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# **Regulatory Analysis for Supplemental Proposed Enhanced Weapons Rule (10 CFR Part 73)**

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## **U.S. Nuclear Regulatory Commission**

Office of Nuclear Reactor Regulation

Office of Nuclear Security and Incident Response

Office of Nuclear Material Safety and Safeguards





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## Abbreviations and Acronyms

ADAMS	Agencywide Documents Access Management System
AEA	Atomic Energy Act of 1954, as amended
AG	U.S. Attorney General
CFR	<i>Code of Federal Regulations</i>
COL	combined license
DG	draft regulatory guide
DOJ	U.S. Department of Justice
FBI	U.S. Federal Bureau of Investigation
FR	<i>Federal Register</i>
ISFSI	independent spent fuel storage installation
NICS	National Instant Criminal Background Check System
NRC	U.S. Nuclear Regulatory Commission
NUREG	NRC technical report designation
SAMA	severe accident mitigation alternatives
SSNM	strategic special nuclear material

## Abstract

On February 3, 2011, the NRC published in the *Federal Register* a new proposed rule, “Enhanced Weapons, Firearms Background Checks and Security Event Notifications” (76 FR 6200), referred to as the enhanced weapons rulemaking. The 2011 proposed rule would add §§ 73.18 and 73.19 to Title 10 of the *Code of Federal Regulations* (10 CFR) and would modify the existing 10 CFR 73.51. The U.S. Nuclear Regulatory Commission (NRC) proposes to supplement the proposed regulations related to background checks that support applications for authorities allowed under Section 161A of the Atomic Energy Act of 1954, as amended, (AEA). This document presents a draft regulatory analysis of the supplemental proposed rule for the enhanced weapons rulemaking (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15204A313) and the associated Draft Regulatory Guide (DG) 5020, Revision 1, “Applying for Enhanced-Weapons Authority, Applying for Preemption Authority, and Performing Firearms Background Checks under 10 CFR Part 73” (ADAMS Accession No. ML14322A847). In particular, the draft regulatory analysis evaluates the benefits and costs associated with requiring firearms background checks for only those licensees and certificate holders that request the authorities allowed under Section 161A of the AEA.

## Executive Summary

The U.S. Nuclear Regulatory Commission (NRC) proposed new regulations on February 3, 2011, (76 FR 6200) that would implement the NRC's statutory authority of Section 161A of the AEA. The rulemaking is referred to as the enhanced weapons rulemaking. Subsequently, with the approval of the U.S. Attorney General, the NRC published Revision 1 to the Firearms Guidelines (*Federal Register* (FR) notice, 79 FR 36100; June 25, 2014), which describes the NRC's statutory authorities and obligations under Section 161A of the AEA. In particular, the Firearms Guidelines state that only those regulated entities that apply for Section 161A authorities need to perform background checks through the U.S. Federal Bureau of Investigation's (FBI) National Instant Criminal Background Check System (NICS) for their security personnel requiring access to covered weapons (weapons otherwise prohibited by State, local and other Federal firearms laws). The NRC proposes to supplement the enhanced weapons rulemaking to reflect the revisions to the Firearms Guidelines.

The supplemental proposed rule results in fewer regulated entities being required to conduct firearms background checks on their security personnel. In addition, the NRC would need to process fewer firearms background check submittals. Therefore the supplemental proposed rule would avert costs to regulated entities ("the industry") and to the NRC.

The averted costs from the supplemental proposed rule are in the form of implementation (one-time) and operational (recurring and annual) costs. The supplemental proposed rule would result in an averted cost estimated between \$37.8 million and \$56.6 million (at a 7 percent and 3 percent discount rate, respectively). Although the supplemental proposed rule is necessary because of the revised Firearms Guidelines, it also represents a cost benefit to both the industry and the NRC.



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## 1. Introduction

This document presents a draft regulatory analysis of the U.S. Nuclear Regulatory Commission's (NRC's) supplemental proposed rule for the enhanced weapons rulemaking (Agencywide Documents Access Management System (ADAMS) Accession No. ML15204A313) and the associated Draft Regulatory Guide (DG) 5020, Revision 1, "Applying for Enhanced-Weapons Authority, Applying For Preemption Authority, and Performing Firearms Background Checks Under 10 CFR Part 73" (ADAMS Accession No. ML14322A847). A discussion of backfitting for the supplemental proposed rule is presented in Appendix A. The recommended regulatory action modifies proposed regulations under §§ 73.18, 73.19 and existing regulations under § 73.51 of Title 10 of the *Code of Federal Regulations* (10 CFR) related to background checks that support applications for authorities allowed under Section 161A of the Atomic Energy Act of 1954, as amended (AEA). These authorities (also referred to as "Section 161A authorities") include stand-alone preemption authority and combined enhanced weapons authority and preemption authority.

## 2. Statement of the Problem and Objective

The NRC staff is proposing regulations that would implement its authority under Section 161A of the AEA. On September 11, 2009, with the approval of the U.S. Attorney General (AG), the NRC published the Firearms Guidelines (74 FR 46800). These guidelines describe the NRC's statutory authorities and obligations under Section 161A of the AEA. On June 25, 2014, with the approval of the AG, the NRC published Revision 1 to the Firearms Guidelines (79 FR 36100).

The NRC proposed new regulations on February 3, 2011 (76 FR 6200), that would implement the NRC's new statutory authority of Section 161A of the AEA. The NRC staff is now proposing further revisions to those proposed regulations that will address how to apply for combined enhanced weapons authority and preemption authority, as well as stand-alone preemption authority. The revisions also will require firearms background checks for only licensees and certificate holders who apply for the authorities.

### 2.1. Background

Section 161A.d of the AEA provides that the Commission shall, with the approval of the AG, develop and promulgate guidelines for the implementation of this statute. This includes preemption authority only or combined preemption and enhanced weapons authority. The statute also includes provisions for firearms background checks for the security personnel of those licensees and certificate holders who apply for Section 161A authorities. The enhanced weapons rulemaking implements the statute. This supplemental proposed rule would conform the rulemaking with the revised Firearms Guidelines published in the *Federal Register* on June 25, 2014 (79 FR 36100).

The NRC staff prepared a draft regulatory analysis for the proposed rule published on February 3, 2011 (76 FR 6226). Within the draft regulatory analysis, the NRC staff analyzed the benefits and costs of implementation of Section 161A of the AEA through the proposed modifications to 10 CFR Part 73 and development of regulatory guidance. Subsequent to the 2011 proposed rule, the NRC supplemented the enhanced weapons rule (78 FR 2218; January 10, 2013), changing the number of licensees included in the scope and the number of licensees affected by the firearm background check requirements. The NRC staff updated the draft regulatory analysis in the 2013 supplemental proposed rule to reflect the addition of

at-reactor independent spent fuel storage installations (ISFSIs) within the classes of facilities eligible to apply for Section 161A authorities.

The NRC staff recommends conforming the proposed implementing regulations to the Firearms Guidelines issued by the Commission, with the approval of the AG. In this draft regulatory analysis, the NRC staff provides an analysis of only the benefits and costs resulting from the above-stated supplemental proposed regulations. The NRC staff considers the benefits and costs for an individual licensee associated with applying for enhanced weapons authority or for preemption authority to be unchanged from those described by the draft regulatory analysis in the 2011 proposed rule.

## **2.2. Statement of the Problem**

On February 3, 2011, the NRC published proposed regulations in the *Federal Register* (76 FR 6200) that would implement the provisions of Section 161A. It also made several changes to the security event notification requirements in 10 CFR Part 73 to address imminent attacks or threats against power reactors, as well as suspicious events that could indicate adversaries conducting reconnaissance or surveillance, or challenging security systems. Subsequent to publication of the 2011 proposed rule, the NRC and the U.S. Department of Justice (DOJ) revised the Firearms Guidelines. The revision updated background check requirements such that only those licensees and certificate holders that apply for Section 161A authority would need to submit information regarding their security personnel for firearms background checks using NICS. This supplemental proposed rule implements the revisions to the Firearms Guidelines.

The costs to a single regulated entity that applies for Section 161A authorities would not change because of this supplement to the proposed enhanced weapons rulemaking. However, the supplement would reduce the aggregate costs of the proposed regulation, because the NRC staff expects that only some of the eligible regulated entities will apply for Section 161A authorities.

## **2.3. Objective**

The objective of the enhanced weapons rulemaking is to implement the statutory provisions mandated by Section 161A of the AEA. The proposed enhanced weapons rulemaking would add 10 CFR 73.18, "Authorization for Use of Enhanced Weapons and Preemption of Firearms Laws," and 10 CFR 73.19, "Firearms Background Checks for Armed Security Personnel," and would amend 10 CFR 73.51, "Requirements for the Physical Protection of Stored Spent Nuclear Fuel and High-Level Radioactive Waste." The supplemental proposed rule would modify the background check process, which was proposed in Sections 73.18 and 73.19 such that only those licensees and certificate holders who apply for Section 161A authorities would be required to conduct firearms background checks for their security personnel requiring access to covered weapons (weapons otherwise prohibited by State, local and other Federal firearms laws).

The February 2011 proposed enhanced weapons rule and this supplemental proposed rule apply to: operating power reactor sites; decommissioning power reactor sites; new power reactor sites licensed under 10 CFR Parts 50 (Domestic Licensing of Production and Utilization Facilities) or 52 (Licenses, Certifications, and Approvals for Nuclear Power Plants), planned or under construction; Category I strategic special nuclear material (SSNM) sites; and ISFSI co-located at power reactors.

### **3. Identification and Analysis of Alternative Approaches**

This rulemaking responds to the statutorily mandated provisions of Section 161A of the AEA and the direction provided by the Firearms Guidelines, so there are no acceptable alternatives to rulemaking. Application for combined enhanced weapons authority and preemption authority or stand-alone preemption authority under Section 161A is voluntary. Also, licensee and certificate holder compliance with the firearms background checks is conditioned upon the application for enhanced weapons authority or preemption authority. Thus, it is also considered voluntary for the purposes of this draft regulatory analysis. This section presents an analysis of the alternatives that the NRC staff considered in meeting the regulatory objectives identified in Section 2. The NRC staff considered the relative benefits and costs between the status quo and this supplement.

#### **3.1. Alternative 1: No Action to Additionally Supplement the Proposed Rule**

Under Alternative 1, the “no-action” alternative would represent the 2011 proposed rule as supplemented in January 2013. The 2011 proposed rule would designate classes of licensees and certificate holders as eligible to apply for Section 161A authorities. All licensees and certificate holders falling within these designated classes would be required to conduct firearms background checks on their security personnel, whether or not these licensees or certificate holders intended to apply for Section 161A authorities. Licensees and certificate holders would incur costs to establish and maintain firearms background check programs and train staff on the firearms background check process. The NRC would incur costs to process firearms background checks.

Regulated entities within the designated classes would be required to conduct firearms background checks for their security personnel once the rule is effective and would need to resubmit their security personnel for firearms background checks no later than every 3 years to comply with the proposed regulation. New security personnel would need to have a firearms background check before being assigned duties requiring access to covered weapons (weapons otherwise prohibited by State, local and other Federal firearms laws). Firearms background checks entail completing a fingerprint check and submittal of NRC Form 754 to the FBI’s NICS system. There is a fee for each NRC Form 754 submittal (used for firearms background checks). In addition, regulated entities would be required to provide firearms background check process training to their security personnel once the rule is effective and in accordance with their Firearms Background Check Plan (NRC staff expects annual refresher training). Finally, regulated entities will notify the NRC of events that disqualify their security personnel from access to covered weapons and keep records of staff removed from access to covered weapons.

The NRC will receive the NRC Form 754 submittals and transmit them to the FBI for the NICS check. The NRC also will communicate the result of the NICS check to the licensee. On an ongoing basis, the NRC will maintain the firearms background check program which includes processing the 3-year renewals of licensee firearms background checks. Finally, the NRC will review the notifications by regulated entities of events that disqualify their security personnel from access to covered weapons.

However, in this alternative the NRC would not comply with the mandated obligations of Section 161A of the AEA, as specified by the Firearms Guidelines. Under this alternative, the requirements from the 2011 proposed rule would be codified, which would not conform to the 2014 Firearms Guidelines. For example, under this alternative all regulated entities eligible to apply for Section 161A authorities would be required to conduct firearms background checks.

This alternative would also result in costs to licensees and certificate holders in the designated classes that do not apply for Section 161A authorities, by requiring them to conduct firearms background checks.

### **3.2. Alternative 2: Amend the Proposed Rule, as Currently Supplemented, To Modify Background Check Requirements related to Section 161A Authorities**

Under this alternative, the NRC would supplement the 2011 proposed rule by changing the firearms background check requirements to comply with the 2014 Firearms Guidelines. This change would affect the provisions in 10 CFR 73.18, "Authorization for Use of Enhanced Weapons and Preemption of Firearms Laws," 10 CFR 73.19, "Firearms Background Checks for Armed Security Personnel," and 10 CFR 73.51, "Requirements for the Physical Protection of Stored Spent Nuclear Fuel and High-Level Radioactive Waste." Specifically, the supplemental proposed rule would modify the firearms background check process such that only those licensees and certificate holders who apply for Section 161A authorities would be required to submit security personnel for firearms background checks. Also, periodic firearms background checks would be required at least once every 5 years; rather than every 3 years. This alternative differs from Alternative 1 in the number of affected regulated entities and the frequency of periodic firearms background checks. The NRC staff does not anticipate a large number of applicants for Section 161A authorities. Therefore under the supplemental proposed rule, only a fraction of the licensees and certificate holders in the designated classes would incur costs. For the purposes of this draft regulatory analysis, the NRC staff assumes that seven sites with operating reactors, one decommissioning reactor site, and two Category I SSNM sites apply for Section 161A authorities (See Section 4.2.2 for a discussion of this assumption).

Costs to individual applicants for Section 161A authority are unchanged as a result of this supplemental proposed rule. The supplemental proposed rule would avert costs to regulated entities that do not apply for Section 161A authorities. Regulated entities that do not apply for Section 161A authority would not need to submit applications for Section 161A authority to the NRC, conduct firearms background checks for their security personnel, develop a Firearms Background Check Plan, maintain a firearms background check program, or provide firearms background check training for their security personnel.

As a result of the supplemental proposed rule, the NRC and the FBI also would avert costs compared to the 2011 proposed rule. The NRC and FBI would process fewer initial and 5-year renewal submittals of NRC Form 754. Finally, the NRC will review fewer notifications by regulated entities of events that disqualify their security personnel from access to covered weapons.

Other regulatory activities associated with the enhanced weapons rulemaking, such as applying for Section 161A authorities and updating implementation procedures and inspection procedures, are unchanged as a result of this supplemental proposed rule, and therefore are not included in this analysis. The draft regulatory analysis performed to support the 2011 proposed rule assessed those benefits and costs and they will be updated and included in the regulatory analysis that accompanies the final rule.

## 4. Evaluation of Benefits and Costs

This section evaluates the incremental benefits and costs expected to result from this supplemental proposed rulemaking when compared to the no-action alternative, and are presented in two subsections. Section 4.1 identifies attributes that the rulemaking is expected to affect. Section 4.2 describes the method used to evaluate benefits and costs.

### 4.1. Identification of Affected Attributes

This rulemaking is expected to affect the following attributes. Their impacts are quantified where possible. An uncertainty analysis is performed to report benefit and cost estimate confidence levels and to identify those variables that most affect the variation in the results distribution. Impacts to security-related attributes are considered qualitatively because estimates of occurrences of possible attacks and their successful repulsions are unknown.

- Industry Implementation — As a result of the supplemental proposed rule, regulated entities that do not apply for Section 161A authorities would no longer have to take certain actions to comply with the new regulation. The regulated entities would no longer need to:
  - Read and understand the regulation;
  - Develop a Firearms Background Check Plan;
  - Submit an NRC Form 754 for each security staff member assigned to duties requiring access to covered weapons;
  - Develop and deliver initial training on the background check process; and

The regulated entities also would not incur costs because of the fee charged for each NRC Form 754 submitted to NICS.

