (3) address adjustments and changes in security plans that licensees have adopted through the development of the revised licensee security plans; (4) clarify the language of the rule; and (5) incorporate changes to address the requirements in the EAct 2005

The NRC has estimated the benefits and costs of this option, as described in Sections 3 and 4 of this regulatory analysis, and has pursued Option 2 for the reasons discussed in Section 5.

3. Evaluation of Benefits and Costs

This section examines the benefits (values) and costs (impacts or burdens) expected to result from this rulemaking, and is presented in two subsections. Section 3.1 identifies attributes that are expected to be affected by the rulemaking. Section 3.2 describes how benefits and costs have been analyzed.

3.1 Identification of Affected Attributes

This section identifies the factors within the public and private sectors that the regulatory alternatives (discussed in Section 2) are expected to affect. These factors are classified as “attributes” using the list of potential attributes provided by NRC in Chapter 5 of its *Regulatory Analysis Technical Evaluation Handbook*.² Affected attributes include the following:

- C Safeguards and Security Considerations – The proposed actions are intended to establish requirements that will provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety.
- C Industry Implementation – The proposed action would require licensees to make facility modifications and to revise their

² *Regulatory Analysis Technical Evaluation Handbook, Final Report*, NUREG/BR-0184, Office of Nuclear Regulatory Research, January 1997.

Physical Security Plans, Safeguards Contingency Plans, and Training and Qualification Plans, among other implementation activities.

- C Industry Operation – The proposed action would require licensees to conduct additional security activities beyond those currently being conducted. For example, licensees would need to provide on-the-job training for security personnel, including an additional 40 hours of on-the-job-training for personnel involved with contingency response. The proposed action would also provide licensees with flexibility in eliminating or reducing certain activities. For example, vehicles operated by an individual with unescorted access to the protected area would no longer need a security escort.
 - C NRC Implementation – Under the proposed action, NRC would develop or revise guidance and inspection procedures and review changes to licensee security plans as a result of the new requirements.
 - NRC Operation – The proposed action would require the NRC Operations Center to answer calls from licensees when they discover an imminent or actual threat against the facility, and to answer calls regarding suspicious activity and tampering.
 - C Regulatory Efficiency – The proposed action would result in enhanced regulatory efficiency through regulatory and compliance improvements, including changes associated with sites using mixed-oxide fuel assemblies.
 - C Public Health (Accident) – The proposed action would reduce the risk that public health will be affected by radiological releases resulting from radiological sabotage.
 - C Occupational Health (Accident) – The proposed action would reduce the risk that occupational health will be affected by radiological releases resulting from radiological sabotage.
 - C Off-Site Property – The proposed action would reduce the risk that off-site property will be affected by radiological releases resulting from radiological sabotage.
 - C On-Site Property – The proposed action would reduce the risk that on-site property will be affected by radiological releases resulting from radiological sabotage.
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Attributes that are *not* expected to be affected under any of the rulemaking options include the following: occupational health (routine); public health (routine); environmental considerations; other government; general public; improvements in knowledge; and antitrust considerations.

3.2 Analytical Methodology

This section describes the process used to evaluate benefits and costs associated with the various regulatory options. The *benefits* (values) of the rule include any desirable changes in affected attributes (e.g., monetary savings, improved safety resulting from new physical protection requirements) while the *costs* (impacts or burdens) include any undesirable changes in affected attributes (e.g., monetary costs, increased exposures). As described in Section 3.1, the attributes expected to be affected include Safeguards and Security Considerations, Industry Implementation, Industry Operation, NRC Implementation, NRC Operation, Regulatory Efficiency, Public Health (Accident), Occupational Health (Accident), Offsite Property, and Onsite Property.

Ideally, a benefit-cost analysis quantifies the overall benefits and costs of the regulatory options relative to each of these attributes. This analysis relies on a qualitative evaluation of several of the affected attributes (safeguards and security considerations, public health, occupational health, offsite property, and onsite property) due to the difficulty in quantifying the impact of the current rulemaking.³ These attributes would be affected by the regulatory options through the associated reduction in the risks of radiological sabotage damage to the reactor core and the spent fuel. Quantification of any of these attributes would require estimation of factors such as (1) the frequency of attempted radiological sabotage, (2) the frequency with which radiological sabotage attempts are (i.e., pre-rule) and will be (i.e., post-rule) successful, and (3) the impacts associated with successful radiological sabotage attempts.

The remaining attributes (industry implementation, industry operation, NRC implementation, NRC operation) are evaluated quantitatively. Quantitative analysis requires a baseline characterization of the universe, including factors such as the number of licensees affected, the nature of the security activities currently being conducted, and the types of new or modified systems and procedures that licensees will implement, or will no longer implement, as a result of the rule. In fact, however, licensees may respond to the rule in different ways depending on their own licensee-specific characteristics, such as (1) the physical characteristics of their sites, (2) the current contents of their Safeguards Contingency Plans, Security Plans, and Training and Qualification Plans, (3) the organizational and managerial characteristics of their operations, and (4) their approaches toward meeting new performance-based criteria. It is beyond the scope of this analysis to individually characterize and analyze affected licensees, in large part because the information that would be needed consists of “Safeguards Information”

³ The regulatory efficiency attribute also is evaluated qualitatively, by definition. See NRC’s *Regulatory Analysis Technical Evaluation Handbook*, Section 5.5.14.

that is protected under 10 CFR 73.21.⁴ Nevertheless, the analysis proceeds quantitatively for these attributes by making generalizing assumptions (see Section 3.2.2).

3.2.1 Data

Information on operating reactors and shutdown dates has been taken from NUREG-1350, Vol. 17, *NRC Information Digest, 2005-2006 Edition*. To the extent practical, quantitative information (e.g., costs and savings) and qualitative information (e.g., the nature and magnitude of safeguards and security impacts) on attributes affected by the rule has been obtained from, or developed in consultation with, NRC staff, commercial vendors, and available Nuclear Energy Institute data. In order to develop the proposed rule regulatory analysis on the accelerated rulemaking schedule, it was necessary to limit stakeholder participation, and this limitation affects the NRC staff's assessments of impacts to individual licensees as a result of the proposed new requirements. NRC headquarters and regional staffs discussed their understanding of the potential differences between the proposed new requirements and the current security measures in place at existing licensees and have incorporated available, non-safeguards, information into the this draft regulatory analysis. The NRC is seeking additional insights from stakeholders on implementing costs and related issues via questions in the proposed rule *Federal Register* notice and will integrate this information into the final rule regulatory analysis. Additionally, in developing the final rule the NRC will consider the need for flexibility by the NRC in evaluating the use of alternative measures and extended schedules for selected licensees in implementing a final rule, so as to not impose an unreasonable burden on these licensees.

