Regulatory Analysis and Backfit Analysis

Final Rulemaking:
Enhancements to Emergency Preparedness Regulations
(10 CFR Parts 50 and 52)

The NRC staff provided this draft regulatory and backfit analysis document to the Advisory Committee for Reactor Safeguards in preparation for the subcommittee meeting on November 1, 2010.

NOTE: The NRC is making this draft regulatory and backfit analysis document available for public viewing only. The release of the draft regulatory and backfit analysis is intended to inform stakeholders of the current status of some of the NRC's activities related to the Emergency Preparedness rulemaking. The draft regulatory and backfit analysis document may be subject to significant revisions as a result of the final rulemaking process. The NRC is not soliciting formal public comments on this draft regulatory and backfit analysis document, and no stakeholder requests for a comment period will be granted. This draft document reflects the NRC's consideration of stakeholder comments throughout this rulemaking process.

Any questions on this document may be addressed to the NRC rulemaking project manager, Robert Beall (301-415-3874; Robert.Beall@nrc.gov).

U.S. Nuclear Regulatory Commission
Office of Nuclear Security and Incident Response

September 1, 2010

Table of Contents

Table of Contents i
Executive Summary 1
Abbreviations 3
1. Introduction 4
1.1 Statement of the Problem and Reasons for the Rulemaking 4
1.2 Background 4
1.2.1 Current Regulations Governing EP (10 CFR Part 50) 4
1.2.2 Commission Orders 4
1.2.3 NRC Bulletin 2005-02 5
1.2.4 NRC Guidance Documents 6
1.3 Regulatory Objectives 6
2. Identification and Preliminary Analysis of Alternative Approaches 7
3. Evaluation of Benefits and Costs 8
3.1 Identification of Affected Attributes 8
3.2 Analytical Methodology 9
3.2.1 Baselines for Analysis 10
3.2.2 EP Programs and Program Characteristics 10
3.2.3 Incremental Requirements in the Final Rule 11
3.2.4 Other Data and Assumptions 11
4. Results 12
4.1 Benefits and Costs Under the Main Analysis 12
4.1.1 Protection of Onsite Personnel 16
4.1.2 Emergency Action Levels for Hostile Action 17
4.1.3 Challenging Drills and Exercises 18
4.1.4 Evacuation Time Estimate Updating 19
4.1.5 Licensee Coordination with Offsite Response Organizations 20
4.1.6 On-Shift Multiple Responsibilities 21
4.1.7 Emergency Response Organization Augmentation and Alternative Facilities 22
4.1.8 Amended Emergency Plan Change Process 23
4.1.9 Emergency Declaration Timeliness 25
4.1.10 Emergency Operations Facility – Performance-Based Approach 26
4.1.11 Backup Means for ANS 27
4.2 Sensitivity Analysis – Pre-Order Baseline 28
4.3 Backfit Analysis 32
4.4 Safety Goal Evaluation 39
4.5 CRGR Results 39
5. Decision Rationale 41
5.1 Regulatory Analysis 41
5.2 Backfit Analysis 41
6. Implementation 42
6.1 Schedule 42
6.2 Impacts on Other Requirements 42

Appendix A Regulatory Analysis Assumptions, Inputs, and Results Per Facility, by Regulatory Initiative

Executive Summary

The Nuclear Regulatory Commission (NRC) is enhancing the current emergency preparedness (EP) regulations pertaining to nuclear reactors. The final rulemaking: (1) codifies EP requirements imposed by Commission order after the terrorist attacks of September 11, 2001, as modified based upon experience and insights gained by the NRC during implementation, (2) codifies certain EP and response enhancements discussed within NRC Bulletin 2005-02, and (3) adds several new requirements that resulted from NRC staff review of EP regulations and guidance. The rulemaking implements changes addressing 11 aspects of EP. All of these changes affect power reactor licensees, and one affects non-power reactors.

The analysis presented in this document examines the benefits and costs of the new EP requirements relative to the baseline of current regulations, relevant orders, and voluntary actions on the part of industry. As a sensitivity analysis, the document also examines the benefits and costs of the final rulemaking relative to the baseline of current regulations only (excluding the Order, NRC Bulletin 2005-02, and industry voluntary actions). The key findings of the analysis are as follows:

- Total Cost to Industry (including Backfits). The final rule is expected to result in a total one-time cost across all nuclear power plant sites and non-power reactors of approximately $32.0 million, followed by total annual costs on the order of $2.6 million. The total present value of these costs is $63.3 million (using a 7-percent discount rate) and $80.4 million (using a 3-percent discount rate) over the next 30 years. Almost all of the estimated costs to industry qualify as backfits (see Section 4.3).