- Industry Operation—The supplemental proposed requirements would avert operational costs for licensees and certificate holders that do not apply for Section 161A authorities, because they would no longer need to:
  - Resubmit their security personnel for firearms background checks every 5 years;
  - Submit information regarding new security staff for firearms background checks on an ongoing basis;
  - Update and provide recurring training on the firearms background check process;
  - Maintain records of staff removed from access to covered weapons; and
    - Notify the NRC of events that disqualify their staff from access to covered weapons.
- NRC Implementation—The NRC would avert implementation costs as a result of the supplemental proposed rule because the NRC would need to process fewer NRC

Form 754 submittals. However, the NRC would incur additional costs to prepare and issue this supplemental proposed rule and to revise and update guidance on the background check process. As a result of the supplemental proposed rule, the NRC developed draft regulatory guide (DG), DG-5020, Revision 1, “Applying for Enhanced Weapons Authority, Applying for Preemption Authority, and Accomplishing Firearms Background Checks under 10 CFR Part 73” (ADAMS Accession No. ML14322A847).

- **NRC Operation**—The NRC would avert operational costs under the supplemental proposed rule because fewer licensees would be required to provide NRC Form 754 submittals every year for new security personnel or for 5-year renewed firearms background checks. The NRC would also avert costs related to reviewing notifications of security personnel disqualified from access to covered weapons.
- **Other Government Agencies**—The FBI averts costs as a result of this proposed supplemental rule because it would need to process fewer firearms background checks. The fee charged to regulated entities for the processing of each NRC Form 754 represents the costs of the NRC and the FBI to process a NICS check. The cost averted is reflected under the Industry Implementation and Industry Operation attributes.
- **Safeguards and Security Considerations**—The proposed regulations will comply with statutory requirements and provide high assurance that public health and safety, and the common defense and security, will be enhanced because of licensees’ and certificate holders’ increased defensive capability to interdict, neutralize, or potentially deter an attack. This supplemental proposed rule does not alter or limit the added defensive capabilities proposed under the enhanced weapons proposed rule. Therefore, the benefit of the supplemental proposed rule related to safeguards and security considerations is reflected in the cost savings to the NRC and industry.
- **Regulatory Efficiency**—The proposed action would reduce the number of firearms background checks required of the industry, and thereby enhance regulatory efficiency. Without the supplemental proposed rule, all regulated entities in the designated classes would have been required to submit firearms background checks. Under this supplemental proposed rule, only those regulated entities that apply for Section 161A authorities would conduct firearms background checks. The averted costs to the NRC and the industry reflect the quantitative benefit of the supplemental proposed rule related to regulatory efficiency. No additional regulatory efficiency gains or costs were identified for this draft regulatory analysis.

Attributes that are not expected to be affected by this rulemaking include: public health (accident and routine); occupational health (accident and routine); offsite property; onsite property; general public; improvements in knowledge; antitrust considerations; environmental considerations; and other considerations.

## **4.2. Analytical Method**

This section describes the process used to evaluate benefits and costs associated with the supplemental proposed rule. The benefits of the supplemental proposed rule include any desirable changes in affected attributes (e.g., monetary savings, improved safety, improved security) while the costs include any undesirable changes in affected attributes (e.g., monetary costs, increased exposures). This draft regulatory analysis was developed following the

guidance contained in NUREG/BR-0058, “Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission,” Revision 4, issued September 2004 (ADAMS Accession No. ML042820192) and NUREG/BR-0053, Revision 6, “United States Nuclear Regulatory Commission Regulations Handbook,” 2005 (ADAMS Accession No. ML052720461).

The analysis evaluates four attributes—industry implementation, industry operation, NRC implementation, and NRC operation—on a quantitative basis. Quantitative analysis requires a baseline characterization of the affected universe, including characterization of factors such as the number of affected entities and the application process that licensees would use as a result of the supplemental proposed rule. Sections 4.2.1 through 4.2.4 describe the analytical method and assumptions used in the quantitative and qualitative analysis of these attributes.

#### **4.2.1. Baseline for Analysis**

This draft regulatory analysis measures the incremental costs of the final rule relative to a “baseline” that reflects anticipated behavior in the event the NRC undertakes no additional regulatory action (Alternative 1, the “no-action” alternative). As part of the regulatory baseline used in this analysis, the NRC staff assumes full licensee compliance with existing NRC regulations and the proposed enhanced weapons rule, as supplemented in January 2013. This alternative is equivalent to the status quo and serves as a baseline against which other alternatives may be measured. Section 5 presents the estimated incremental benefits and costs of the supplemental proposed rule relative to this baseline.

#### **4.2.2. Affected Entities**

The NRC staff estimates that 67 sites with regulated entities would be eligible to apply for Section 161A authorities under the supplemental proposed rule. However, the NRC staff does not anticipate all eligible regulated entities to apply. Under the supplemental proposed rule, the regulated entities that do not apply for Section 161A authorities would experience averted costs related to firearms background checks. Therefore, those regulated entities that do not apply represent a cost-savings with regard to the implementation of the supplemental proposed rule. This draft regulatory analysis assesses the averted costs for those eligible regulated entities that do not apply for Section 161A authorities.

The enhanced weapons rulemaking applies to sites with:

- operating power reactors (single or multiunit);
- projected new power reactors for which a combined license (COL) already has been issued under 10 CFR Part 52 (i.e., Virgil C. Summer Nuclear Station Units 2 and 3 and Vogtle Electric Generating Plant Units 3 and 4);
- power reactors under active construction under a 10 CFR Part 50 license (i.e., Watts Bar Nuclear Plant, Unit 2);
- decommissioning reactors;



- Category I strategic special nuclear material facilities (e.g., Babcock & Wilcox Nuclear Operations Group Inc. (B&W) and Nuclear Fuel Services); and
- at-reactor ISFSIs<sup>1</sup>.

Appendix B to this analysis presents more information on the sites affected by the supplemental proposed rule, including information on the categorization of the individual sites.

### ***Assumptions Related to Affected Entities***

In keeping with the assumptions made in the draft regulatory analysis for the original proposed rule, other potential new reactors licensed under 10 CFR Part 52<sup>2</sup> and small modular reactors, are not included in this analysis. In the case that additional 10 CFR Part 52 applicants are issued licenses, the regulatory analysis for the final rule will reflect that change.

A multiunit site uses the same security personnel to protect each unit. This also applies to sites with a mixed set of regulated entities. For example, the same staff using the same weapons will protect an operating reactor as well as a decommissioning reactor at the same site. In particular, at-reactor ISFSIs are by definition associated with a power reactor site, so at-reactor ISFSIs are not treated as separate entities in this draft regulatory analysis. The draft regulatory analysis evaluates the incremental costs of the final rule on a site (67) basis rather than on a regulated entity basis. This is because it is typical for each the licensees and certificate holder at a certain site to request Section 161A authorities at the same time, since security personnel are usually fungible between facilities at a site. For each type of site included in the analysis, Table 4-1 under “Applicability Period of the Supplemental Proposed Rule” presents the number of sites and the average number of years that sites are expected to be subject to the final rule requirements (i.e., final rule applicability period).

In estimating benefits and costs, the NRC staff classified sites with more than one type of reactor under the site category with the longest final rule applicability period. For example, a site with one operating reactor and one or more decommissioning reactor(s) is categorized as a “site with only reactors that are in commercial operation” because the final rule applicability period for an operating reactor exceeds the period for a reactor that already is decommissioning.

### ***Eligible Regulated Entities That Do Not Apply for Section 161A Authorities***

The NRC staff expects that 56 out of 67 of the eligible regulated entities will not apply for Section 161A authorities, as follows:

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<sup>1</sup> At-reactor ISFSIs are defined in the January 10, 2013 supplemental proposed rule (78 FR 2214) to be those ISFSIs whose physical security program is conducted as a support activity of the co-located power reactor facility licensed under 10 CFR Parts 50 or 52.

<sup>2</sup> The Bellefonte Nuclear Power Station is not included in this analysis because the site will not be affected by the final rule. The site. It does not have any operating units, it has no fuel on site, and new construction is indefinitely delayed. Bellefonte Units 1 and 2 are under the Commission Policy Statement on Deferred Plants (52 FR 38077; October 14, 1987). Fermi, Unit 3 is not included in this draft analysis because as of December 23, 2014, no license has been issued. If the license is issued during the final rule phase of the enhanced weapons rulemaking, the regulatory analysis will be updated accordingly.

- Operating power reactor sites—As of January 2015, 58 operating power reactor sites would be eligible to apply for Section 161A authorities and of those 58 sites, six requested standalone preemption authority via confirmatory order. From informal discussions with regulated entities, the NRC anticipates that one more regulated entity may apply for Section 161A authorities. Restated, the NRC staff assumes in the draft regulatory analysis that 51 operating power reactor sites would not apply for Section 161A authorities.
- Projected new power reactors for which a COL already has been issued under 10 CFR Part 52—The two sites in this category did not seek Section 161A authority via confirmatory order. Therefore, the NRC staff assumes in the draft regulatory analysis that neither COL site licensee would apply for Section 161A authorities.
- Power reactors under active construction under a 10 CFR Part 50 license—Watts Bar did not seek Section 161A authority via confirmatory order. Therefore, the NRC staff assumes in the draft regulatory analysis that Watts Bar will not apply for Section 161A authorities.
- Decommissioning reactors—One out of four decommissioning sites requested Section 161A authority via confirmatory order. Therefore, the NRC staff assumes in the draft regulatory analysis that the other three decommissioning sites will not apply for Section 161A authorities.
- Category I Strategic Special Nuclear Material facilities—The two sites in this category are fuel fabrication facilities for the U.S. Navy. B&W Nuclear Operations Group Inc. applied for Section 161A authority via confirmatory order. Because of the affiliation of the sites in this category to the military, the NRC staff assumes in this draft regulatory analysis that Nuclear Fuel Services Inc., also will apply for Section 161A authorities eventually. Restated, in the regulatory analysis both Category I SSNM sites are assumed to apply for Section 161A authorities.

### ***Applicability Period of the Supplemental Proposed Rule***

The supplemental proposed rule applicability period was derived as follows:

- Sites with Only Reactors That Are in Commercial Operation—The supplemental proposed rule applicability period for this type of site is estimated to be 34 years. This estimate is based on the sum of the average remaining operating license term across sites of this type and then adding a 15-year decommissioning period. For each site, the NRC staff identified the operating reactor unit with the latest license expiration date.<sup>3</sup> The NRC staff then used that license expiration date to calculate the remaining operating life for the site. For example, for a site where the last unit license expiration date will occur in 2017, the calculated remaining operating life would be three years

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<sup>3</sup> Based on information obtained from NRC, NUREG-1350, Volume 25, “2013-2014 Information Digest (NUREG-1350, Volume 25), ”, Appendix H: “U.S. Commercial Nuclear Power Reactor Operating Licenses - Expiration by Year, 2013–2049,” August 2013. Available at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>, <http://pbadupws.nrc.gov/docs/ML1324/ML13241A207.pdf>, last accessed on July 7, 2014.

(i.e., 2015, 2016, and 2017). The NRC staff assumed that all operating licenses go to term with the exception of: (1) early terminations already announced (i.e., Vermont Yankee terminated commercial operation in December 2014 and Oyster Creek plans to terminate commercial operation in 2019), and (2) license renewal applications already under consideration (i.e., Indian Point Nuclear Generating) are assumed that they will be granted. Using the calculated remaining operating license term for each site, the average remaining operating license term across all sites was calculated. Finally, a 15-year decommissioning period was added. (Refer to “Sites with Only Reactors That Are Decommissioning” for information on the derivation of the 15-year decommissioning period.)

- Sites with Both Operating Reactors and Projected New Reactors under a 10 CFR Part 52 License—The supplemental proposed rule applicability period for this type of site is estimated to be 59 years. This estimate is based on the sum of the average estimated remaining operating life across all sites and then adding a 15-year decommissioning period. For each site, the NRC staff identified the reactor unit with the latest license expiration date.<sup>4</sup> The NRC staff then used that license expiration date to calculate the remaining operating life for the site. The NRC staff assumed that all licenses go to term. After calculating the remaining operating life for each site, the NRC staff then calculated the average remaining operating life across all sites. Finally, the NRC staff added a 15-year decommissioning period. (Refer to “Sites with Only Reactors That Are Decommissioning” for information on the derivation of the 15-year decommissioning period.)
- Sites with Both Operating Reactors and Reactors under Active Construction under a 10 CFR Part 50 License—The supplemental proposed rule applicability period for this type of site is estimated to be 55 years. This estimate is based on the remaining operating life of the only site with reactors under active construction under a 10 CFR Part 50 license (i.e., the Watts Bar Nuclear Plant) and then adding a 15-year decommissioning period. (Refer to “Sites with Only Reactors That Are

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<sup>4</sup> Based on information obtained from NRC, NUREG-1350, Volume 25, “2013-2014 Information Digest (NUREG-1350, Volume 25), ” Appendix H: U.S. Commercial Nuclear Power Reactor Operating Licenses - Expiration by Year, 2013–2049,” August 2013. Available at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>, last accessed on July 7, 2014.

Based on information obtained from NRC, NUREG-1350, Volume 25, “2013-2014 Information Digest (NUREG-1350, Volume 25), ” Appendix A: “U.S. Commercial Nuclear Power Reactors - Operating Reactors under Active Construction or Deferred Policy,” August 2013. Available at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>, Available at: <http://pbadupws.nrc.gov/docs/ML1324/ML13241A207.pdf>, last accessed on July 7, 2014.

For a 10 CFR Part 52 license, the 40-year term of the license does not begin until after the 10 CFR 52.103(g) finding, which occurs after construction is completed. Summer Units 2 and 3 are expected to begin commercial operation in 2016 and 2019, respectively. Vogtle Units 3 and 4 are expected to begin commercial operation in 2017 and 2018, respectively.

Kewaunee permanently ceased commercial operation on May 7, 2013. The site expects to have all spent fuel transferred from the spent fuel pool to the ISFSI by the end of year 2016 (e.g., transfer within 4 years of ceasing commercial operation). Crystal River permanently ceased commercial operation on February 20, 2013, and transferred fuel from the reactor vessel to the spent fuel pool. The site expects to have all spent fuel transferred from the spent fuel pool to the ISFSI by the end of year 2019 (e.g., transfer within 6 years of ceasing commercial operation). Based on these representative plans, it is reasonable to estimate that licenses will transfer all spent fuel to ISFSI (e.g., dry cask storage) within 15 years of ceasing commercial operation.

Decommissioning” for information on the derivation of the 15-year decommissioning period.)

- Sites with Only Reactors That Are Decommissioning—The supplemental proposed rule applicability period for this type of site is estimated to be 15 years. This estimate is based on information on time periods contained in Irradiated Fuel Transfer Plans submitted, under 10 CFR 50.54(bb), by licensees that shutdown their reactor units earlier than the expiration of their license term.<sup>5</sup>
- Sites with Category I Strategic Special Nuclear Material—The supplemental proposed rule applicability period for this type of site is estimated to be 33 years. This estimate is based on the assumption that these facilities (fuel fabrication facilities for the U.S. Navy) will continue to operate for the remainder of their current license plus a period for decommissioning. The two facilities have 13 and 24 years remaining on their current renewed licenses. For this analysis, an average of the remaining license periods, or 18 years, was used. The decommissioning period used was the same as the period for operating reactors, or 15 years. This is a conservative assumption because the Category I SSNM facilities are smaller in size and use isotopes with shorter half-lives than operating reactors, therefore it is likely the decommissioning periods for these facilities will be shorter than an operating reactors.