3.2.2 Assumptions

The analysis assumes that all operating nuclear power reactors are in full compliance with current requirements imposed by NRC's regulations and Commission orders. It assumes that incremental costs and savings accrue to sites independent of the number of reactor facilities located at each site. It also assumes that the manner in which operating reactors comply with 10 CFR Part 73 is substantially similar. That is, the analysis applies the same average cost per activity to each site, even though some sites will incur higher or lower costs. Where appropriate, the analysis calculates incremental costs and benefits for only a percentage of sites. In these cases, the results presented in Section 4 for the average site will reflect an appropriate proration of the applicable cost or benefit. The detailed incremental cost and savings calculations are presented in Appendices A and B.

The analysis assumes the rule will become effective in December 2007, and that any one-time implementation costs are incurred in 2008. Ongoing costs of operation are assumed to begin in 2008, and are modeled on an annual cost basis. The analysis assumes that each licensee will apply for and receive a license extension. Based on the extended license expiration dates, the analysis calculated the average operating life across all reactors as 34 years. Therefore, costs

⁴ Safeguards Information under 10 CFR 73.21 includes, for example, Security Plans, Safeguard Contingency Plans, physical protection system designs, security procedures, and information relating to safeguards inspections, audits, and evaluations.

and savings are estimated for the 65 reactor sites over a 34 year period, with each year's costs or savings discounted back at a 7-percent and 3-percent discount rate, in accordance with NUREG/BR-0058, Rev. 4, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission." (See Section 4.1 for these results.) Costs and savings are expressed in 2006 dollars.

Although two sections of the proposed rules, § 73.18 and § 73.19, apply not only to power reactor licensees but also to a small number of licensees that handle formula quantities of special nuclear materials, the analysis does not calculate any cost or saving for these activities.

4. Results

This section presents the analytical results which are organized into five separate sections:

- Section 4.1 presents findings on the overall benefits and costs of the proposed rule under the main analysis.
- Section 4.2 considers the findings relative to NRC's backfit rule.
- Section 4.3 considers the findings on a disaggregated basis.
- Section 4.4 addresses the applicability of a safety goal evaluation to the current rulemaking.
- Section 4.5 describes the information required for review by the Committee to Review Generic Requirements (CRGR).

4.1 Benefits and Costs

This section summarizes the values (benefits) and impacts (costs) estimated for the regulatory options. To the extent that the affected attributes could be analyzed quantitatively, the net effect of each option has been calculated and is presented below. However, some values and impacts could be evaluated only on a qualitative basis.

The results of the value-impact analysis are summarized in Exhibits 4-1 and 4-2. Relative to the no-action alternative (Option 1), Option 2 would result in a net quantitative impact estimated between \$290.0 million and \$396.6 million (7-percent and 3-percent discount rate, respectively). The majority of the costs associated with Option 2 will be incurred by industry (\$287.5 million - \$394.0 million, 7-percent and 3-percent discount rate, respectively).

The analysis estimates that Option 2 would result in qualitative benefits in the following attributes: regulatory efficiency, safeguards and security, public health (accident), occupational health (accident), off-site property, and on-site property. Specifically, the benefits will include enhanced regulatory efficiency through regulatory and compliance improvements, including changes in industry's planning efforts and in NRC's review and inspection efforts. In addition, the proposed rule would result in an increased level of assurance that nuclear power plants can

defend against the DBT. There would also be a reduced risk that public health and occupational health will be affected by radiological releases resulting from radiological sabotage. The proposed rule would also reduce the risk that off-site and on-site property will be affected by radiological releases resulting from radiological sabotage.

The new requirements in the rule are expected to result in specific qualitative benefits listed below:

- The security plan updates and revisions that would be required by the proposed rule would lead to the consistent implementation of best security practices.
- Current security regulations do not contain requirements related to cyber security. The NRC issued orders after September 11, 2001, that required power reactor licensees to implement interim compensatory measures to enhance cyber security licensees. These security measures required an assessment sufficient to provide protection against the cyber threats at the time of the orders. However, as licensees implement digital upgrades for many systems at their plants the potential for cyber threats will be increased. The proposed requirements would maintain the intent of the security orders by establishing the requirement for a cyber security program to protect any systems that can, if compromised, adversely impact safety, security or emergency preparedness.
- The proposed rule would ensure that escorts are trained and knowledgeable about their duties while accompanying visitors. This proposed requirement would reduce the risk of a security incident initiated by a visitor since escorts would be better informed regarding visitor's authorized activities.
- Current regulatory requirements ensure that both CAS and SAS have equivalent alarm annunciation and communication capabilities, but do not explicitly require equivalent assessment, monitoring, observation, and surveillance capabilities. Further, the current requirement of 73.55(e)(1) states "All alarms required pursuant to this part must annunciate in a continuously manned central alarm station located within the protected area and in at least one other continuously manned station not necessarily onsite, so that a single act cannot remove the capability of calling for assistance or otherwise responding to an alarm." The Commission orders added enhanced detection and assessment capabilities, but did not require equivalent capabilities for both CAS and SAS. The security plans approved by the Commission on October 29, 2004, varied, due to the performance-based nature of the requirements, with respect to how the individual licensees implemented these requirements, but all sites were required to provide CAS and SAS with functionally equivalent capabilities to support the implementation of the site protective strategy.

The proposed rule extends the requirement for no single act to remove capabilities to the key functions required of the alarm stations and would require licensees to implement protective measures such that a single act would not disable the intrusion detection, assessment, and communications capabilities of both the CAS and SAS. This proposed requirement would ensure continuity of response operations during a security event by ensuring that the detection, assessment, and communications

functions required to effectively implement the licensee's protective strategy are maintained despite the loss of one or the other alarm station. For the purposes of assessing the regulatory burden of this proposed rule, the NRC assumed that all licensees would require assessments and approximately one third of the licensees would choose to implement hardware modifications.

The NRC has concluded that protecting the alarm stations such that a single act does not disable the key functions would provide an enhanced level of assurance that a licensee can maintain detection, assessment and communications capabilities required to protect the facility against the design basis threat of radiological sabotage. For new reactor licensees, licensed after the publication of this rule, the Commission would require CAS and SAS to be designed, constructed, and equipped with equivalent standards.