- Average Cost per Site for Power Reactors. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $485,000 followed by annual costs of approximately $40,000.

- Average Cost per Site for Non-Power Reactors. The average non-power reactor will incur a one-time cost of approximately $14,000. The final rule will not impose any annual costs on non-power reactors.

- Value of Benefits Not Reflected Quantitatively. With the exception of some direct monetary savings to industry, the cost figures shown above do not reflect the value of the benefits of the final rule. These benefits are evaluated qualitatively in Section 4.1.

- Costs to NRC. The rule is expected to result in a one-time cost to NRC of approximately $598,000, followed by annual costs of approximately $192,000. The total present value of these NRC costs is $2.9 million (using a 7-percent discount rate) and $4.2 million (using a 3-percent discount rate).

- Costs to Other Government Agencies. The rule is expected to result in a one-time cost to other government agencies of approximately $3.5 million, followed by annual costs of approximately $316,000. The total present value of these other government

costs is $7.3 million (using a 7-percent discount rate) and $9.4 million (using a 3-percent discount rate).

- Decision Rationale. The rule is cost-justified because the regulatory initiatives for increased and consistent EP measures enable emergency personnel to respond earlier and more effectively to emergency events at nuclear power plants, increasing the public health and safety.

The final rule also will apply to any new reactors brought online after promulgation of the final rule, including Watts Bar Unit 2 as well as any units that would be built under the new reactor applications that NRC has received to date. Because EP program costs are primarily a site-based function, rather than a reactor-based function, the regulatory analysis and backfit analysis reflect costs associated with Watts Bar Unit 2 as well as those units covered by the new applications that (like Watts Bar Unit 2) would co-locate new reactors with currently operating reactors. For the new applications that would place new reactors at sites that are not co-located with operating reactors, this analysis estimates that one-time and annual impacts will be less than or equal to the corresponding impacts for operating reactors (i.e., because the development of EP plans for the new sites will not require that existing plans be analyzed and reworked). However, the quantitative results do not reflect any additional incremental cost for the non-co-located reactors due to the uncertainty associated with when and if these facilities actually will be licensed and operated.

Pre-Order Baseline Sensitivity Analysis. The regulatory analysis contains a sensitivity analysis that, like the main analysis, estimates the incremental costs of the final rule, but it assumes an alternative baseline consisting of only the regulations that were in effect *prior to* (1) issuance of NRC Order EA-02-26 on February 25, 2002, and (2) voluntary industry actions initiated in response to NRC Bulletin 2005-02. Relative to the pre-order baseline, the final rule is expected to result in a total one-time cost across all nuclear power plant sites of approximately $59.0 million, followed by total annual costs on the order of $2.6 million. The total present value of these costs is $90.3 million (using a 7-percent discount rate) and $107.4 million (using a 3-percent discount rate) over the next 30 years (see Section 4.2).

Abbreviations

ANS	Alert and Notification System
CFR	Code of Federal Regulations
CRGR	Committee to Review Generic Requirements
DHS	Department of Homeland Security
EAL	Emergency Action Level
EOF	Emergency Operations Facility
EP	Emergency Preparedness
EPZ	Emergency Planning Zone
ERO	Emergency Response Organization
ETE	Evacuation Time Estimate
FEMA	Federal Emergency Management Agency
ICM	Interim Compensatory Measure
JTA	Job Task Analysis
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ORO	Offsite Response Organization
SRM	Staff Requirements Memorandum
RIS	Regulatory Issue Summary

1. Introduction

This document presents a regulatory analysis of enhancements to the emergency preparedness (EP) requirements as set forth by the U.S. Nuclear Regulatory Commission (NRC) in Title 10 of the Code of Federal Regulations (10 CFR), Part 50, "Domestic Licensing of Production and Utilization Facilities" and Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." The final rule revises provisions contained in Sections 50.47, 50.54, and 52.79, and Appendix E to Part 50. This introduction is divided into three sections. Section 1.1 states the problem and the reasons for the rulemaking, Section 1.2 provides background information, and Section 1.3 discusses regulatory objectives related to adoption of the final rule.