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<sup>5</sup> Kewaunee permanently ceased commercial operation on May 7, 2013. The site expects to have all spent fuel transferred from the spent fuel pool to the ISFSI by the end of year 2016 (e.g., transfer within 4 years of ceasing commercial operation). Crystal River permanently ceased commercial operation on February 20, 2013, and transferred fuel from the reactor vessel to the spent fuel pool. The site expects to have all spent fuel transferred from the spent fuel pool to the ISFSI by the end of year 2019 (e.g., transfer within 6 years of ceasing commercial operation). Based on these representative plans, it is reasonable to estimate that licenses will transfer all spent fuel to ISFSI (e.g., dry cask storage) within 15 years of ceasing commercial operation.

**Table 4-1. U.S. Commercial Nuclear Power Reactor Sites Affected by the Final Rule <sup>a</sup>**

Type of Site <sup>b</sup>	Number of Sites	Number of Sites that do not apply for Section 161A Authorities	Final Rule Applicability Period (years) <sup>c</sup>
Sites with only reactors that are in commercial operation	58	47	34
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license	2	1	59
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license	1	0	55
Sites with only reactors that are in decommissioning	4	3	15
Sites with Category I Strategic Special Nuclear Materials	2	0	39
<b>Total</b>	<b>67</b>	<b>51</b>	<b>Not applicable</b>

<sup>a</sup> Sites with more than one type of reactor were included under the site category with the longest final rule applicability period. Refer to Appendix B for information on the categorization of the individual sites.

<sup>b</sup> Sources:

NRC, "Operating Nuclear Power Reactors (by Location or Name)" Web page, [www.nrc.gov](http://www.nrc.gov). Data current as of March 19, 2014. Available at: <http://www.nrc.gov/info-finder/reactor/>, last accessed on July 7, 2014.

NRC, 2013-2014 Information Digest (NUREG-1350, Volume 25), Appendix H "U.S. Commercial Nuclear Power Reactor Operating Licenses - Expiration by Year, 2013–2049," August 2013. Available at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>, last accessed on July 7, 2014.

NRC, "Combined License Applications for New Reactors" Web page, [www.nrc.gov](http://www.nrc.gov). Data current as of July 1, 2014. Available at: <http://www.nrc.gov/reactors/new-reactors/col.html>, last accessed on July 7, 2014.

NRC, 2013-2014 Information Digest (NUREG-1350, Volume 25), Appendix A "U.S. Commercial Nuclear Power Reactors - Operating Reactors under Active Construction or Deferred Policy," August 2013. Available at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>, last accessed on July 7, 2014.

NRC, "Locations of Power Reactor Sites Undergoing Decommissioning" Web page, [www.nrc.gov](http://www.nrc.gov). Data current as of April 24, 2014. Available at: <http://www.nrc.gov/info-finder/decommissioning/power-reactor/>, last accessed on July 7, 2014.

NRC, "Locations of Major U.S. Fuel Cycle Facilities" Web page, [www.nrc.gov](http://www.nrc.gov). Data current as of March 29, 2012. Available at: <http://www.nrc.gov/info-finder/materials/fuel-cycle/>, last accessed September 27, 2014.

<sup>c</sup> The final rule applicability periods for operating reactor sites, reactor sites under construction and Category I SSNM sites includes 15 years for a decommissioning period.

### **Sign Conventions**

The sign convention used in this analysis is that all favorable consequences for the alternative are positive and all adverse consequences for the alternative are negative. Negative values are shown using parentheses (e.g., negative \$500 is displayed as (\$500)).

### **Labor Rates**

In estimating the incremental costs of the supplemental proposed rule, the analysis uses two hourly labor rates that include salary, fringe benefits (e.g., paid leave and health benefits), and other overhead (e.g., payroll costs):

- The average labor rate for licensee staff is estimated to be \$125 per hour.<sup>6</sup>
- The labor rate for NRC staff is estimated to be \$124 per hour.<sup>7</sup>

Both average labor rates are in 2016 dollars.

#### **4.2.3. Assumptions**

This subsection discusses the analysis of the costs associated with the implementation of the supplemental proposed rule. The analysis employs the following assumptions and considerations:

- All licensees are assumed to be in full compliance with the existing baseline requirements and the requirements in the 2011 proposed rule as modified by the 2013 supplemental proposed rule. The costs to comply with the baseline requirements are not expected to change with the supplemental proposed rule. Therefore, this analysis only presents the incremental costs associated with the supplemental proposed rule changes.
- All costs presented in this subsection are in 2016 dollars.
- Implementation costs are assumed to be incurred as early as 2016. Eligible licensees and certificate holders may apply for Section 161A authorities once the final rule is effective, on a voluntary basis. The NRC staff assumes in this draft regulatory analysis that the final rule will be effective in 2016 and that all applications are submitted at that time. This is a conservative assumption because the regulated entities more likely will submit applications over time.
- Licensees will incur costs over the final rule applicability period, as presented in Table 4-1. The actual time period that each site will be operated will depend on the term of the operating license, and on whether the licensee chooses to operate the site for the duration of the licensed period.
- The costs incurred in each year of the analysis are discounted to the present using a 7-percent and 3-percent discount rate, in accordance with NUREG/BR-0058, Revision 4, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission." (See Section 5 for these results.)

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<sup>6</sup> Based on data developed from the Bureau of Labor Statistics for "Security Guards" (Standard Occupational Code 33-9032), "Power Plant Operators, Distributors, and Dispatchers" (Standard Occupational Code 51-8010) and for "Nuclear Power Reactor Operators" (Standard Occupational Code 51-8011), hourly labor rates for industry range from about \$58 to \$102. Based on NRC review of licensee cost estimates for the Indian Point Nuclear Generating severe accident mitigation alternatives (SAMA) submittal, the non-manual labor category labor rates (covers system engineers, project managers, health physics and radiation protection workers) ranged between \$100 and \$120 per hour (2014 dollars). As a conservative assumption and to adjust to 2016 dollars, this analysis uses an hourly labor rate of \$125.

<sup>7</sup> NRC, Rulemaker@nrc.gov, "NRC Labor Rates for Use in 2015 Regulatory Analyses (as of October 2014)," October 29, 2014.

- Based on the NRC Form 754 submittals from the six sites that requested Section 161A authorities via confirmatory orders, the NRC staff made the following estimates of the number of security personnel at each category of site:
  - On average each operating power reactor and new reactor (planned and under construction) site employs 200 security personnel. This is based on averaging the number of NRC Form 754 submittals over the 6 sites that requested Section 161A authorities via confirmatory orders.
  - On average each Category I SSNM site employs 250 security personnel. This is based on the 200 personnel on average at operating reactor sites plus 50 additional personnel for tactical teams.
  - On average, each decommissioning site employs 100 security personnel, which is based on half of the number at operating power reactors.

#### **4.2.4. Per Site Costs Averted by Cost Category**

For purposes of this analysis, the costs averted under the supplemental proposed rule were categorized as follows:

- implementation (one-time) costs averted for the industry
- implementation (one-time) costs averted for the NRC
- recurring and annual costs averted for the industry
- recurring and annual costs averted for the NRC

The remainder of this subsection describes the derivation of the estimated per site costs averted for each of the cost categories.

##### **4.2.4.1. Industry Implementation Costs Averted**

As a result of the supplemental proposed rule, regulated entities would no longer be required to take the following one-time actions once the enhanced weapons rulemaking is effective:

(1) read and understand the supplemental proposed rule, (2) develop and submit a Firearms Background Check Plan, (3) conduct firearms background checks on security personnel using NRC Form 754, and train security personnel on the firearms background check process. To assess averted costs, the analysis employs the following assumptions that reflect labor and costs a regulated entity would no longer incur as a result of the supplemental proposed rule:

- On average, a site would avert 32 hours of licensee staff time to read and understand the supplemental proposed rule. This reflects two staff members spending 16 hours each reading the supplemental proposed rule and associated guidance.
- A site would incur labor to develop and submit a Firearms Background Check Plan. The NRC estimates that a site would avert on average 350 hours to develop and submit a Firearms Background Check Plan which is based on two months of productive hours (2,080 productive hours per year x 1/6 of a year).

A site would incur labor to submit security personnel for firearms background checks using NRC Form 754. The NRC staff estimates that each NRC Form 754 submittal would use 2 hours of staff time (0.5 hours for security personnel to complete the form and 1.5 hours to process and submit the form). For operating power reactor and new

reactor sites, this results in 400 hours of staff time averted (200 personnel x 2 hours = 400 hours). For decommissioning reactor sites, this results in 200 hours of staff time averted (100 personnel x 2 hours = 200 hours).

- A site would incur a fee for each NRC Form 754 submitted. The fee charged for the confirmatory orders was \$70 per form. For operating power reactor and new reactor sites, this results in \$14,000 averted costs due to fees (200 personnel x \$70 per form = \$14,000). For decommissioning reactor sites, this results in \$7,000 averted costs due to fees (100 personnel x \$70 per form = \$7,000).
- Based on the experience with the NRC Form 754 submittals related to the confirmatory orders, the NRC estimates that 1 percent of the submittals would receive a delayed or denied response, which would result in additional processing labor of 8 hours per form on average. For operating power reactor and new reactor sites, this results in 16 hours of staff time averted (200 personnel x 1% of submittals x 8 hours = 16 hours). For decommissioning reactor sites, this results in 8 hours of staff time averted (100 personnel x 1 percent of submittals x 8 hours = 8 hours).
- On average, a site would use 60 hours of staff time to develop the initial training for the firearms background checks. The training would address the firearms background check process including actions security personnel can take in the event of a delayed or denied NICS result. The NRC staff estimates that the training would last about 1 hour and it takes about 60 hours to develop and receive approval for each hour of a training course.
- A site would deliver initial firearms background check training to all of their security personnel. Operating and new power reactor sites would use on average 200 hours to conduct initial training (200 security personnel x 1 hour training = 200 hours). Decommissioning power reactor sites would use on average 100 hours to conduct initial training (100 security personnel x 1 hour training = 100 hours).

Table 4-2 shows the estimated Industry implementation costs averted per site, by type of site.

**Table 4-2. Estimated Industry Implementation Costs Averted, per Site (2016 Dollars)**

Type of Site	One-Time Cost to the Industry <sup>c</sup>
Sites with only reactors that are in commercial operation <sup>a</sup>	\$146,000
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license <sup>a</sup>	\$146,000
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license <sup>a</sup>	\$146,000
Sites with only reactors that are in decommissioning <sup>b</sup>	\$101,000

<sup>a</sup> One-time cost averted for industry for operating and new reactor sites = [32+350+400+16+60+200=1,058 hours] x [\$124/hour]+[\$14,000 in fees].

<sup>b</sup> One-time cost averted for Industry for decommissioning reactor sites = [32+350+200+8+60+100=750 hours] x [\$124/hour]+[\$7,000 in fees].

<sup>c</sup> Costs in the table are rounded to three significant figures.



#### 4.2.4.2. NRC Implementation Costs Averted and Incurred

As a result of the supplemental proposed rule, the NRC will avert costs related to processing the firearms background checks. The NRC would also incur costs to develop and publish the supplemental proposed rule and to update associated guidance. To assess benefits and costs, the analysis employs the following assumptions that reflect labor the NRC would avert or incur as a result of the supplemental proposed rule:

- The NRC would avert labor to process firearms background checks using NRC Form 754. The NRC uploads forms to the FBI and communicates the result back to the regulated entity. Based on the experience with the NRC Form 754 submittals related to the confirmatory orders, the NRC staff estimates that the NRC would expend 8 minutes per form (5 minutes to upload, and 3 minutes to communicate the result to the licensee). NRC processing time is the same for approved, delayed, or denied NICS responses. For operating power reactor and new reactor sites, this results in 27 hours of staff time averted (200 personnel x 8 minutes per form / 60 minutes per hour = 27 hours). For decommissioning reactor sites, this results in 13 hours of staff time averted (100 personnel x 8 minutes per form / 60 minutes per hour = 13 hours).
- Compared to the no-action alternative, the NRC would incur costs related to developing and publishing the supplemental proposed rule. Based on the number of hours already expended by NRC staff on the enhanced weapons rulemaking, the NRC staff estimates 1,000 hours develop and publish the second supplemental proposed rule and associated guidance.

Table 4-3 shows the estimated NRC implementation costs averted per site, by type of site.

**Table 4-3. Estimated NRC Implementation Costs Averted (2016 Dollars)**

Type of Site	One-Time Cost to the NRC <sup>d</sup>
All Sites <sup>a</sup>	(\$124,000)
Sites with only reactors that are in commercial operation, per site <sup>b</sup>	\$3,310
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license, per site <sup>b</sup>	\$3,310
Sites with both operating reactors and reactors under active construction under a Part 10 CFR 50 license, per site <sup>b</sup>	\$3,310
Sites with only reactors that are in decommissioning, per site <sup>c</sup>	\$1,650

<sup>a</sup> One-time costs incurred for NRC related to developing and publishing the supplemental proposed rule = [1,000 hours] x [\$124/hour].

<sup>b</sup> One-time cost averted for NRC for operating and new reactor sites = [27 hours] x [\$124/hour].

<sup>c</sup> One-time cost averted for NRC for decommissioning reactor sites = [13 hours] x [\$124/hour].

<sup>d</sup> Costs in the table are rounded to three significant figures.

#### 4.2.4.3. Industry Recurring and Annual Costs Averted

As a result of the supplemental proposed rule, regulated entities would avert costs associated with maintaining their Firearms Background Check Plan. The actions regulated entities would no longer be required to take are:

- re-submitting security personnel for firearms background checks every 5 years;
- submitting firearms background checks for new staff;
- training staff annually on the firearms background check process;
- submitting notifications to the NRC of events that would disqualify security personnel from access to covered weapons; and
- maintaining records of staff removed from access to covered weapons.

To assess averted costs, the analysis employs the following assumptions, which reflect labor and fees a regulated entity would no longer incur as a result of the supplemental proposed rule:

- A site would avert labor costs in resubmitting security personnel for firearms background checks using NRC Form 754 at least every 5 years, which would be a regulatory requirement. The regulated entities would therefore avert the same costs every 5 years as for the initial firearms background checks. For operating power reactor and new reactor sites, this results in 400 hours of staff time averted every 5 years (200 personnel x 2 hours to complete and process NRC Form 754 = 400 hours). For decommissioning reactor sites, this results in 200 hours of staff time averted every 5 years (100 personnel x 2 hours = 200 hours).
- A site would avert a fee for each NRC Form 754 submitted for the 5-year resubmittals. The fee charged for the confirmatory orders was \$70 per form. For operating power reactor and new reactor sites, this results in \$14,000 averted costs due to fees every 5 years (200 personnel x \$70 per form = \$14,000). For decommissioning reactor sites, this results in \$7,000 averted costs due to fees every 5 years (100 personnel x \$70 per form = \$7,000).
- Based on the experience with the NRC Form 754 submittals related to the confirmatory orders, the NRC estimates that 1 percent of the initial submittals would receive a delayed or denied response, which would average 8 hours of additional processing labor. The NRC estimates that the rate of delayed or denied NICS responses for the 5-year renewals would be much lower (0.1 percent) because the initial checks would identify disqualified staff. Annually, these responses result in negligible costs averted. However, the cost averted is factored into the 5-year resubmittals. For operating power reactor and new reactor sites, this results in 1.6 hours of staff time averted (200 personnel x 0.1 percent of submittals x 8 hours = 1.6 hours). For decommissioning reactor sites, this results in 0.8 hours of staff time averted (100 personnel x 0.1 percent of submittals x 8 hours = 0.8 hours).
- Based on elicitation from NRC staff with expertise in security staffing at regulated entities, 5 percent of the security personnel turnover on average each year. Sites would

avert costs related to conducting firearms background checks on new staff hired each year to fill vacancies. For operating power reactor and new reactor sites, this results in 20 hours of staff time averted each year (200 personnel x 5 percent x 2 hours to complete and process NRC Form 754 = 20 hours). For decommissioning reactor sites, this results in 10 hours of staff time averted each year (100 personnel x 5 percent x 2 hours to complete and process NRC Form 754 = 10 hours).