- Current regulatory requirements require back-up power for alarm annunciation and non-portable communication equipment, but do not require uninterruptible back-up power. Although not specifically required, many licensees have installed uninterruptible power to their security systems for added reliability of these electronic systems. However, the Commission has not required uninterruptible power for assessment systems. Uninterruptible back-up power would provide an enhanced level of assurance that a licensee can maintain detection, assessment and communication capabilities required to defend the facility against the design basis threat. This new requirement would reduce the risk of losing detection, assessment, and communication capabilities during a loss of the normal power supply.
 - Current regulatory requirements address the use of closed circuit television systems, but do not explicitly require them. Although not specifically required, all licensees have adopted the use of video surveillance in their site security plans, and many of the licensees have adopted advanced video surveillance technology to provide real-time and play-back/recorded video images to help security officials determine the cause of an alarm annunciation. Advanced video technology would provide an enhanced level of assurance that a licensee can assess the cause of an alarm annunciation and initiate a timely response capable of defending the facility against the threat up to and including the design basis threat.
 - The proposed safety-security interface requirements would reduce the risk of adverse safety-security interactions. These requirements would enhance the communication among nuclear power plant staff in order to avoid adverse safety or security effects.
 - The proposed rule contains several new reporting provisions. It would require licensees to notify the NRC Operations Center no later than 15 minutes after discovery of an actual or imminent threat against the facility including a requirement to follow this report with a written report within 60 days. Additionally, the proposed rule would require licensees to report within 4 hours to NRC incidents of suspicious activity or tampering. These proposed requirements enable NRC to quickly obtain information that could
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permit NRC to identify coordinated attacks against multiple facilities, and support the NRC effort to assess the current threat environment.

- Unarmed security personnel perform duties similar to armed security personnel, such as detection, assessment, vehicle and personnel escort, and vital area controls. The current requirements for unarmed members of the security organization state in part that these individuals shall have no physical weaknesses or abnormalities that would affect their performance of assigned duties. However, the current rule does not require unarmed personnel to pass a physical examination to verify that they meet standards for vision, hearing, or some portions of psychological qualifications. The proposed rule would include a requirement to assure that unarmed security personnel are physically capable of performing their assigned duties. Additionally, the current rule specifies a minimum age of 21 years old for armed security personnel, but does not specify a minimum age requirement for unarmed security personnel. The proposed rule would require that unarmed members attain the age of 18 prior to assignment to establish a minimum age requirement for unarmed members of the security organization at a power reactor facility. These proposed additional requirements would assure that personnel performing security functions whether, armed or unarmed, meet appropriate age, vision, hearing and psychological requirements commensurate with their assigned security duties.
 - The current rule includes daylight qualification scores of 70 percent for handguns, 80 percent for semiautomatic rifles, 50 percent for shotguns and a requirement for night fire familiarization with assigned weapons. The training order issued on April 29, 2003 imposed new requirements for the firearms training and qualification programs at power reactor licensees. The order retained the current daylight qualification scores of 70 percent for handguns, 80 percent for semiautomatic rifles and superceded the daylight qualification score of 50 percent for the shotgun. The order did not specify a qualification score for the daylight course of fire for the shotgun, only an acceptable level of proficiency. The order superceded the current rule for night fire familiarization and added courses of fire for night fire and tactical training with assigned weapons. The proposed rule would retain the qualification scores of the existing regulations and add specific qualification scores for the daylight course of fire for the shotgun and/or enhanced weapons, the night fire qualification for shotguns, handguns, semiautomatic rifles, and/or enhanced weapons and the tactical course of fire for all assigned weapons to remain consistent with the qualification scoring methodology contained in the current rule. The proposed rule would also include a requirement for a qualification score of 80 percent for the annual written exam. The current rule does not provide a requirement for an annual written exam score. Likewise, the April 29, 2003, Training Order that required licensees to develop and implement an annual written exam also did not specify a qualification score. The 80 percent demonstrates a minimum level of understanding and familiarity of the material necessary to adequately perform security related tasks. The 80 percent score would be consistent with minimum scores commonly accepted throughout the Nuclear Industry.
 - The current rule and the security orders do not specifically address the qualification or certification of instructors, or other personnel that have assigned duties and
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responsibilities for implementation of training and qualification programs at power reactor licensees. The proposed rule would include requirements that personnel who have assigned duties and responsibilities for implementation of training and qualification programs be qualified and/or certified to make determinations of security personnel suitability, working condition of security equipment, and overall determinations that security personnel are trained and qualified to execute their assigned duties.

- The current rule states in part that each individual who requires training to perform assigned security duties shall, prior to assignment, be trained to perform these tasks and duties, including the need to demonstrate the required knowledge, skill and ability in accordance with specific standards of each task. The proposed rule would specify the new requirement that the licensee include on-the-job training as part of the training and qualification program. This requirement would be in addition to formal and informal classroom training. The on-the-job training program would provide the licensee the ability to assess an individual's knowledge, skill and ability to effectively carry-out assigned duties, in a supervised manner, within the actual work environment, before assignment, to an unsupervised position.
 - The proposed training requirements identified above would provide licensees with the assurance that security personnel are prepared to assume their security duties upon assignment, and that they remain skilled in the weaponry that is available onsite. These new requirements would enhance the effectiveness of the security personnel in responding to security events.
 - The current rule and the security orders do not specifically address the qualification of personnel that have assigned duties and responsibilities for implementation of training and qualification drills and exercises at power reactor licensees. The proposed rule would include requirements for personnel that function as drill and exercise controllers to ensure these persons are trained and qualified to execute their assigned duties. Drills and exercises are key elements to assuring the preparedness of the licensee security force and assuring that these personnel are qualified provides greater assurance that the drills and exercises provide meaningful results with regard to the licensee's ability to execute the protective strategy as described in the site security plans.
 - The proposed rule would improve the integration of the access authorization requirements, fitness-for-duty requirements, and security program requirements.
 - The proposed rule would retain the requirement for a licensee to determine that an individual is trustworthy and reliable before permitting the individual to have unescorted access to nuclear power plant protected areas and vital areas. The majority of the revisions in proposed rule reflect several fundamental changes to the NRC's approach to access authorization requirements since the terrorist attacks of September 11, 2001 and the NRC's concern with the threat of an active or passive insider who may collude with adversaries to commit radiological sabotage. These changes would include: 1) an increase in the rigor of some elements of the access authorization program to provide increased assurance that individuals who have unescorted access authorization are
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trustworthy and reliable; 2) an elimination of temporary unescorted access provisions [prior to the completion of the full background check]; 3) an elimination of the provisions that permit relaxation of the program when a reactor is in cold shutdown; and 4) the addition of a new category of individuals who would be subject to § 73.56.