- A site would avert fees related to conducting firearms background checks for new employees each year. For operating power reactor and new reactor sites, this results in \$700 of averted fees each year (200 personnel x 5 percent turnover x \$70 per NRC Form 754 = \$700). For decommissioning reactor sites, this results in \$350 of averted fees each year (100 personnel x 5 percent x \$70 per NRC Form 754 = \$350).
- A site would average 30 hours of staff time each year to update the initial firearms background check training. The update would address changes to the firearms background check process. The NRC staff estimates that updating the training would take about half the time it takes to develop initial training. (60 hours x 0.5 = 30 hours).
- A site would deliver firearms background check training annually to all of its security personnel (new and existing). Operating and new power reactor sites would average 200 hours in annual training (200 security personnel x 1 hour training = 200 hours). Decommissioning power reactor sites would average 100 hours in annual training (100 security personnel x 1 hour training = 100 hours).

Every fifth year, the costs averted by a site differs from the other years due to the 5-year resubmittals of firearms background checks. Costs averted in years without the 5-year resubmittals (years 2 through 5 after the effective date of the rule, years 7 through 10, etc.) include costs related to new employee firearms background checks, and updating and delivering training. For operating power reactor and new reactor sites, this results in 250 hours of staff time averted each year (20 + 30 + 200 hours = 250 hours) and \$700 in fees. For decommissioning reactor sites, this results in 140 hours of staff time averted each year (10 + 30 + 100 hours = 140 hours) and \$3,500 in fees. Costs during the years that 5-year resubmittals are conducted (years 6, 11, etc.) include conducting firearms background checks, and updating and delivering training. For operating power reactor and new reactor sites, this results in 632 hours of staff time averted each year (400 + 1.6 + 30 + 200 hours = 632 hours, rounded to the nearest whole number of hours) and \$14,000 in fees. For decommissioning reactor sites, this results in 331 hours of staff time averted each year (200 + 0.8 + 30 + 100 hours = 331 hours, rounded to the nearest whole number of hours) and \$7,000 in fees.

Table 4-4 shows the estimated Industry recurring and annual costs averted per site, by type of site.

**Table 4-4. Estimated Industry Recurring and Annual Costs Averted, per Site (2016 Dollars)**

Type of Site	Annual Cost to the Industry (years without 5-year renewals) <sup>e</sup>	Recurring and Annual Cost to the Industry (years with 5-year renewals) <sup>e</sup>
Sites with only reactors that are in commercial operation <sup>a,b</sup>	\$32,000	\$93,000
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license <sup>a,b</sup>	\$32,000	\$93,000
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license <sup>a,b</sup>	\$32,000	\$93,000
Sites with only reactors that are in decommissioning <sup>c,d</sup>	\$17,900	\$48,400

<sup>a</sup> Annual costs averted for operating and new reactor sites = [250 hours] x [\$124/hour]+[\$700 in fees].

<sup>b</sup> Recurring and annual costs averted for operating and new reactor sites = [632 hours] x [\$124/hour] + [\$14,000 in fees].

<sup>c</sup> Annual costs averted for decommissioning reactor sites = [140 hours] x [\$124/hour] + [\$350 in fees].

<sup>d</sup> Recurring and annual costs averted for Industry for decommissioning reactor sites = [331 hours] x [\$124/hour] + [\$7,000 in fees].

<sup>e</sup> Costs in the table are rounded to three significant figures.

#### 4.2.4.4. NRC Recurring Costs Averted

As a result of the supplemental proposed rule, the NRC would avert costs associated with processing firearms background checks each year. To assess averted costs, the analysis employs the following assumptions, which reflect labor the NRC would no longer incur each year as a result of the supplemental proposed rule:

- At least every 5 years, the NRC would incur labor to process firearms background checks resubmitted using NRC Form 754 by regulated entities. The NRC would therefore avert the same costs every 5 years as for the initial firearms background checks. For operating power reactor and new reactor sites, this results in 27 hours of NRC staff time averted (200 personnel x 8 minutes per form / 60 minutes per hour = 27 hours). For decommissioning reactor sites, this results in 13 hours of NRC staff time averted (100 personnel x 8 minutes per form / 60 minutes per hour = 13 hours).
- The NRC would also avert costs related to processing firearms background checks for new employees of regulated entities each year. However, because the turnover rate of security personnel at regulated entities is low and because the NRC labor for processing each firearms background check submittal is low, the annual cost to the NRC to process firearms background checks for new employees is small (less than \$1,000 per year) compared to other costs in the regulatory analysis. Therefore, the NRC staff did not include in the operating cost calculations the annual costs averted by the NRC for processing firearms background checks for new employees at regulated entities.

Table 4-5 shows the estimated NRC recurring and annual costs averted per site, by type of site.

**Table 4-5. Estimated NRC Recurring Costs Averted, per Site  
(2016 Dollars)**

Type of Site	Recurring Costs to the NRC <sup>c</sup>
Sites with only reactors that are in commercial operation <sup>a</sup>	\$3,310
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license <sup>a</sup>	\$3,310
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license <sup>a</sup>	\$3,310
Sites with only reactors that are in decommissioning <sup>b</sup>	\$1,650

<sup>a</sup> Recurring and annual costs averted for operating and new reactor sites = [27 hours] x [\$124/hour].

<sup>b</sup> Recurring and annual costs averted for Industry for decommissioning reactor sites = [13 hours] x [\$124/hour].

<sup>c</sup> Costs in the table are rounded to three significant figures.

## 5. Evaluation of Benefits and Costs

This section organizes the analytical results into four sections. Section 5.1 presents results on the benefits and costs of the supplemental proposed rule as a whole, as well as disaggregated results for each of the regulatory requirements that comprise the supplemental proposed rule. Section 5.2 evaluates the uncertainties in the benefit and cost estimate and identifies those uncertain variables that most affect the variation in the results. Section 5.3 discusses disaggregation of the requirements in the supplemental proposed rule. Section 5.3 addresses the applicability of a safety goal evaluation to the supplemental proposed rule.

### 5.1. Benefits and Costs of the Final Rule

This section discusses the incremental benefit and cost estimates for the supplemental proposed rule.

#### 5.1.1. Summary of Benefits and Costs

Table 5-1 summarizes the incremental benefits and costs of the supplemental proposed rule as compared to the baseline. Appendix C includes tables that summarize the incremental benefits and costs of the supplemental proposed rule as compared to the baseline for each quantifiable attribute of the supplemental proposed rule.

The supplemental proposed rule as a whole (Alternative 2) would result in an estimated averted cost of between \$37.8 million and \$56.6 million (at a 7-percent and 3-percent discount rate, respectively). These costs are associated with four affected attributes—industry implementation and operation, and NRC implementation and operation. Section 4.2.5 provides detail on the incremental activities under the supplemental proposed rule, and estimates the one-time, recurring and annual costs associated with these activities.

Overall, the benefits of the supplemental proposed regulation include averted costs to both the industry and the NRC by reducing the number of industry security personnel who would be required to undergo firearms background checks. The NRC would incur one-time costs as a

result of developing and publishing the supplemental proposed rule. In addition, the supplemental proposed rule implements the mandates of Section 161A of the AEA, as described in the Firearms Guidelines.

**Table 5-1. Summary of Overall Benefits and Costs (Quantitative and Qualitative)**

	<b>Benefits – Averted Costs (2016 Dollars) and Qualitative Factors</b>	<b>Costs (2016 Dollars)</b>
<p><b>Alternative 2: Supplemental Proposed Rule</b></p>	<p><b>Industry Implementation Costs Averted:</b> \$8,200,000</p> <p><b>Industry Operation Costs Averted:</b> \$29.4 million using a 7% discount rate \$48.2 million using a 3% discount rate</p> <p><b>NRC Implementation Costs Averted:</b> \$209,000</p> <p><b>NRC Operation Costs Averted:</b> \$25,900 using a 7% discount rate \$49,000 using a 3% discount rate</p> <p><b>Total Implementation Costs Averted:</b> \$8,410,000</p> <p><b>Total Operation Costs Averted:</b> \$29.5 million using a 7% discount rate \$48.3 million using a 3% discount rate</p> <p><b>Total Costs Averted:</b> \$37.8 million using a 7% discount rate \$56.6 million using a 3% discount rate</p> <p><b><u>Qualitative consideration of factors</u></b></p> <p><b>Other Government Agencies</b> – The FBI averts costs as a result of this proposed supplemental rule because it would process fewer firearms background checks. The fee charged to regulated entities for the processing of each NRC Form 754 represents the costs of the NRC and the FBI to process a NICS check. The cost averted is reflected under the Industry Implementation and Industry Operation attributes.</p> <p><b>Safeguards and Security Considerations</b> – The regulations proposed in the enhanced weapons rulemaking regarding access to covered weapons and firearms background checks will comply with statutory requirements and provide high assurance that public health and safety and the common defense and security will be enhanced because of licensees' and certificate holders' increased defensive capability to interdict and neutralize an attack, or potentially to deter an attack. This supplemental proposed rule does not alter or limit the additional defensive capabilities proposed under the enhanced weapons proposed rule. Therefore, the benefit of the supplemental proposed rule related to safeguards and security considerations is reflected in the cost savings to the NRC and industry</p> <p><b>Regulatory Efficiency</b> – The proposed action would result in enhanced regulatory efficiency by reducing the number of firearms background checks required of the industry. Previously, all regulated entities in the designated classes would have been required to submit firearms background checks. Under this supplemental proposed rule, only those regulated entities that apply for Section 161A authorities would submit information regarding their security personnel for firearms background checks. The costs averted to the NRC and the industry reflect the quantitative benefit of the proposed action related to regulatory efficiency. This draft regulatory analysis identified no additional regulatory efficiency gains or costs.</p>	<p><b>NRC Implementation Costs:</b> (\$124,000)</p>

## 5.2. Uncertainty Analysis

As this entire analysis is based on estimates of values and unknown amounts of risk, a sensitivity analysis can be useful for the variables for which there is the greatest amount of uncertainty. A Monte Carlo sensitivity analysis was completed with the assistance of @Risk™, software specially designed for this type of analysis. The Monte Carlo approach answers the question: What distribution of net benefits results from multiple draws of the probability distribution assigned to key variables?

### 5.2.1. Uncertainty Analysis Assumptions

The Monte Carlo analysis requires the identification of the variables that are uncertain. In this analysis, those variables are: (1) the decommissioning duration, (2) the number of sites that apply for Section 161A authorities, (3) the industry implementation activities durations, and (4) labor categories and rates for individuals assigned to perform this work. Table 5-2 summarizes the variable assumptions in the analysis.

**Table 5-2. Uncertainty Analysis Variables**

<b>Uncertainty Variable Description</b>	<b>Distribution</b>	<b>Low estimate</b>	<b>Most Likely</b>	<b>High Estimate</b>
<b><i>Final Rule Applicability Period (Years)</i></b>				
Sites with reactors that are in commercial operation	Pert <sup>8</sup>	26	34	64
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license	Pert	51	59	74
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license	Pert	47	55	70
Sites with only reactors that are being decommissioned	Pert	7	15	30
<b><i>Number of sites that apply for Section 161A authorities</i></b>				
Sites with reactors that are in commercial operation that apply for Section 161A authorities	Pert	6	7	58
Sites with only reactors that are being decommissioned that apply for Section 161A authorities	Pert	0.9	1.0	4.0
<b><i>Personnel and Fees</i></b>				
<b><i>Number of Security Personnel Requiring NICS Background Checks Per Site</i></b>				
Operating and new power reactor sites	Pert	150	200	220
Decommissioning power reactor sites	Pert	90	100	110
Category I Strategic Special Nuclear Material	Pert	200	250	275

<sup>8</sup> A program evaluation and review technique (PERT) distribution is a special form of the beta distribution with a minimum and maximum value specified. The shape parameter is calculated from the defined *most likely* value.

The PERT distribution is similar to a triangular distribution in that it has the same set of three parameters. Technically, it is a special case of a scaled beta (or beta general) distribution. It can generally be considered as to be superior to the triangular distribution when the parameters result in a skewed distribution, as the smooth shape of the curve places less emphasis in the direction of skew. Similar to the triangular distribution, the PERT distribution is bounded on both sides, and therefore may not be adequate for some modeling purposes where it is desired to capture tail or extreme events.



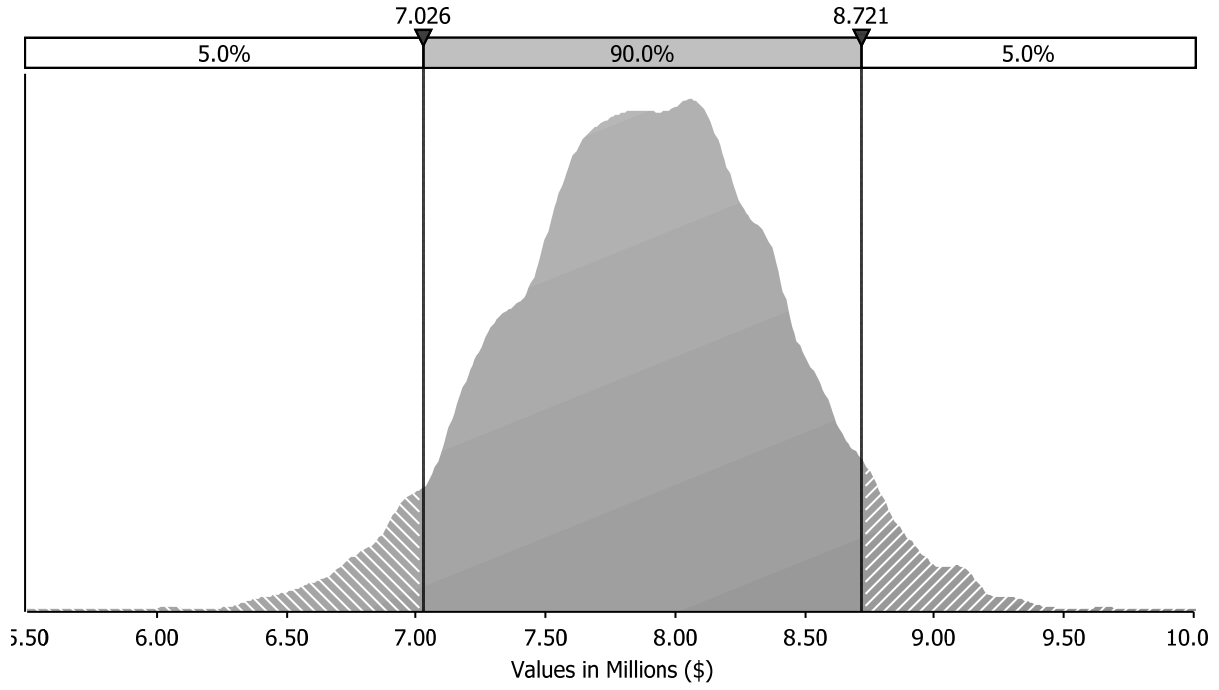
<b>Uncertainty Variable Description</b>	<b>Distribution</b>	<b>Low estimate</b>	<b>Most Likely</b>	<b>High Estimate</b>
Licensees				
<b>Hours of Labor and Fees by Attribute</b>				
<b>Industry (one-time, per site)</b>				
<i>Rulemaking Costs</i>				
Read the Final Rule (hours)	Pert	16	32	80
Develop Firearms Background Check Plan (hours)	Pert	300	350	500
<i>Training</i>				
Develop Initial Training about Background Check Process to Designated Personnel (hours)	Pert	40	60	80
Initial training duration (hours per trainee)	Pert	0.75	1	1.1
<i>Conducting Firearms Background Checks</i>				
Hours to prepare and process each NRC Form 754	Pert	1.8	2	2.2
Fraction of security personnel that receive a delayed or denied response from NICS	Pert	0.009	0.01	0.02
Hours of licensees staff time for additional time requests	Pert	6	8	16
<b>Industry (recurring, per site)</b>				
<i>Update and Deliver Recurring Training about Background Check Process to Designated Personnel</i>				
Percent of time required to update the annual (percent based on initial training)	Pert	0.45	0.5	0.75
Annual training duration (hours per trainee)	Pert	0.75	1	1.1
Staff turnover annually	Pert	4%	5%	7%
<i>Maintain Background Check Program</i>				
Percent of staff reporting disqualifying events per year	Pert	0.09%	0.10%	0.50%
<b>Labor Rates</b>				
Industry	Pert	\$100	\$125	\$130
NRC	Pert	\$120	\$124	\$125

### 5.2.2. Uncertainty Analysis Results

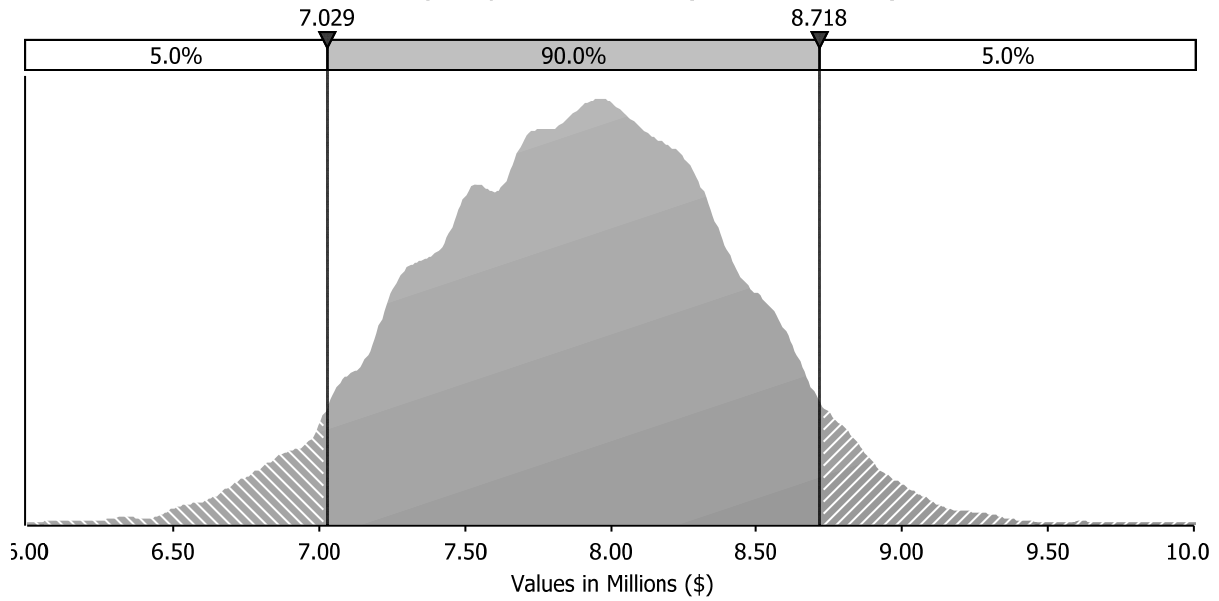
Ten thousand simulations were run. Figures 5-1 through 5-7 display the histograms of the realized benefits. The analysis showed that industry would realize averted costs (savings) in implementation and operation costs. The mean averted costs are \$7.89 million for industry implementation and \$27.4 million for industry operation based on a 7 percent discount rate (2016 dollars). The mean total net benefit is \$35.4 million of averted costs based on a 7 percent discount rate (2016 dollars) as shown in Figure 5-7 and summarized in Table 5-3.

Figure 5-1.

Industry Implementation (Averted Costs)

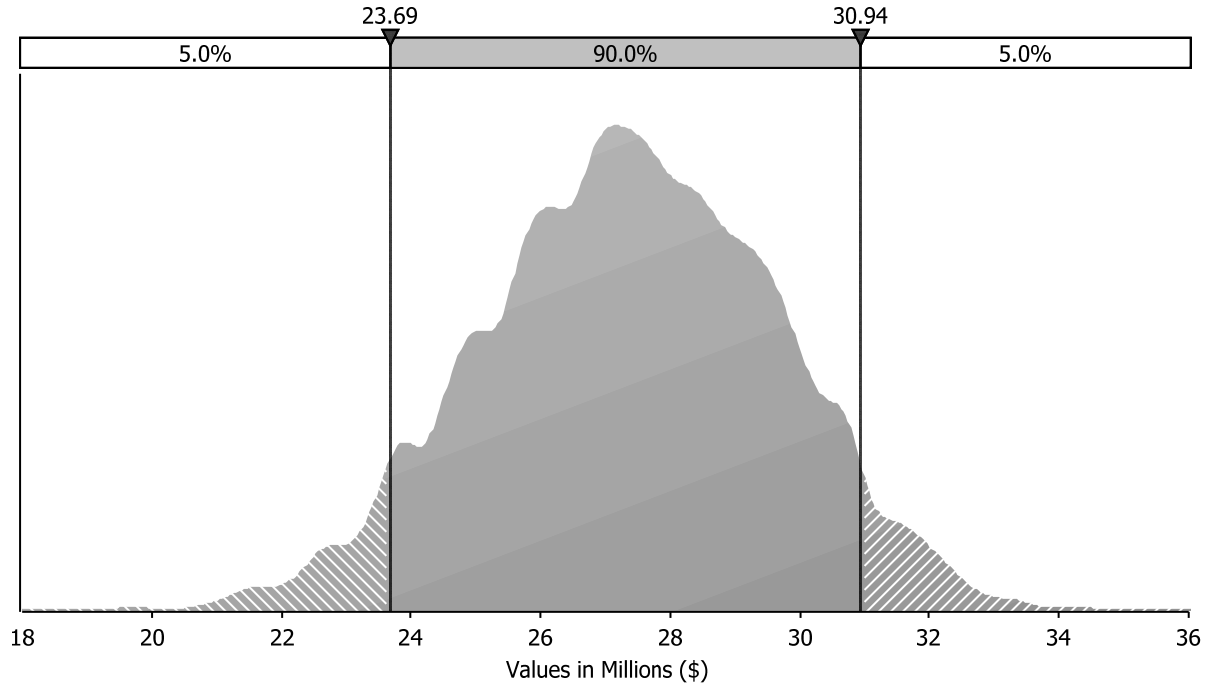


Industry Implementation (Averted Costs)

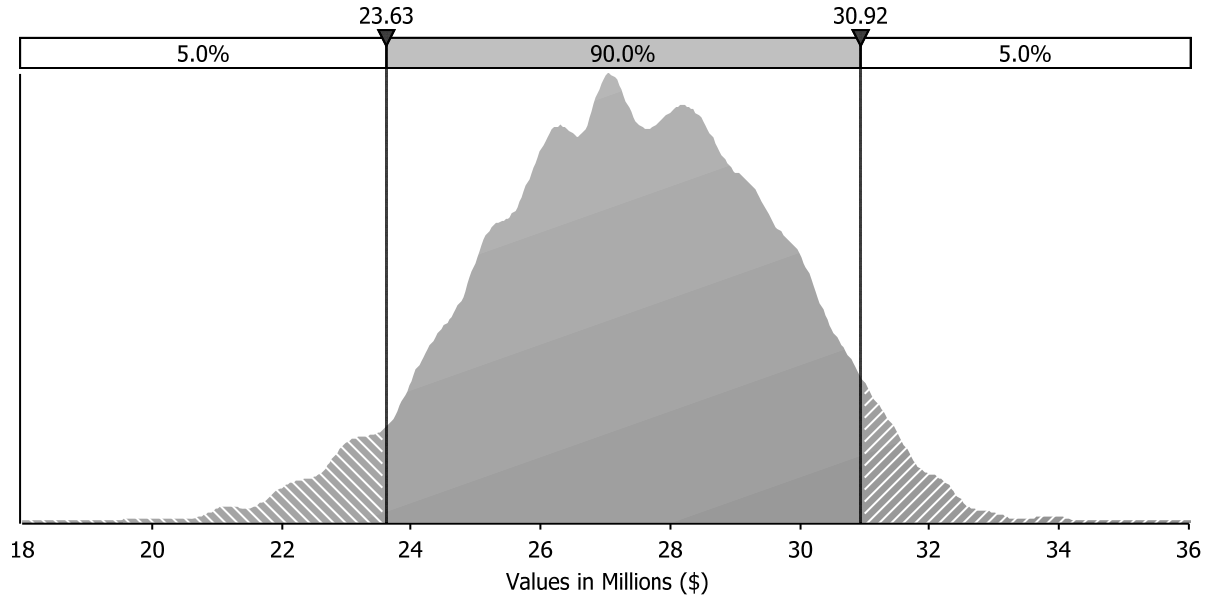


**Figure 5-2.**

**Industry Operation (Averted Costs - 7% NPV)**

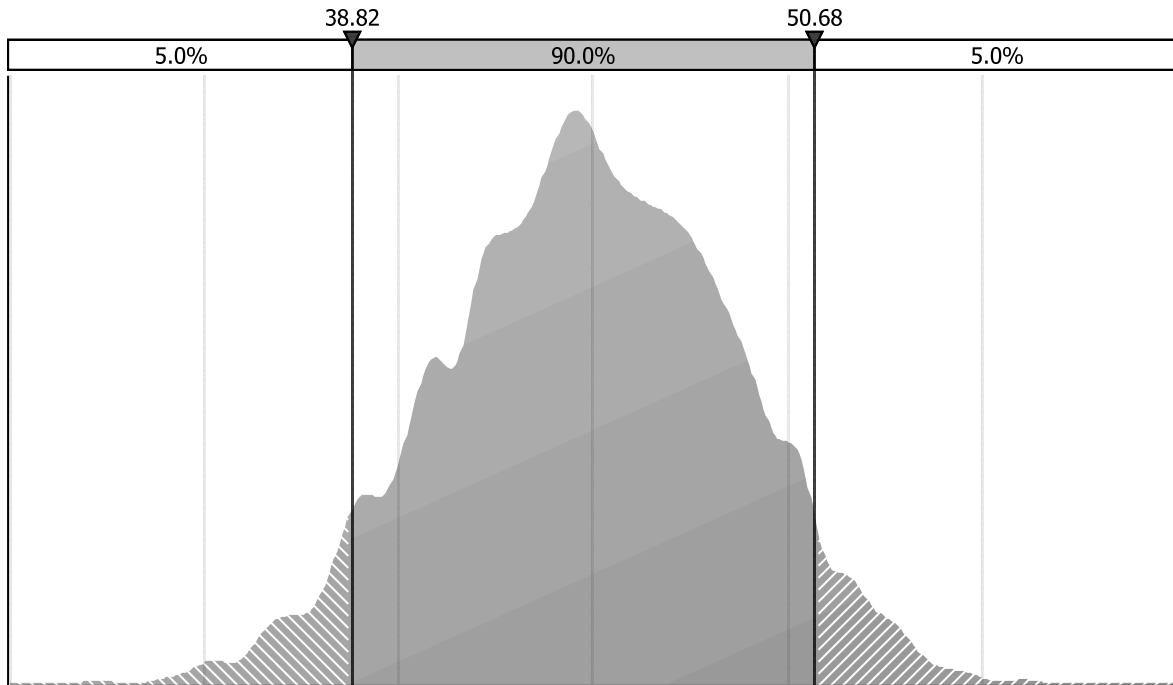


**Industry Operation (Averted Costs - 7% NPV)**

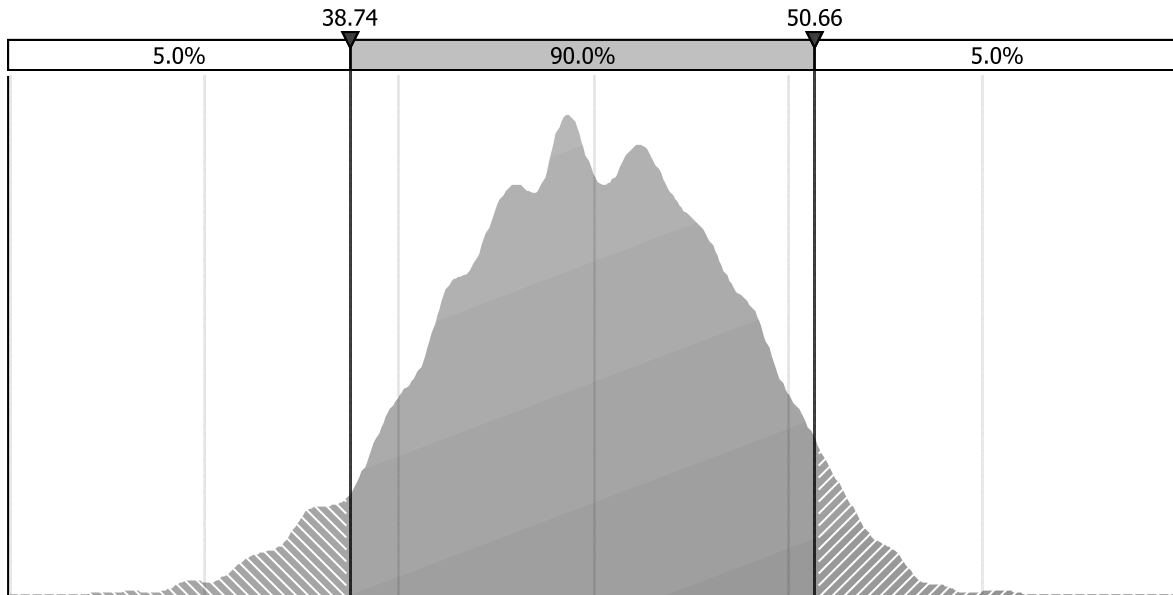


**Figure 5-3.**

Industry Operation (Averted Costs - 3% NPV)

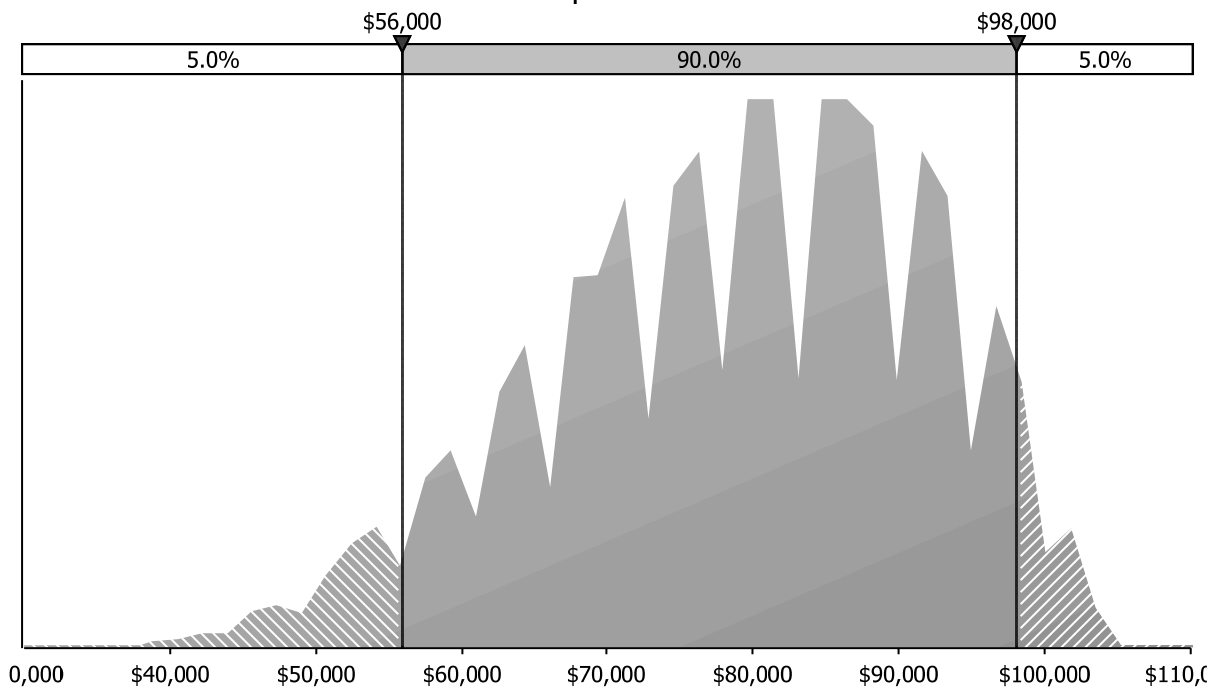


Industry Operation (Averted Costs - 3% NPV)