- The proposed rule would require licensees' access authorization programs to cover individuals whose job duties and responsibilities permit them to access or use digital computer systems that may affect licensees' operational safety and security systems, and emergency response capabilities. Historically digital computer systems have played a limited role in the operation of nuclear power plants. However, the role of computer systems at nuclear power plants is increasing as licensees take advantage of computer technology to maximize plant productivity. In general, licensees currently exclude from their access authorization programs individuals who may electronically access equipment located in the protected areas of nuclear power plants to perform their job functions, if their duties and responsibilities do not require physical unescorted access to the equipment located within protected or vital areas. However, because these individuals manage and maintain the networks that connect to equipment located within protected or vital areas and are responsible for permitting authorized and/or trusted personnel to gain electronic access to equipment and systems, they are often granted greater electronic privileges than the trusted and authorized personnel. With advancements in electronic technology and telecommunications, differences in the potential adverse impacts of a saboteur's actions through physical access and electronic access are lessening. Thus, the proposed rule would require those individuals who have authority to electronically access equipment that, if compromised can adversely impact operational safety, security or emergency preparedness of the nuclear power plants, to be determined to be trustworthy and reliable.
 - The proposed rule would also address changes in the nuclear industry's structure and business practices since this rule was originally promulgated. At the time the current § 73.56 was developed, personnel transfers between licensees (i.e., leaving the employment of one licensee to work for another licensee) with interruptions in unescorted access authorization were less common. Most licensees operated plants at a single site and maintained an access authorization program that applied only to that site. When an individual left employment at one site and began working for another licensee, the individual was subject to a different access authorization program that often had different requirements. Because some licensees were reluctant to share information about previous employees with the new employer, licensees often did not have access to the information the previous licensee had gathered about the individual and so were required to gather the necessary information again. The additional effort to collect information that another licensee held created a burden on both licensees and applicants for unescorted access authorization. But, because few individuals transferred, the burden was not excessive.
 - Since 1991, the industry has undergone significant consolidation and developed new business practices to use its workforce more efficiently. Industry efforts to better use staffing resources have resulted in the development of a transient workforce that travels from site to site as needed, such as roving outage crews. Although the industry has
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always relied on contractors and vendors (C/Vs) for special expertise and staff for outages, the number of transient personnel who work solely in the nuclear industry has increased and the length of time they are on site has decreased. Because the current regulations were written on the basis that the majority of nuclear personnel would remain at one site for years, and that licensees would maintain independent, site-specific access authorization programs and share limited information, the current regulations do not adequately address the transfer of personnel between sites.

- In light of the NRC's increased concern with an insider threat since September 11, 2001, the increasingly mobile nuclear industry workforce has heightened the need for information sharing among licensee access authorization programs, including contractor/vendor authorization programs upon which licensees rely, to ensure that licensees have information that is as complete as possible about an individual when making an unescorted access authorization decision. To address this need, the access authorization orders issued by the NRC to nuclear power plant licensees on January 7, 2003, mandated increased sharing of information. In addition, proposed § 73.56 would require licensees and contractors/vendors to collect and share greater amounts of information than under the current rule, subject to the protections of individuals' privacy that would be specified in proposed §73.56(m) [Protection of information]. As a result, individuals who are subject to this section would establish a detailed "track record" within the industry that would potentially cover their activities over long periods of time and would follow them if they change jobs and move to a new position that requires them to be granted unescorted access authorization by another licensee. This increased information sharing is necessary to provide high assurance that individuals who are granted and maintain unescorted access authorization are trustworthy and reliable when individuals move between access authorization programs. In addition, the increased information sharing would reduce regulatory burden on licensees when processing individuals who have had only short breaks between periods of unescorted access authorization.
 - Another change in the NRC's proposed approach to access authorization requirements is the result of a series of public meetings that were held with stakeholders during 2001–2004 to discuss potential revisions to 10 CFR Part, 26, "Fitness-for-Duty Programs." Part 26 establishes additional steps that the licensees who are subject to § 73.56 must take as part of the process of determining whether to grant unescorted access authorization to an individual or permit an individual to maintain unescorted access authorization. These additional requirements focus on aspects of an individual's behavior, character, and reputation related to substance abuse, and, among other steps, require the licensee and other entities who are subject to Part 26 to conduct drug and alcohol testing of individuals and an inquiry into the individual's past behavior with respect to illegal drug use or consumption of alcohol to excess, as part of determining whether the individual may be granted unescorted access authorization. However, historically there have been some inconsistencies and redundancies between the § 73.56 access authorization requirements and the related requirements in Part 26. These inconsistencies have led to implementation questions from licensees, as well as inconsistencies in how licensees have implemented the requirements. The redundancies have, in other cases, imposed an unnecessary burden on licensees.
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- The proposed changes are expected to result in more uniform implementation of the requirements, and, consequently, greater consistency in achieving the goals of § 73.56.

Exhibit 4-1
Summary of Benefits/Savings and Costs/Burdens

Net Monetary Savings (or Costs) - Total Present Value	Non-Monetary Benefits/Costs
<p>Option 1: No Action</p> <p>\$0</p>	<p><u>Qualitative Benefits and Costs:</u></p> <p>None.</p>
<p>Option 2: Proposed Action</p> <p>Industry: (\$287.5 million) using a 7% discount rate (\$394 million) using a 3% discount rate</p> <p>NRC: (\$2.5 million) using a 7% discount rate (\$2.62 million) using a 3% discount rate</p>	<p><u>Qualitative Benefits:</u></p> <p>Safeguards and Security: Increased level of assurance that nuclear power plants are safeguarded from the DBT.</p> <p>Regulatory Efficiency: Enhanced regulatory efficiency through regulatory and compliance improvements, including changes in industry's planning efforts and in NRC's review and inspection efforts.</p> <p>Public Health (Accident): Reduced risk that public health will be affected by radiological releases resulting from radiological sabotage.</p> <p>Occupational Health (Accident): Reduced risk that occupational health will be affected by radiological releases resulting from radiological sabotage.</p> <p>Off-Site Property: Reduced risk that off-site property will be affected by radiological releases resulting from radiological sabotage.</p> <p>On-Site Property: Reduced risk that on-site property will be affected by radiological releases resulting from radiological sabotage.</p> <p><u>Qualitative Costs:</u></p> <p>None.</p>

Exhibit 4-2
Industry Savings and Costs by Paragraph

Section	Average per Site		Total - All Sites			
	One-Time Saving (Cost)	Annual Saving (Cost)	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)
Section 73.55						
Update Plans - Security plan updates	(\$40,000)		(\$2,600,000)		(\$2,600,000)	(\$2,600,000)
Amend Contracts - Amend contracts with security personnel contractors	(\$2,200)		(\$143,000)		(\$143,000)	(\$143,000)
Video Capture - Install real-time and play- back/recorded video capabilities to the CAS & SAS	(\$7,000)		(\$455,000)		(\$455,000)	(\$455,000)
Escort of Vehicles - Vehicle escort relaxation		\$15,000		\$975,000	\$13,193,519	\$20,475,418
Uninterrupted Power - Install uninterrupted power to intrusion detection and assessment system	(\$46,200)		(\$3,003,000)		(\$3,003,000)	(\$3,003,000)
No Single Act (includes costs to add equivalent capabilities and to add additional protective measures)	(\$547,500)		(\$35,587,500)		(\$35,587,500)	(\$35,587,500)
Cyber Security	(\$600,000)	(\$145,000)	(\$39,000,000)	(\$9,425,000)	(\$166,537,349)	(\$236,929,039)
<i>Subtotal for Section 73.55</i>	<i>(\$1,242,900)</i>	<i>(\$130,000)</i>	<i>(\$80,788,500)</i>	<i>(\$8,450,000)</i>	<i>(\$195,132,330)</i>	<i>(\$258,242,121)</i>
Section 73.56						
Records	(\$1,900)	(\$1,250)	(\$123,500)	(\$81,250)	(\$1,222,960)	(\$1,829,785)
Protection of Information	(\$2,750)	(\$2,700)	(\$178,750)	(\$175,500)	(\$2,553,583)	(\$3,864,325)
Individuals are subject to an access authorization program	(\$1,500)	(\$1,500)	(\$97,500)	(\$97,500)	(\$1,416,852)	(\$2,145,042)
<i>Subtotal for Section 73.56</i>	<i>(\$6,150)</i>	<i>(\$5,450)</i>	<i>(\$399,750)</i>	<i>(\$354,250)</i>	<i>(\$5,193,395)</i>	<i>(\$7,839,152)</i>

Section	Average per Site		Total - All Sites			
	One-Time Saving (Cost)	Annual Saving (Cost)	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)
Section 73.58						
Safety/Security Interface - Safety-security interface procedures	(\$8,500)	(\$14,560)	(\$552,500)	(\$946,400)	(\$13,359,009)	(\$20,427,306)
<i>Subtotal for Section 73.58</i>	<i>(\$8,500)</i>	<i>(\$14,560)</i>	<i>(\$552,500)</i>	<i>(\$946,400)</i>	<i>(\$13,359,009)</i>	<i>(\$20,427,306)</i>
Section 73.71						
NRC Threat Notification - Notification of NRC Operations Center	(\$620)	(\$17)	(\$40,300)	(\$1,083)	(\$54,959)	(\$63,050)
<i>Subtotal for Section 73.71</i>	<i>(\$620)</i>	<i>(\$17)</i>	<i>(\$40,300)</i>	<i>(\$1,083)</i>	<i>(\$54,959)</i>	<i>(\$63,050)</i>
Section 73, Appendix B						
Physical/Medical Examinations for Security Personnel - Vision, hearing, medical, and physical fitness qualifications for unarmed security personnel	(\$8,800)	(\$2,200)	(\$572,000)	(\$143,000)	(\$2,507,049)	(\$3,575,061)
Physical Requirements for Security Organization Personnel - Unarmed security personnel must meet physical requirements annually		(\$3,400)		(\$221,000)	(\$2,990,531)	(\$4,641,095)
On-the-Job Training - On- the-job training & documentation and certification	(\$178,500)	(\$40,000)	(\$11,602,500)	(\$2,600,000)	(\$46,785,217)	(\$66,203,614)
Qualification of Security Instructors	(\$5,000)	(\$1,000)	(\$325,000)	(\$65,000)	(\$1,204,568)	(\$1,690,028)
Armorer Certification	(\$4,267)	(\$2,133)	(\$277,333)	(\$138,667)	(\$2,153,745)	(\$3,189,393)
<i>Subtotal for Section 73, Appendix B</i>	<i>(\$196,567)</i>	<i>(\$48,733)</i>	<i>(\$12,776,833)</i>	<i>(\$3,167,667)</i>	<i>(\$55,641,110)</i>	<i>(\$79,299,191)</i>
Section 73, Appendix C						
Drill Exercise		(\$20,000)		(\$1,300,000)	(\$17,591,358)	(\$27,300,557)
<i>Subtotal for Appendix 73, Appendix C</i>	<i>\$0</i>	<i>(\$20,000)</i>	<i>\$0</i>	<i>(\$1,300,000)</i>	<i>(\$17,591,358)</i>	<i>(\$27,300,557)</i>

Section	Average per Site		Total - All Sites			
	One-Time Saving (Cost)	Annual Saving (Cost)	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)
Section 73, Appendix G						
NRC Suspicious Activity Notification		(\$324)		(\$21,052)	(\$284,872)	(\$442,101)
Tampering Notification		(\$324)		(\$21,052)	(\$284,872)	(\$442,101)
<i>Subtotal for Appendix 73, Appendix G</i>	\$0	(\$648)	\$0	(\$42,104)	(\$569,744)	(\$884,202)
Total	(\$1,454,737)	(\$198,760)	(\$94,557,883)	(\$12,961,504)	(\$287,541,906)	(\$394,055,578)

4.2 Backfit Analysis

This section presents the NRC's evaluation of changes in the proposed rule in accordance with the Backfit Rule, 10 CFR 50.109.

The analysis examines the aggregation of the individual Part 73 rule requirements that constitute backfits, which excludes (1) matters that are not subject to the Backfit Rule, and (2) matters that do not fall within the definition of "backfitting" as defined in the Backfit Rule and discussed below. The backfit analysis examines the impacts of the rule relative to the baseline used in the regulatory analysis, which consists of existing requirements including the recently issued orders.

The backfit analysis examines the aggregation of the subset of proposed Part 73 regulatory requirements that constitute backfits as defined in 10 CFR 50.109(a)(1). These provisions are identified later in this section. The analysis excludes individual requirements that are not subject to the Backfit Rule or that are not backfits by definition, which include requirements that fall into one or more of the following categories.

- Administrative matters. Revisions that make minor administrative changes, such as correction of typographic errors, correction of inconsistencies, relocating requirements from one section to another, and combining existing requirements into a single section.
- Information collection and reporting requirements. Revisions that either amend existing information collection and reporting requirements or impose new information and collection and reporting requirements, which are not considered to be backfits, as set forth in the Committee to Review Generic Requirements (CRGR) charter.
- Clarifications. Revisions that clarify current requirements to assure consistent understanding and implementation of the NRC's original intent for these requirements. These revisions remove the ambiguities that produced regulatory uncertainty without changing the underlying requirements stated in these sections.
- Permissive relaxations/Voluntary alternatives. Revisions that permit, but do not require, relaxations or alternatives to current requirements (i.e., licensees are free to either comply with current requirements or adopt the relaxed requirements/voluntary alternative as a binding requirement).
- Provisions required under the recent Commission orders (Interim Compensatory Measures (ICM), February 25, 2002; Access Authorization, January 7, 2003; Revised Design Basis Threat, April 29, 2003, and; Security Personnel Training and Qualification Requirements (Training), April 29, 2003) are excluded from the backfit analysis under the exclusion in 10 CFR 50.109(a)(4).

The NRC then evaluated the aggregated set of requirements constituting backfits in accordance with 10 CFR 50.109 to determine if the costs of implementing the rule would be justified by a substantial increase in public health and safety or common defense and security.

In performing this analysis, the NRC considered the quantitative and qualitative costs and benefits of the rule, as discussed below.