**Figure 5-4.**

### NRC Implementation



### NRC Implementation

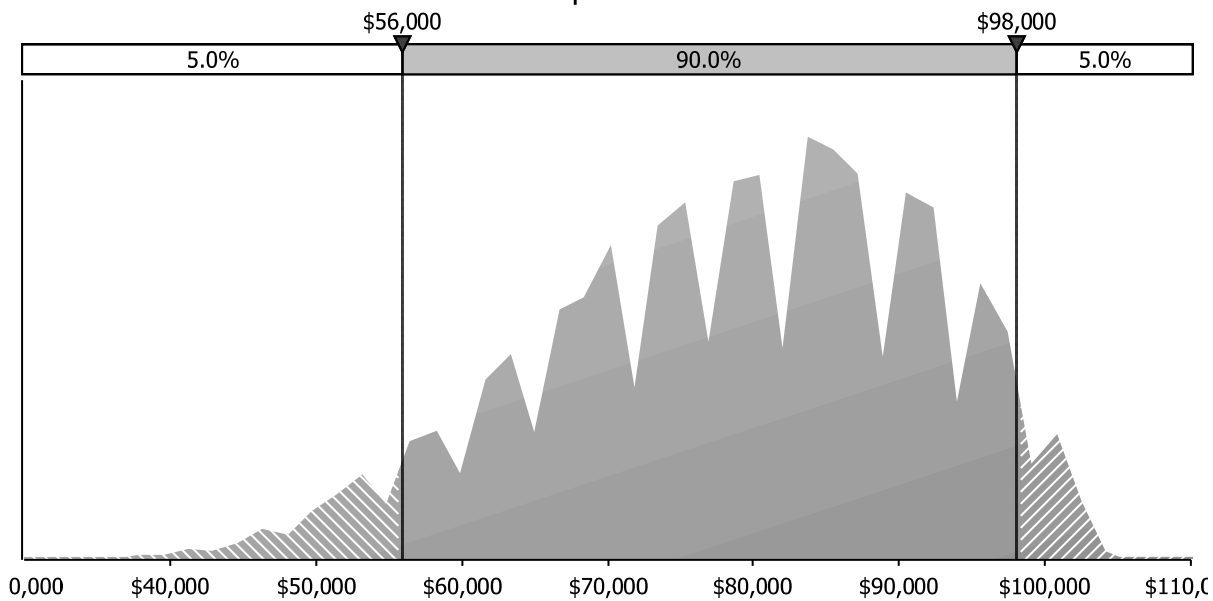


Figure 5-5.

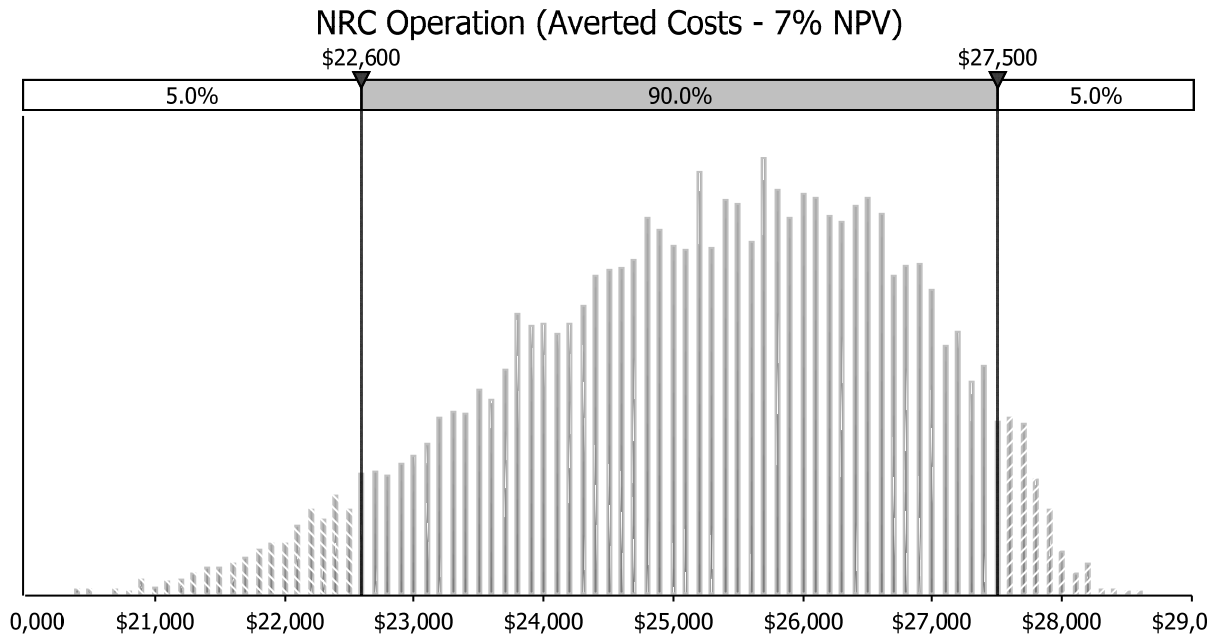
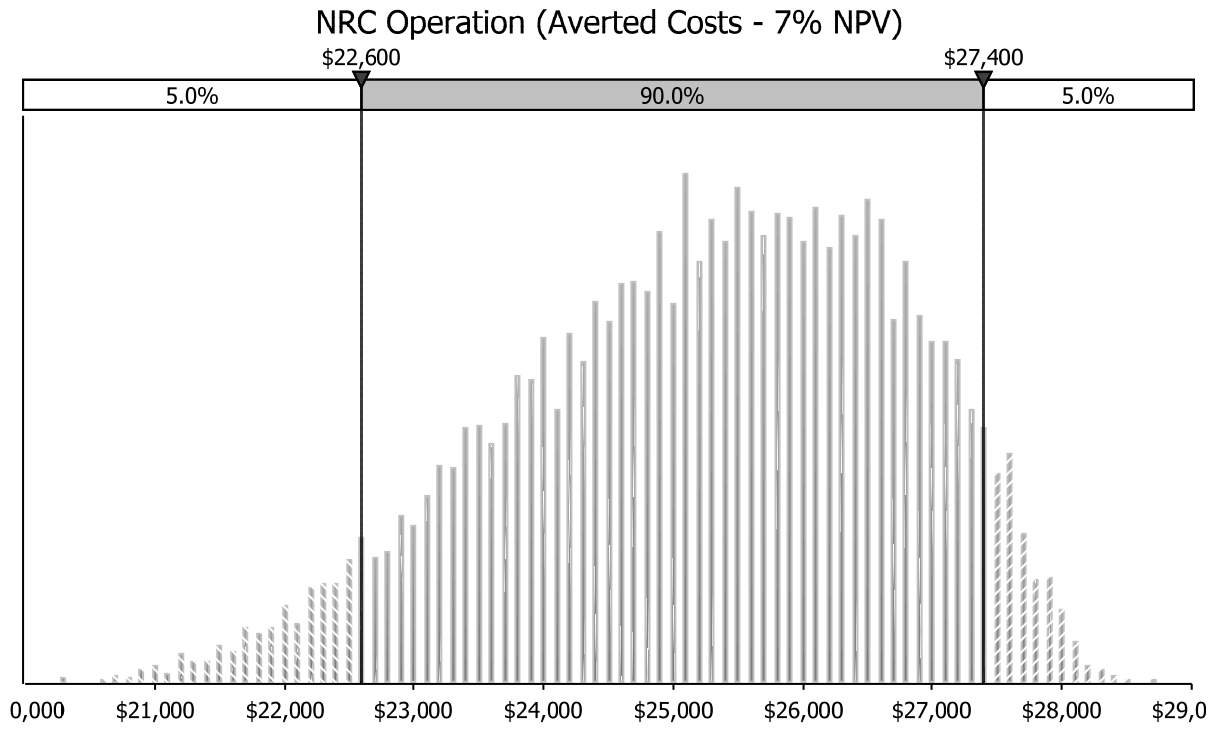
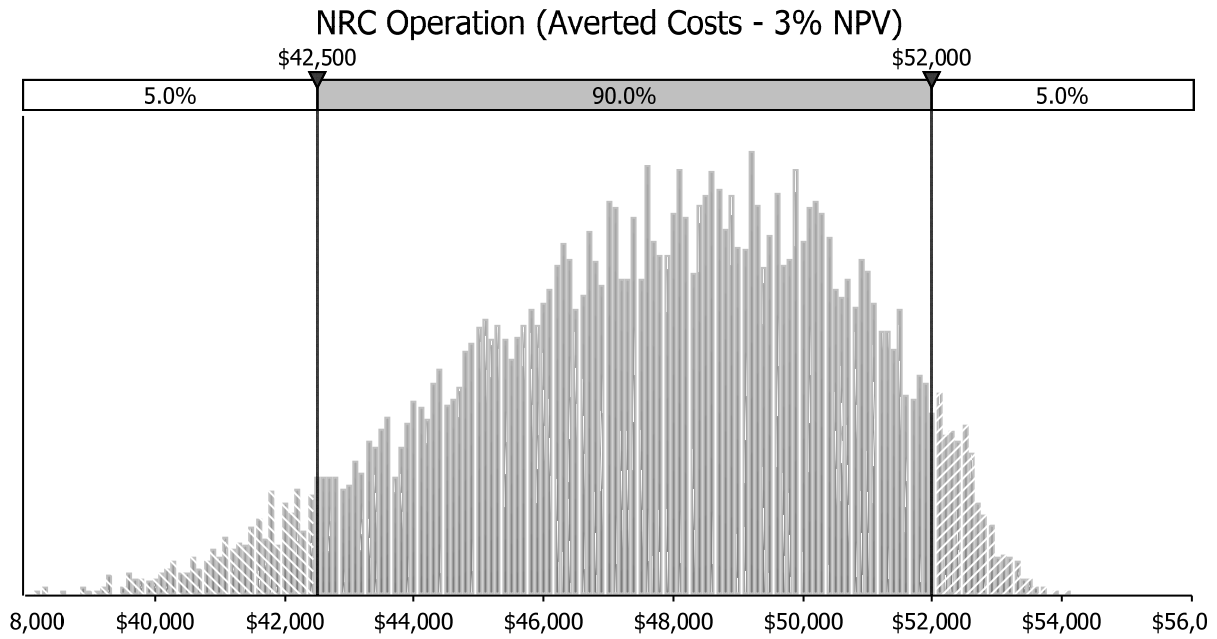
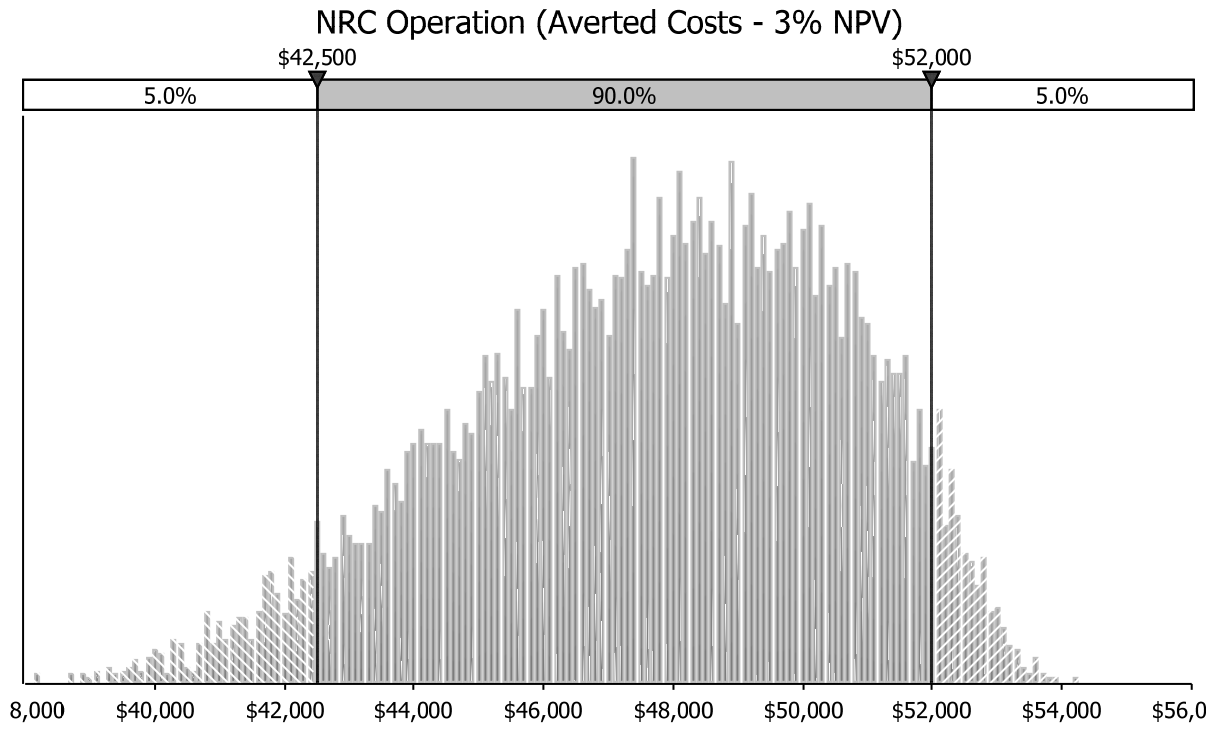


Figure 5-6.