Proposed Security Regulatory Requirements that Constitute Backfits

- Security plans must be revised to incorporate amended requirements.
 - Target set equipment that is in maintenance or out of service, or other changes to site conditions that could adversely affect safety or security, must be identified by the safety-security interface process in accordance with section 73.58.
 - If a contracted security force is used to implement the onsite physical protection program, the licensee's written agreement with the contractor must be revised to clearly state the following additional conditions: (1) An individual may not be assigned to any position involving detection, assessment, or response to unauthorized activities unless that individual has satisfied the requirements of § 73.56. (2) Any license for possession and ownership of enhanced weapons will reside with the licensee.
 - Additional requirements on control of openings in the protected area boundary.
 - The CAS and SAS must be equipped with functionally equivalent assessment, monitoring, observation, and surveillance capabilities to support the effective implementation of the approved security plans and the licensee protective strategy in the event that either alarm station is disabled.
 - No single act can cause the loss of both alarm stations.
 - Uninterruptible power supplies to maintain detection, assessment, and communications capabilities.
 - Assessment capabilities must include specialized video surveillance equipment.
 - The licensee shall ensure the onsite individual with the authority to direct the activities of the security organization is assigned no other duties that would interfere with performing this duty in accordance with the approved security plans and licensee protective strategy.
 - All individuals assigned to escort personnel must be provided with a means of timely communication.
 - Licensees must develop and implement safety/security interface procedures.
 - Unarmed members of the security organization must be 18 or older.
 - Licensees must test the vision, hearing, and medical condition of unarmed members of the security organization assigned to "unsupervised" duties involving detection, assessment, and response.
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- Unarmed security personnel must, on an annual basis, meet physical requirements commensurate with their duties.
- Licensees must provide on-the-job training to security personnel including 40 hours of training to contingency response personnel.
- Licensees must use the guidelines approved by the U. S. Department of Justice for training, receiving, possessing, transporting, importing, and use of automatic weapons.
- Licensees must conduct annual firearms familiarization training.
- Licensees must implement enhanced access authorization requirements.

Collectively, the individual requirements in the proposed rule that qualify as backfits result in an estimated net cost of approximately \$298 million to industry over the next 34 years (present value), assuming a 7-percent discount rate, or approximately \$412 million assuming a 3-percent discount rate.

For the average site, these backfits would mean an initial one-time cost of approximately \$1.43 million, followed by annual costs of about \$1.16 million per year. For industry as a whole, NRC estimates that the backfits would result in approximately \$93.0 million in one-time costs, and about \$15.2 million in annual costs.

With regard to safety benefits afforded by the Part 73 rule's provisions, as documented in Section 4.1 of the regulatory analysis, the NRC considered them in qualitative terms. (See Section 3.2 of this document for a discussion of the issues that would be involved in quantifying the benefits of the proposed rule.) NRC also qualitatively determined whether the costs of the rule would be justified in light of the safety benefits. By contrast, the NRC evaluated costs and cost reductions in quantitative terms, as documented in Appendix A of the regulatory analysis.

In performing this analysis, the NRC considered the nine factors in 10 CFR 50.109, as follows:

- (1) Statement of the specific objectives that the proposed backfit is designed to achieve;

The rulemaking constitutes an integrated regulatory initiative directed at the singular regulatory matter of security requirements at nuclear facilities. The goals of the proposed rule would be as follows:

- (A) Make generically applicable security requirements imposed by Commission orders issued after the terrorist attacks of September 11, 2001, based upon experience and insights gained by the Commission during implementation.
 - (B) Fulfill certain provisions of the Energy Policy Act of 2005.
 - (C) Add several new requirements that resulted from insights from implementation of the security orders, review of site security plans, and
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implementation of the enhanced baseline inspection program and force-on-force exercises.

(D) Update the regulatory framework in preparation for receiving license applications for new reactors.

(E) Impose requirements to assess and manage site activities that can adversely affect safety and security.

(2) General description of the activity that would be required by the licensee or applicant in order to complete the backfit;

In general terms, the proposed Part 73 rule would ensure that all licensees consistently implement new and existing security measures. These new measures include developing and implementing safety-security interface procedures to avoid adverse safety-security interactions. The backfits include several requirements targeted at enhancing intrusion detection and assessment system technologies in the CAS and SAS. These enhancements include: equivalent systems in the CAS and SAS; uninterruptible power to the intrusion detection and assessment system; and advanced video surveillance technology. The backfits required in Appendix B address physical qualifications and training for security personnel. The proposed rule extends armed security personnel requirements for vision, hearing, medical, and physical qualifications (commensurate with their duties) to unarmed security personnel. In terms of training, the proposed rule requires on-the-job training for armed and unarmed members of the security organization, use of qualification scores for weapon training, qualification of training instructors, and qualification or certification of drill and exercise controllers. The proposed rule would maintain the intent of the security orders by establishing the requirement for a cyber security program to protect any systems that can, if compromised, adversely impact safety, security or emergency preparedness. Detailed analysis of the activities and procedural changes required by the proposed rule are set forth in Appendix A of regulatory analysis.

(3) Potential change in the risk to the public from the accidental off-site release of radioactive material;

The rulemaking is intended to provide added assurance that the risk of offsite releases as a result of breaches in security at nuclear power plants is acceptably low and consistent with the NRC's Safety Goals. However, the reduction in risk to the public from offsite releases of radioactive materials has not been fully quantified because there is insufficient information and modeling to support such quantification (see Section 3.2).

(4) Potential impact on radiological exposure of facility employees;

The rulemaking would provide added assurance that nuclear industry workers are not subjected to unnecessary radiological or hazardous chemical exposures as the result of a breach in security that causes an accident leading to a release of radiation which workers then are exposed to as the result of mitigative and/or clean-up activities.

(5) Installation and continuing costs associated with the backfit, including the cost of facility downtime or the cost of construction delay;

The backfit analysis for the Part 73 rule sets forth the NRC's estimate of the initial costs for implementing the major elements of the proposed Part 73 rule, and the ongoing costs and savings to the licensees. The estimated one-time industry net cost associated with the backfits would be approximately \$93.0 million (or approximately \$1.43 million for the average program), and the annually recurring cost would be approximately \$15.2 million (or approximately \$1.16 for the average program). Combining these initial and annual costs, this analysis estimates that the backfits associated with the proposed Part 73 rule would cost industry approximately \$298 million (present value, assuming a 7-percent discount rate) to \$412 million (present value, assuming a 3-percent discount rate).

(6) The potential safety impact of changes in plant or operational complexity, including the relationship to proposed and existing regulatory requirements;

The proposed Part 73 rule would make changes with respect to the design of a nuclear power plant. Specifically, the changes involve the following:

- Both the central alarm station (CAS) and the secondary alarm station (SAS) must have equivalent functional capabilities and not be susceptible to both being lost to a single act;
- Advanced video surveillance systems must be installed;
- The intrusion detection system must have uninterrupted power source;

For new reactors:

- The interior of the SAS must not be visible from the perimeter of the protected area;
- The SAS must be bullet-resistant; and
- The SAS must be located within the perimeter of the protected area.

These design changes do not affect all nuclear power plants because some currently meet these requirements. This rule is not expected to have a significant effect on facility complexity.

The proposed rule would require modifications to training and safety/security interface procedures. These "costs" in terms of increased complexity in security procedures are detailed in Appendix A of the regulatory analysis. The added complexity is not significant and will not substantially impact licensees' operational practices or result in substantial indirect costs.

(7) The estimated resource burden on the NRC associated with the proposed backfit and the availability of such resources;

The rulemaking would result in a substantial increase in one-time expenditures of agency resources for the NRC to inspect licensees' revised security plans. The NRC estimates that in the first year of implementation, it would require 8 full-time equivalents to review the updated security plans from the 65 sites. In addition, the NRC estimates that it would require 3 full-time equivalents and \$600,000 in contractor support to revise implementation guidelines and inspection procedures. These activities would result in a one-time cost of approximately \$2.46 million.

The rulemaking would not result in a substantial increase in annual expenditures of agency resources.

(8) The potential impact of differences in facility type, design or age on the relevancy and practicality of the proposed backfit;

The proposed security requirements in Part 73 do not directly relate to the facility type, design or age. Although the benefits and costs attributable to the proposed Part 73 rule will vary for a variety of site-specific reasons (e.g., facility layout, geography, choice of protective strategies), the NRC does not believe they will vary based upon the facility type, design or age.

(9) Whether the proposed backfit is interim or final and, if interim, the justification for imposing the proposed backfit on an interim basis.

The proposed backfit, when implemented later at the final rule stage, would be final.

The NRC finds that the backfits contained in the proposed Part 73 rule, when considered in the aggregate, would constitute a substantial increase in protection to public health and safety and security. Ordinarily, NRC would prepare a quantitative assessment of the projected benefits of the proposed backfit. For reasons that were discussed in Section 3.2, however, it is not feasible to quantify the safety benefits of the proposed rule. Nevertheless, NRC believes that the rule is warranted for several qualitative reasons.

First, the proposed rule would provide assurance of the licensee's capability to protect the power reactor sites against the DBT defined in § 73.1, in accordance with 10 CFR 73.55(a). Second, there have been technological advances in intrusion detection systems that are necessary to maintain an effective protection system and failure to implement these technologies could significantly diminish assurance that the physical protection system will perform as intended during a safeguards contingency. Third, the rule would increase the assurance that no single act could remove both the SAS and CAS while also making the CAS and SAS functionally equivalent. Fourth, the rule would increase licensees' security program effectiveness through procedures such as on-the-job training and increased qualification training. NRC believes that these factors represent a substantial increase in safety and that the proposed rulemaking has merit on the basis of these stated qualitative reasons.

In light of the findings above, the NRC submits that the qualitative safety benefits of the proposed Part 73 rule provisions that qualify as backfits, considered in the aggregate, would constitute a substantial increase in protection to public health and safety and the common

defense and security, and that the costs of this rule would be justified in view of the increase in protection to safety and security provided by the backfits embodied in the proposed rule.

4.3 Disaggregation

In order to comply with the guidance provided in Section 4.3.2 (“Criteria for the Treatment of Individual Requirements”) of the Regulatory Analysis Guidelines, the NRC conducted a screening review to ensure that the aggregate analysis does not mask the inclusion of individual rule provisions that are not cost-beneficial when considered individually and not necessary to meet the goals of the rulemaking. Consistent with the Regulatory Guidelines, the NRC evaluated, on a disaggregated basis, each new regulatory provision expected to result in incremental costs. Based on this screening review, the NRC selected for further consideration the four proposed requirements expected to have the largest cost impacts on licensees. The NRC believes that each of these provisions is necessary and cost-justified based on its resulting qualitative benefits, as discussed below.

Cyber Security measures would require an assessment sufficient to provide protection against the cyber threats. As licensees implement digital upgrades for many systems at their plants the potential for cyber threats will be increased. The proposed requirements would maintain the intent of the security orders by establishing the requirement for a cyber security program to protect any systems that can, if compromised, adversely impact safety, security or emergency preparedness. The resulting total annual cost to the industry is \$9.4 million.

No Single Act Removing both SAS and CAS requires the licensees to ensure that a single act cannot remove the capability of both alarm stations to detect and assess unauthorized activities, respond to an alarm, summon offsite assistance, implement the protective strategy, provide command and control, or otherwise prevent significant core damage and spent fuel sabotage. This proposed requirement would ensure continuity of response operations during a security event by ensuring the maintenance of those detection, assessment, and communications functions required to effectively implement the licensee protective strategy despite the loss of one or the other alarm stations. Further, licensees are required to ensure that intrusion alarms annunciate and video assessment equipment images display concurrently in both alarm stations and that both alarm stations are designed and equipped with functionally equivalent capabilities for assessment, monitoring, observation, and surveillance. These requirements would ensure that assessment, monitoring, observation, and surveillance functions would be maintained by either the CAS or SAS in the event that one or the other is disabled during a security event. Some sites, but not all, already meet these requirements. Therefore, these provisions also will help ensure that all licensees consistently implement measures to enhance security and safety at nuclear power plants. The NRC estimates that these new requirements will impose a total one-time cost of \$35.6 million on all sites.

On-the-Job Training requires licensees to provide on-the-job training to security personnel including an additional 40 hours of on-the-job training for each armed member of the security organization (that functions as part of the contingency response)

prior to his or her assignment. The NRC estimates that this new requirement will impose a total annual cost of approximately \$2.6 million on all sites. The added training requirements in this would provide licensees with the assurance that security personnel are prepared to assume their security duties upon assignment. This would enhance the effectiveness of the security personnel in responding to security events. Most sites already provide some-amount of on-the-job training to the armed and unarmed members of the security organization. Therefore, this provision also helps ensure that all licensees consistently implement measures to enhance security and safety at nuclear power plants.

Uninterruptible back-up power requirements in the proposed rule would provide an enhanced level of assurance that a licensee can maintain detection, assessment and communication capabilities required to defend the facility against the design basis threat. This new requirement would reduce the risk of losing detection, assessment, and communication capabilities during a loss of the normal power supply. There is a one-time cost for this requirement of \$3.0 million.