**Figure 5-7.**

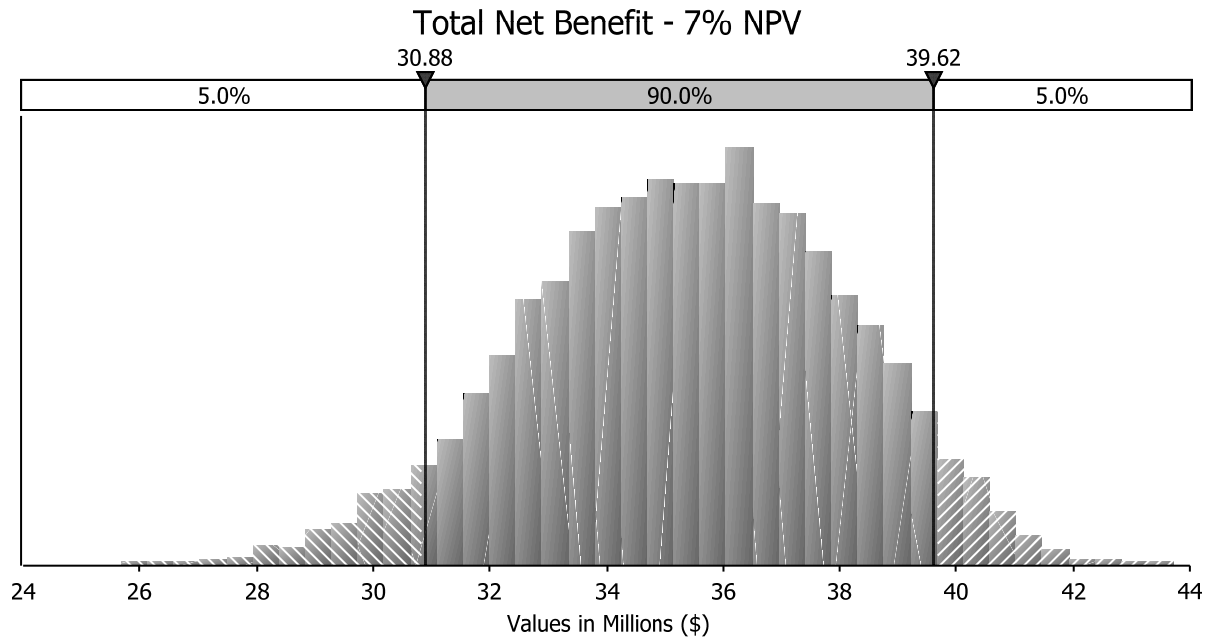
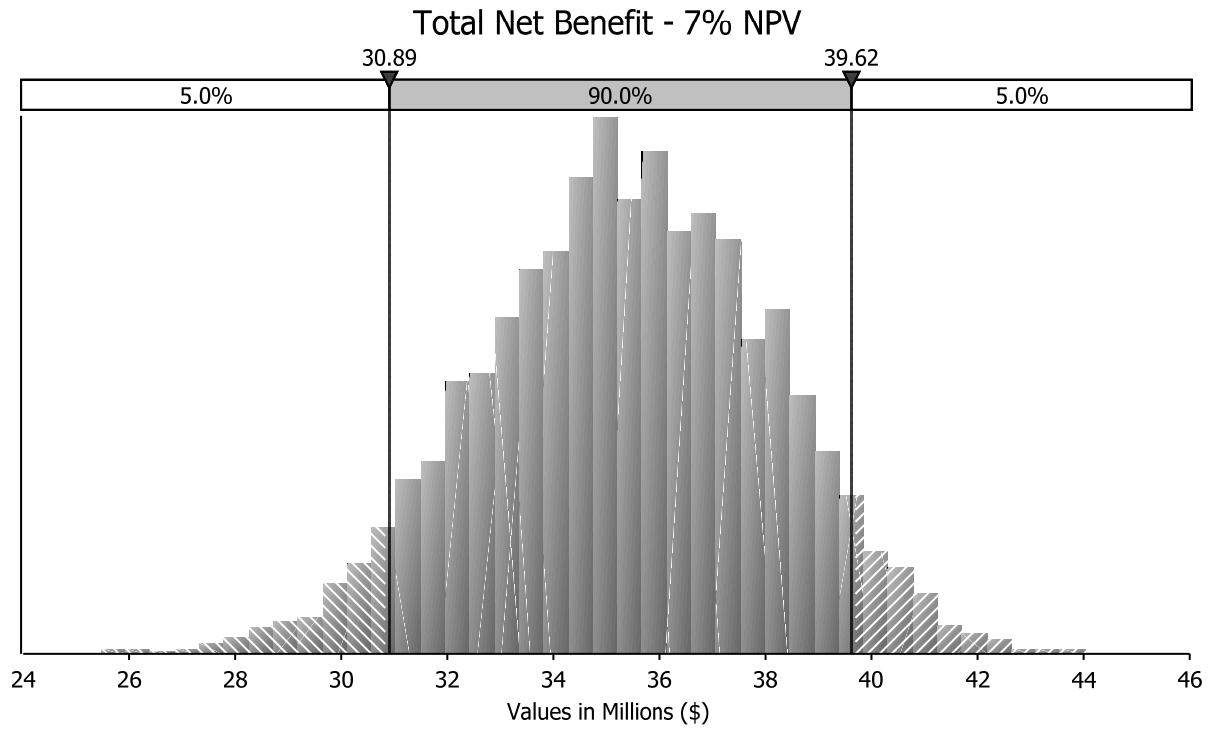


Table 5-3 provides other pertinent descriptive statistics.

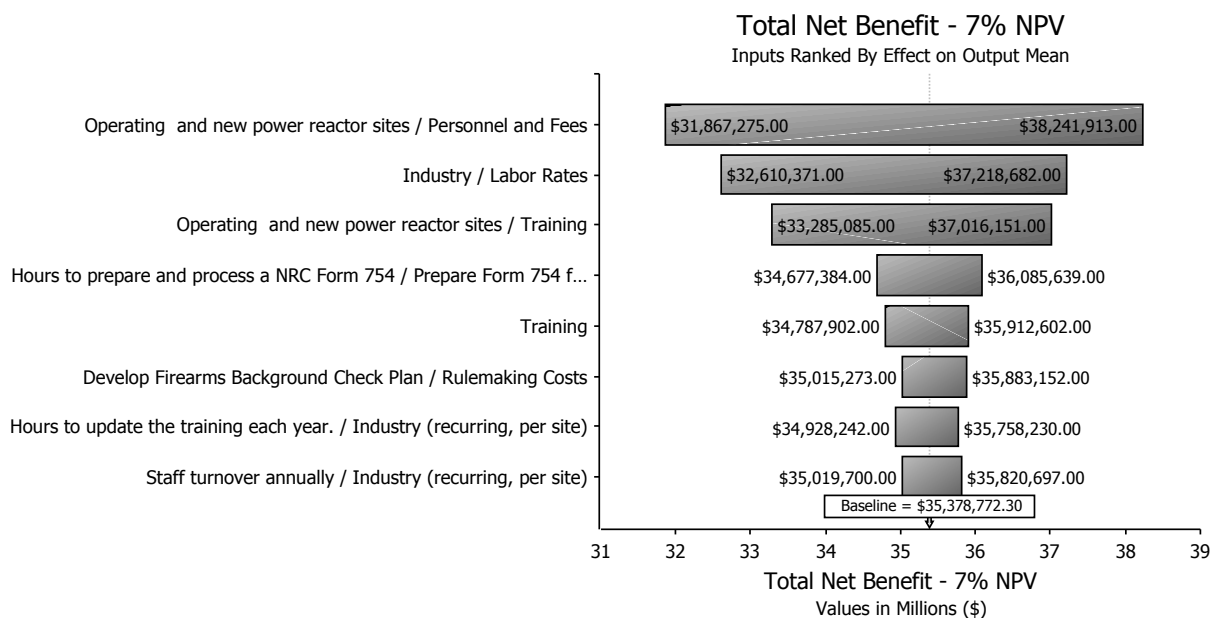


**Table 5-3. Uncertainty Results Descriptive Statistics (2016 million dollars)**

<b>Uncertainty Result</b>	<b>Minimum</b>	<b>Mean</b>	<b>Mode</b>	<b>Median</b>	<b>Maximum</b>	<b>5%</b>	<b>95%</b>
Industry Implementation Costs Averted	\$5.98	\$7.89	\$7.99	\$7.86	\$9.72	\$7.03	\$8.72
Industry Operation Costs Averted (7% Discount Rate)	\$19.4	\$27.4	\$27.3	\$27.4	\$34.7	\$23.7	\$30.9
Industry Operation Costs Averted (3% Discount Rate)	\$31.8	\$44.9	\$40.8	\$44.9	\$56.9	\$38.8	\$50.7
NRC Implementation Costs Averted	\$0.038	\$0.079	\$0.086	\$0.080	\$0.106	\$0.056	\$0.098
NRC Operation Costs Averted (7% Discount Rate)	\$0.020	\$0.025	\$0.025	\$0.025	\$0.029	\$0.023	\$0.027
NRC Operation Costs Averted (3% Discount Rate)	\$0.038	\$0.048	\$0.047	\$0.048	\$0.054	\$0.043	\$0.052
Total Net Benefit (7% Discount Rate)	\$25.5	\$35.4	\$35.0	\$35.4	\$44.0	\$30.9	\$39.6

Figure 5-8 shows a Tornado Diagram, which identifies the eight factors whose uncertainty drives the largest impact on the costs averted for the total net benefit. The uncertainty regarding the number of sites that applies for Section 161A authorities has the largest impact on industry implementation costs averted, is asymmetrical, and can result in less averted cost savings if more licensees request Section 161A authorities. The next two variables, industry labor rates and operating and new reactor site training program costs highlights the sensitivity of labor costs to the total net benefit. The remaining five variables, NRC Form 754 processing, training development, rulemaking costs, and staff turnover rate have lesser and comparable impacts on the total net benefit.

**Figure 5-8.  
Tornado Diagram of Total Net Benefit**



### 5.3. Uncertainty Analysis Results

A Monte Carlo analysis found that amending the proposed rule, as currently supplemented, to modify background check requirements related to Section 161A authorities would result in positive averted costs (e.g., savings) for all 10,000 simulations. Given the uncertainties involved in obtaining these estimates, a reasonable inference from the analysis is that proceeding with the supplemental rule represents a socially efficient use of resources.

### 5.4. Disaggregation

The NRC staff has evaluated the rulemaking to determine whether specific requirements have to be considered separately, but has determined that the requirements in the supplemental proposed rule are narrowly focused, meaning the benefits and costs can be reasonably and practically evaluated and disaggregation would not result in meaningful implications on the analysis results. Therefore, the analysis of disaggregated requirements is not appropriate.

### 5.5. 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 § 50.109(a)(3). Some aspects of this rule may have generic safety impacts 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 4.2. A more dominant effect of this rule is to reduce burden on the regulated entities and the NRC, resulting in cost savings for both. Because the change in safety associated with the rulemaking cannot be quantified, the regulatory changes cannot be compared to the NRC's safety goals.

## 6. Decision Rationale for Selection of the Proposed Action

Relative to the “no-action” alternative, the supplemental proposed rule would avert between \$37.6 million and \$56.4 million (at a 7-percent and 3-percent discount rate, respectively) in costs to industry. Averted recurring costs to the NRC are estimated to be between \$25,900 and \$49,000 (at a 7-percent and 3-percent discount rate, respectively). NRC implementation costs are estimated to be \$85,000 (present value) averted, leading to a net averted cost to the NRC of \$111,000 to \$134,000 (at a 7-percent and 3-percent discount rate, respectively). Therefore, the total averted cost resulting from this supplemental proposed rule is estimated to range from \$37.8 million (7-percent discount rate) to \$56.6 million (3-percent discount rate). Although the supplemental proposed rule is necessary to conform to the 2014 Firearms Guidelines, it also represents a cost benefit to both the Industry and the NRC.

Based on the NRC’s assessment of the benefits and costs of the supplemental proposed rule on licensees and certificate holders, the NRC staff recommends supplementing the proposed rule as the benefits are justified by the costs.

## 7. Implementation

The supplemental proposed rule will be published for public comment in the *Federal Register*. After that public comment period, the NRC staff will develop and publish a final rule in the *Federal Register*. The NRC staff assumes in this regulatory analysis that the final rule will be effective in 2016. The final rule would take effect 30 days after publication in the *Federal Register* with no compliance date for licensees and certificate holders who do not intend to apply for Section 161A authorities. However, licensees who have been issued a confirmatory order, approving their application for Section 161A authorities, would have a compliance date of 60 days after the effective date of publication of the final rule in the *Federal Register* to transition from the requirements of their orders to the requirements of the final rule. The NRC staff does not expect this rule to have any impact on other requirements.

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# **Appendix A Backfitting**

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## **Backfitting**

This supplemental proposed rule contains: (i) proposed provisions which reduce the regulatory burden associated with the original 2011 proposed rule and the 2013 supplemental proposed rule, and (ii) additional provisions – not contained in either the original 2011 proposed rule and the 2013 supplemental proposed rule – which facilitate licensees' capability to obtain burden reduction (i.e., proposed sunseting of the interim designation order and the confirmatory orders). The provisions of this supplemental proposed rule are effectively voluntary in nature, and would not impose modifications or additions to existing structures, components, designs, or existing procedures or organizations if adopted in final form. Accordingly, the provisions of this supplemental proposed rule, if adopted as a final rule, would not constitute backfitting or otherwise be inconsistent with any issue finality provision in Part 52, and the consideration of backfitting for the original 2011 proposed rule and the 2013 supplemental proposed rule, considered together, bounds the backfitting and issue finality consideration for this supplemental proposed rule. Therefore, a backfit analysis is not required and has not been completed for any of the provisions of this supplemental proposed rule.

**Appendix B**  
**U.S. Commercial Nuclear Power Reactor Sites**  
**Affected by the Enhanced Weapons Rule**

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**Table B-1. U.S. Commercial Nuclear Power Reactor Sites Subject to the Enhanced Weapons Rule**

No.	Site Name	Location	Reactors at Site						Type of Site for Purposes of Analysis
			Operating Reactor 1 Unit	Operating Reactors 2 Units	Operating Reactors 3 Units	Projected New Reactor Issued Combined License under 10 CFR Part 52	Reactors under Active Construction under 10 CFR Part 50 License	Reactors Undergoing Decommissioning	
1	Arkansas Nuclear One	London, AR		X					Site with only reactors that are in commercial operation
2	Beaver Valley Power Station	Shippingport, PA		X					Site with only reactors that are in commercial operation
3	Braidwood Station	Braceville, IL		X					Site with only reactors that are in commercial operation
4	Browns Ferry Nuclear Plant	Athens, IL			X				Site with only reactors that are in commercial operation
5	Brunswick Steam Electric Plant	Southport, NC		X					Site with only reactors that are in commercial operation
6	Byron Station	Byron, IL		X					Site with only reactors that are in commercial operation
7	Callaway Plant	Fulton, MO	X						Site with only reactors that are in commercial operation
8	Calvert Cliffs Nuclear Power Plant	Lusby, MD		X					Site with only reactors that are in commercial operation
9	Catawba Nuclear Station	York, SC		X					Site with only reactors that are in commercial operation
10	Clinton Power Station	Clinton, IL	X						Site with only reactors that are in commercial operation
11	Columbia Generating Station	Benton County, WA	X						Site with only reactors that are in commercial operation
12	Comanche Peak Nuclear Power Plant	Glen Rose, TX		X					Site with only reactors that are in commercial operation
13	Cooper Nuclear Station	Brownville, NE	X						Site with only reactors that are in commercial operation
14	Crystal River	Crystal River, FL						X	Site with only reactors that are in decommissioning
15	Davis-Besse Nuclear Power Station	Oak Harbor, OH	X						Site with only reactors that are in commercial operation

**Table B-1. U.S. Commercial Nuclear Power Reactor Sites Subject to the Enhanced Weapons Rule**

No.	Site Name	Location	Reactors at Site						Type of Site for Purposes of Analysis
			Operating Reactor 1 Unit	Operating Reactors 2 Units	Operating Reactors 3 Units	Projected New Reactor Issued Combined License under 10 CFR Part 52	Reactors under Active Construction under 10 CFR Part 50 License	Reactors Undergoing Decommissioning	
16	Diablo Canyon Nuclear Power Plant	Avila Beach, CA		X					Site with only reactors that are in commercial operation
17	Donald C. Cook Nuclear Plant	Bridgman, MI		X					Site with only reactors that are in commercial operation
18	Dresden Nuclear Power Station	Morris, IL		X				X	Site with only reactors that are in commercial operation <sup>a</sup>
19	Duane Arnold Energy Center	Palo, IA	X						Site with only reactors that are in commercial operation
20	Edwin I. Hatch Nuclear Plant	Baxley, GA		X					Site with only reactors that are in commercial operation
21	Fermi	Newport, MI	X					X	Site with only reactors that are in commercial operation <sup>a</sup>
22	Fort Calhoun Station	Ft. Calhoun, NE	X						Site with only reactors that are in commercial operation
23	Grand Gulf Nuclear Station	Port Gibson, MS	X						Site with only reactors that are in commercial operation
24	H.B. Robinson Steam Electric Plant	Hartsville, SC	X						Site with only reactors that are in commercial operation
25	Hope Creek Generating Station	Hancocks Bridge, NJ	X						Site with only reactors that are in commercial operation
26	Indian Point Nuclear Power Plant	Buchanan, NY		X				X	Site with only reactors that are in commercial operation <sup>a</sup>
27	James A. FitzPatrick Nuclear Power Plant	Scriba, NY	X						Site with only reactors that are in commercial operation
28	Joseph M. Farley Nuclear Plant	Columbia, AL		X					Site with only reactors that are in commercial operation
29	Kewaunee	Kewaunee, WI						X	Site with only reactors that are in decommissioning
30	LaSalle County Station	Marseilles, IL		X					Site with only reactors that are in commercial operation