4.4 Safety Goal Evaluation

Safety goal evaluations are applicable only to regulatory initiatives considered to be generic safety enhancement backfits subject to the substantial additional protection standard at 10 CFR 50.109(a)(3).⁵ The current rulemaking would provide added assurance that licensees are maintaining adequate safeguards against radiological sabotage and implements certain provisions of the EAct 2005. Some aspects of the rule may qualify as generic safety enhancements because they may affect the likelihood of core damage or spent fuel damage, which generally are the focus of a quantitative safety goal evaluation. However, the magnitude of this change is not readily quantifiable due to uncertainties discussed in Section 3.2 above. A more dominant effect of the rule is to reduce the probability of other types of damage associated with a wide array of acts of sabotage, although this effect is equally difficult to quantify. Because the change in safety associated with the rulemaking cannot be quantified, the proposed regulatory changes cannot be compared to NRC's safety goals.

4.5 CRGR Results

This section addresses regulatory analysis information requirements for rulemaking actions or staff positions subject to review by the Committee to Review Generic Requirements (CRGR). All information called for by the CRGR is presented in this regulatory analysis, or in the Federal Register Notice for the proposed Part 73 rule. As a reference aid, Exhibit 4-4 provides a cross-reference between the relevant information and its location in this document or the Federal Register Notice.

⁵ A safety goal evaluation is not needed, therefore, for new requirements falling within the backfit exceptions at 10 CFR 50.109(a)(4)(i)-(iii).

Exhibit 4-4
Specific CRGR Regulatory Analysis Information Requirements

CRGR Charter Citation	Information Item to be Included in a Regulatory Analysis Prepared for CRGR Review	Where Item is Discussed
IV.B(1)	Proposed generic requirement or staff position as it is proposed to be sent out to licensees. When the objective or intended result of a proposed generic requirement or staff position can be achieved by setting a readily quantifiable standard that has an unambiguous relationship to a readily measurable quantity and is enforceable, the proposed requirements should specify the objective or result to be attained rather than prescribing how the objective or result is to be attained.	Proposed rule text in Federal Register Notice.
IV.B(iii)	The sponsoring office's position on whether the proposed action would increase requirements or staff positions, implement existing requirements or staff positions, or relax or reduce existing requirements or staff positions.	Regulatory Analysis, Section 4.1.
IV.B(iv)	The proposed method of implementation.	Regulatory Analysis, Section 6.
IV.B(vi)	Identification of the category of power reactors or nuclear materials facilities/activities to which the generic requirement or staff position will apply.	Regulatory Analysis, Section 3.2.2.
IV.B(vii) IV.B(viii))	If the proposed action involves a power reactor backfit and the exceptions at 10 CFR 50.109(a)(4) are not applicable, the items required at 10 CFR 50.109(c) and the required rationale at 10 CFR 50.109(a)(3) are to be included.	Regulatory Analysis, Section 4.2.
IV.B(x)	For proposed relaxations or decreases in current requirements or staff positions, a rationale is to be included for the determination that (a) the public health and safety and the common defense and security would be adequately protected if the proposed reduction in requirements or positions were implemented, and (b) the cost savings attributed to the action would be substantial enough to justify taking the action.	Federal Register Notice for the proposed rule.
IV.B(xii)	Preparation of an assessment of how the proposed action relates to the Commission's Safety Goal Policy Statement.	Regulatory Analysis, Section 4.4.

5. Decision Rationale

5.1 Regulatory Analysis

Relative to the “no-action” alternative, the proposed rule would result in a net cost estimated as approximately \$290 million (total present value over a 34-year period), assuming a 7-percent discount rate, or approximately \$396.6 million assuming a 3-percent discount rate. All of this cost would accrue to industry, except for approximately \$2.5 million (7 percent) or \$2.62 million (3 percent) that would accrue to the NRC. The rule would result in one-time industry costs of approximately \$94.6 million. This is equivalent to approximately \$1.45 million for the average reactor site. The proposed rule language would generate annual industry costs of about \$13.0 million (**\$199,000 per site**). Offsetting this net cost, the NRC believes that the rule would result in substantial non-quantified benefits related to safety and security, as well as enhanced regulatory efficiency and effectiveness. The analysis presents these benefits in Section 4.1 of this document. Based on the NRC’s assessment of the costs and benefits of the proposed rule on licensee facilities, the agency has concluded that the proposed rule provisions would be justified.

5.2 Backfit Analysis

The NRC conducted a backfit analysis of the proposed Part 73 rule relative to the backfit requirements in 10 CFR 50.109. The proposed rule does constitute a backfit because it would impose new requirements on licensees. These new measures include developing and implementing safety-security interface procedures to avoid adverse safety-security interactions; enhancing intrusion detection and assessment system technologies in the CAS and SAS; ensuring duplicative capability in the CAS and SAS; extending armed security personnel requirements for vision, hearing, medical, and physical qualifications to unarmed security personnel; conducting on-the-job training for new armed and unarmed members of the security organization and annual firearms familiarization training for all armed security personnel. This falls under the definition of a backfit because such efforts would be new and would be the result of a change in NRC’s position.

The NRC believes that the rule is cost-justified for several qualitative reasons. First, the proposed rule would provide additional assurance of licensees’ capability to protect the power reactor sites against an external assault by the DBT. Second, the proposed rule would require equivalent functionality of the SAS and CAS, uninterruptible power supplies, and extension of the “no single act” criterion to key alarm station functions. In this regard the proposed rule would also result in the deployment of certain technological advances in intrusion detection systems that are necessary during a safeguards contingency. Third, in recognition of advancing digital technology, the proposed rule would maintain the intent of the security orders by establishing the requirement for a cyber security program to protect any systems that can, if compromised, adversely impact safety, security or emergency preparedness. Fourth, the rule would increase licensees’ security program effectiveness through additional training and procedures such as safety-security interface, on-the-job training and annual firearms familiarization. NRC believes that these factors represent a substantial increase in safety and that the proposed rulemaking has merit on the basis of these stated qualitative reasons.

6. Implementation

This section identifies how and when the proposed action would be implemented, the required NRC actions to ensure implementation, and the impact on NRC resources.

6.1 Schedule

The action would be enacted through a proposed rule, resolution of public comments, and a final rule, with promulgation of the final rule within 180 days from the date of publication. The staff has not identified any impediments to implementing the recommended alternative.

6.2 Impacts on Other Requirements

As discussed in Section 4.1, affected licensees would experience most of the impact of the revisions to 10 CFR Part 73. The NRC expects the rulemaking will have a substantial impact on one-time expenditures of agency resources. The impact results from NRC's need to review licensees' revised security plans. The NRC estimates that in the first year of implementation, it will require 8 full-time equivalents to review the updated security plans from the 65 sites. In addition, the NRC estimates that it would require 3 full-time equivalents and \$600,000 in contractor support to revise implementation guidelines and inspection procedures. These activities would result in a one-time cost of approximately \$2.46 million. However, the NRC does not expect that the rulemaking subsequently will result in a substantial increase in annual expenditures of agency resources.