**Table B-1. U.S. Commercial Nuclear Power Reactor Sites Subject to the Enhanced Weapons Rule**

No.	Site Name	Location	Reactors at Site					Type of Site for Purposes of Analysis	
			Operating Reactor 1 Unit	Operating Reactors 2 Units	Operating Reactors 3 Units	Projected New Reactor Issued Combined License under 10 CFR Part 52	Reactors under Active Construction under 10 CFR Part 50 License		Reactors Undergoing Decommissioning
31	Limerick Generating Station	Limerick, PA		X					Site with only reactors that are in commercial operation
32	McGuire Nuclear Station	Huntersville, NC		X					Site with only reactors that are in commercial operation
33	Millstone Power Station	Waterford, CT		X				X	Site with only reactors that are in commercial operation <sup>a</sup>
34	Monticello Nuclear Generating Plant	Monticello, MN	X						Site with only reactors that are in commercial operation
35	Nine Mile Point Nuclear Station	Scriba, NY		X					Site with only reactors that are in commercial operation
36	North Anna Power Station	Mineral, VA		X					Site with only reactors that are in commercial operation
37	Oconee Nuclear Station	Seneca, SC			X				Site with only reactors that are in commercial operation
38	Oyster Creek Nuclear Generating Station <sup>c</sup>	Forked River, NJ	X						Site with only reactors that are in commercial operation
39	Palisades Nuclear Plant	Covert, MI	X						Site with only reactors that are in commercial operation
40	Palo Verde Nuclear Generating Station	Wintersburg, AZ			X				Site with only reactors that are in commercial operation
41	Peach Bottom Atomic Power Station	Delta, PA		X				X	Site with only reactors that are in commercial operation <sup>a</sup>
42	Perry Nuclear Power Plant	Perry, OH	X						Site with only reactors that are in commercial operation
43	Pilgrim Nuclear Power Station	Plymouth, MA	X						Site with only reactors that are in commercial operation
44	Point Beach Nuclear Plant	Two Rivers, WI		X					Site with only reactors that are in commercial operation
45	Prairie Island Nuclear Generating Plant	Welch, MN		X					Site with only reactors that are in commercial operation

**Table B-1. U.S. Commercial Nuclear Power Reactor Sites Subject to the Enhanced Weapons Rule**

No.	Site Name	Location	Reactors at Site					Type of Site for Purposes of Analysis	
			Operating Reactor 1 Unit	Operating Reactors 2 Units	Operating Reactors 3 Units	Projected New Reactor Issued Combined License under 10 CFR Part 52	Reactors under Active Construction under 10 CFR Part 50 License		Reactors Undergoing Decommissioning
46	Quad Cities Nuclear Power Station	Cordova, IL		X					Site with only reactors that are in commercial operation
47	R.E. Ginna Nuclear Power Plant	Ontario, NY	X						Site with only reactors that are in commercial operation
48	River Bend Station	St. Francisville, LA	X						Site with only reactors that are in commercial operation
49	Salem Nuclear Generating Station	Hancocks Bridge, NJ		X					Site with only reactors that are in commercial operation
50	San Onofre Nuclear Generating Station	San Clemente, CA						X	Site with only reactors that are in decommissioning
51	Seabrook Station	Seabrook, NH	X						Site with only reactors that are in commercial operation
52	Sequoyah Nuclear Plant	Soddy-Daisy, TN		X					Site with only reactors that are in commercial operation
53	Shearon Harris Nuclear Power Plant	New Hill, NC	X						Site with only reactors that are in commercial operation
54	South Texas Project	Bay City, TX		X					Site with only reactors that are in commercial operation
55	St. Lucie Plant	Jensen Beach, FL		X					Site with only reactors that are in commercial operation
56	Surry Power Station	Surry, VA		X					Site with only reactors that are in commercial operation
57	Susquehanna Steam Electric Station	Berwick, PA		X					Site with only reactors that are in commercial operation
58	Three Mile Island Nuclear Station	Middletown, PA	X					X	Site with only reactors that are in commercial operation <sup>a</sup>
59	Turkey Point Nuclear Generating	Homestead, FL		X					Site with only reactors that are in commercial operation
60	Vermont Yankee Nuclear Power Station	Vernon, VT						X	Site with only reactors that are in decommissioning <sup>b</sup>

**Table B-1. U.S. Commercial Nuclear Power Reactor Sites Subject to the Enhanced Weapons Rule**

No.	Site Name	Location	Reactors at Site						Type of Site for Purposes of Analysis
			Operating Reactor 1 Unit	Operating Reactors 2 Units	Operating Reactors 3 Units	Projected New Reactor Issued Combined License under 10 CFR Part 52	Reactors under Active Construction under 10 CFR Part 50 License	Reactors Undergoing Decommissioning	
61	Virgil C. Summer Nuclear Station	Jenkinsville, SC	X			X			Site with both operating reactors and projected new reactors under a 10 CFR Part 52 license
62	Vogtle Electric Generating Plant	Waynesboro, GA		X		X			Site with both operating reactors and projected new reactors under a Part 10 CFR 52 license
63	Waterford Steam Electric Station	Killona, LA	X						Site with only reactors that are in commercial operation
64	Watts Bar Nuclear Plant	Spring City, TN	X				X		Site with both operating reactors and reactors under active construction under a 10 CFR Part 50 license
65	Wolf Creek Generating Station	Burlington, KS	X						Site with only reactors that are in commercial operation

<sup>a</sup> Site has operating reactor(s) and decommissioning reactor(s). Because the final rule applicability period for an operating reactor exceeds the period for a reactor that already is decommissioning, the site is categorized as a “site with only reactors that are in commercial operation” for purposes of this analysis.

<sup>b</sup> The Vermont Yankee Nuclear Power Station terminated commercial operation in December 2014 and thus, is categorized as “site with only reactors that are in decommissioning.” The operating license renewal applications for Indian Point Nuclear Generating Units 2 and 3 are under NRC consideration and it was assumed that these license renewals will be granted.

<sup>c</sup> Oyster Creek Nuclear Generating Station plans to terminate commercial operation in 2019.

**Sources:**

- (1) NRC, “Operating Nuclear Power Reactors (by Location or Name)” Web page, [www.nrc.gov](http://www.nrc.gov). Data current as of March 19, 2014. Available at: <http://www.nrc.gov/info-finder/reactor/>, last accessed on May 26, 2014.
- (2) NRC, “Locations of Power Reactor Sites Undergoing Decommissioning” Web page, [www.nrc.gov](http://www.nrc.gov). Data current as of April 24, 2014. Available at: <http://www.nrc.gov/info-finder/decommissioning/power-reactor/>, last accessed on May 26, 2014.
- (3) NRC, 2013-2014 Information Digest (NUREG-1350, Volume 25), “Appendix A: U.S. Commercial Nuclear Power Reactors - Operating Reactors under Active Construction or Deferred Policy,” August 2013. Available at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/#pubinfo>, last accessed on May 26, 2014.
- (4) NRC, “Combined License Applications for New Reactors” Web page, [www.nrc.gov](http://www.nrc.gov). Data current as of April 17, 2014. Available at: <http://www.nrc.gov/reactors/new-reactors/col.html>, last accessed on May 26, 2014



**Table B-2. Category I Strategic Special Nuclear Material Sites Subject to the Enhanced Weapons Rule**

<b>No.</b>	<b>Site Name</b>	<b>Location</b>	<b>Type of Site for Purposes of Analysis</b>
1	Babcock & Wilcox Nuclear Operations Group	Lynchburg, VA	Site with Category I Strategic Special Nuclear Material (fuel fabrication for the U.S. Navy)
2	Nuclear Fuel Services	Erwin, TN	Site with Category I Strategic Special Nuclear Material (fuel fabrication for the U.S. Navy)

**Appendix C**  
**Summary Tables of the Benefits and Costs of the**  
**Enhanced Weapons Supplemental Proposed Rulemaking**

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**Table C-1. Summary of Quantified One-Time, Recurring, Annual, and Overall Costs of the Supplemental Proposed Rule (2016 Dollars) <sup>a</sup>**

Cost Category	One-Time Costs	Recurring and Annual Costs	Present Value	
			7% Discount Rate	3% Discount Rate
One-Time Costs Averted	\$8,280,000	\$0	\$8,280,000	\$8,280,000
Recurring Costs Averted	\$0	\$78,300,000	\$29,500,000	\$48,300,000
<b>Total</b>	<b>\$8,280,000</b>	<b>\$78,300,000</b>	<b>\$37,800,000</b>	<b>\$56,600,000</b>

<sup>a</sup> Values rounded to three significant figures.

**Table C-2. Summary of Quantified One-Time, Recurring, Annual, and Overall Costs to Industry and the NRC, by Regulatory Requirement (2016 Dollars)<sup>a</sup>**

Cost Category	Averted Costs to Industry				Averted Costs to the NRC			
	One-Time Costs	Recurring and Annual Costs	Present Value		One-Time Costs	Recurring and Annual Costs	Present Value	
			7% Discount Rate	3% Discount Rate			7% Discount Rate	3% Discount Rate
Industry Initial Costs Averted	\$8,200,000	\$0	\$8,200,000	\$8,200,000	\$0	\$0	\$0	\$0
Industry Recurring and Annual Costs Averted	\$0	\$77,200,000	\$29,400,000	\$48,200,000	\$0	\$0	\$0	\$0
NRC Initial Costs Averted	\$0	\$0	\$0	\$0	\$85,000	\$0	\$85,000	\$85,000
NRC Recurring and Annual Costs Averted	\$0	\$0	\$0	\$0	\$0	\$1,140,000	\$25,900	\$49,000
<b>Total</b>	<b>\$8,200,000</b>	<b>\$77,200,000</b>	<b>\$37,600,000</b>	<b>\$56,400,000</b>	<b>\$85,000</b>	<b>\$1,140,000</b>	<b>\$111,000</b>	<b>\$134,000</b>

<sup>a</sup> Values rounded to three significant figures.

**Incremental Costs by Type of Site**

Tables C-3 and C-4 show the costs by the type of site to industry and the NRC, respectively. The tables also show the per-site costs and number of sites used to estimate total costs.

**Table C-3. Summary of Estimated Averted Costs to Industry under the Supplemental Proposed Rule, by Type of Site (2016 Dollars)<sup>a</sup>**

Type of Site	Per-Site Costs	Number of Sites	Total Costs
<b>One-Time Costs</b>			
Sites with reactors that are in commercial operation	\$146,000	51	\$7,446,000
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license	\$146,000	2	\$292,000
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license	\$146,000	1	\$146,000
Sites with only reactors that are in decommissioning	\$101,000	3	\$303,000
<b>Total One-Time Costs Averted<sup>a</sup></b>			<b>\$8,190,000</b>
<b>Recurring and Annual Costs</b>			
Sites with reactors that are in commercial operation	\$1,360,000	51	\$69,360,000
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license	\$2,460,000	2	\$4,920,000
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license	\$2,270,000	1	\$2,270,000
Sites with only reactors that are in decommissioning	\$275,000	3	\$825,000
<b>Total Recurring and Annual Costs Averted</b>			<b>\$77,400,000</b>

<sup>a</sup> Values rounded to three significant figures.

**Table C-4. Summary of Estimated Averted Costs to the NRC  
under the Supplemental Proposed Rule, by Type of Site (2016 Dollars) <sup>a</sup>**

Type of Site	Per-Site Costs	Number of Sites	Total Costs
<b>One-Time Costs</b>			
All Sites	n/a	67	-\$124,000
Sites with reactors that are in commercial operation	\$3,310	51	\$169,000
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license	\$3,310	2	\$6,620
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license	\$3,310	1	\$3,310
Sites with only reactors that are in decommissioning	\$1,650	3	\$4,950
<b>Total One-Time Costs Averted</b>			<b>\$59,900</b>
<b>Recurring and Annual Costs</b>			
Sites with reactors that are in commercial operation	\$20,000	51	\$1,020,000
Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license	\$36,700	2	\$73,400
Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license	\$33,300	1	\$33,300
Sites with only reactors that are in decommissioning	\$5,000	3	\$15,000
<b>Total Recurring and Annual Costs Averted</b>			<b>\$1,140,000</b>

<sup>a</sup> Values rounded to three significant figures.

Tables C-5 and C-6 summarize the estimated per-site costs associated with each of the cost categories for industry and the NRC, respectively.

**Table C-5. Estimated Per-Site Costs to Industry under the Supplemental Proposed Rule  
(2016 Dollars)<sup>a</sup>**

<b>Cost Category</b>	<b>Sites with reactors that are in commercial operation</b>	<b>Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license</b>	<b>Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license</b>	<b>Sites with only reactors that are in decommissioning</b>
Averted Implementation Costs for Industry	\$146,000	\$146,000	\$146,000	\$101,000
Averted Operational Costs for Industry	\$1,360,000	\$2,460,000	\$2,270,000	\$275,000

<sup>a</sup> Values rounded to three significant figures.

**Table C-6. Estimated Per-Site Costs to the NRC under the Supplemental Proposed Rule  
(2016 Dollars)<sup>a</sup>**

<b>Cost Category</b>	<b>Sites with reactors that are in commercial operation</b>	<b>Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license</b>	<b>Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license</b>	<b>Sites with only reactors that are in decommissioning</b>
<b>One-Time Costs</b>				
One-Time Rulemaking Costs	(\$124,000)			
Averted Implementation Costs for NRC	\$3,310	\$3,310	\$3,310	\$1,650
<b>Recurring Costs</b>				
Total Averted Operational Cost for NRC	\$20,000	\$36,700	\$33,300	\$5,000

<sup>a</sup> Values rounded to three significant figures.



**Table C-5. Estimated Per-Site Costs to Industry under the Supplemental Proposed Rule  
(2016 Dollars)<sup>a</sup>**

<b>Cost Category</b>	<b>Sites with reactors that are in commercial operation</b>	<b>Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license</b>	<b>Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license</b>	<b>Sites with only reactors that are in decommissioning</b>
Averted Implementation Costs for Industry	\$146,000	\$146,000	\$146,000	\$101,000
Averted Operational Costs for Industry	\$1,360,000	\$2,460,000	\$2,270,000	\$275,000

<sup>a</sup> Values rounded to three significant figures.

**Table C-6. Estimated Per-Site Costs to the NRC under the Supplemental Proposed Rule  
(2016 Dollars)<sup>a</sup>**

<b>Cost Category</b>	<b>Sites with reactors that are in commercial operation</b>	<b>Sites with both operating reactors and projected new reactors under a 10 CFR Part 52 license</b>	<b>Sites with both operating reactors and reactors under active construction under a 10 CFR Part 50 license</b>	<b>Sites with only reactors that are in decommissioning</b>
<b>One-Time Costs</b>				
One-Time Rulemaking Costs	(\$124,000)			
Averted Implementation Costs for NRC	\$3,310	\$3,310	\$3,310	\$1,650
<b>Recurring Costs</b>				
Total Averted Operational Cost for NRC	\$20,000	\$36,700	\$33,300	\$5,000

<sup>a</sup> Values rounded to three significant figures.

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**\*via email**

<b>OFFICE</b>	<b>NRR/DPR/ORMB/PM*</b>	<b>NRR/DPR/PRMB/SPM*</b>	<b>NRR/DPR/PRMB/BC*</b>	<b>NRR/DPR/DD*</b>	<b>NRR/DPR/D</b>
<b>NAME</b>	MEllenson	FSchofer w/ comments	TInverso	Amohseni	LKokajko
<b>DATE</b>	12/17/2014	1/12/2015	1/12/2015	1/12/2015	1/12/2015

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