1.1 Statement of the Problem and Reasons for the Rulemaking

Following the terrorist events of September 11, 2001, the NRC staff evaluated the EP planning basis given the resulting threat environment and concluded that it remains valid. However, the NRC staff recognized that security events differ from accidental events and that the EP regulations and guidance could be enhanced in this and other respects. In addition, NRC staff reviewed existing EP regulations and guidance and identified clarifications and enhancements to the regulations that recognize the benefits of advances in communication technologies and lessons learned through EP program implementation.

While licensees have implemented significant enhancements to their EP programs in response to the February 25, 2002, Commission Order, NRC Bulletin 2005-02, and various NRC generic communications, the current regulations do not encompass these elements. EP regulations and guidance could be enhanced to better reflect the security elements implemented in response to the attacks of September 11, 2001, advances in technology, and lessons learned. Therefore, the NRC is revising its regulations to codify the EP enhancements.

1.2 Background

1.2.1 Current Regulations Governing EP (10 CFR Part 50)

Part 50 codifies a set of EP planning standards in § 50.47(b) with supporting requirements in Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50.

1.2.2 Commission Orders

The Commission imposed several security orders on all operating power reactor licensees following September 11, 2001. On February 25, 2002, the NRC issued Order EA-02-26, "Interim Safeguards and Security Compensatory Measures (ICMs)," to all license holders for the operating commercial power reactors in the United States. Among other things, the Order required licensees to implement ICMs for the present threat level and take actions such as:

- Review the security and emergency plans to maximize compatibility,

- Assess the adequacy of staffing plans at emergency response facilities, and for licensees with an onsite emergency operations facility (EOF), identify alternative facilities capable of supporting emergency response,
- Develop plans, procedures and training regarding notification (including responding employees), activation, and coordination between the site and offsite response organizations (OROs),
- Conduct a review to ensure that responders are not assigned collateral duties that would prevent effective emergency response, and
- Implement site-specific Emergency Action Levels (EALs) to provide an anticipatory response to a credible threat.

1.2.3 NRC Bulletin 2005-02

The NRC issued Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," to obtain information regarding changes nuclear power reactor licensees made or were planning to make regarding security-based EP program capabilities and to evaluate how consistently such changes had been implemented. Specifically, the Bulletin focused on gathering information from licensees on five EP topic areas: security-based emergency classification levels and EALs; NRC notifications; onsite protective measures; emergency response organization (ERO) augmentation; and drill and exercise programs.

Nuclear plant licensees all responded that they had implemented, or planned to implement, the types of enhancements outlined in NRC Bulletin 2005-02. Further, the Nuclear Energy Institute (NEI) developed a white paper titled "Enhancements to Emergency Preparedness Programs for Hostile Action," issued May 2005 (revised November 18, 2005). The NRC staff endorsed this guidance in Regulatory Issue Summary (RIS) 2006-12, dated July 19, 2006, as an acceptable implementation methodology for the program enhancements discussed in NRC Bulletin 2005-02. However, these enhancements are voluntary. The NRC currently does not regard these voluntary actions in the licensing basis of the plants.

1.2.4 NRC Guidance Documents

NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (herein referred to as NUREG-0654) is the joint NRC and Federal Emergency Management Agency (FEMA) guidance that provides a basis for NRC licensees and State and local governments to develop radiological emergency plans and improve EP. It also is used by reviewers to determine the adequacy of State, local, and nuclear power plant licensee emergency plans and preparedness. NUREG-0654 provides guidance for each of the planning standards found in 10 CFR 50.47(b). Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Revision 2, issued October 1981, endorsed NUREG-0654/FEMA-REP-1, Revision 1. Regulatory Guide 1.101 provides guidance to licensees and applicants on methods acceptable to the NRC staff for complying with the standards in 10 CFR 50.47 that must be met in onsite and offsite emergency response plans. Regulatory guides are not substitutes for regulations, and compliance with them is not required. Licensees and applicants may propose methods and solutions different from those specified in the guides if they provide a basis for the findings required for the issuance of a license by the Commission.

1.3 Regulatory Objectives

The NRC's objectives for the current rulemaking are to (1) codify EP requirements imposed by Commission order after the terrorist attacks of September 11, 2001, as modified based upon experience and insights gained by the NRC during implementation, (2) codify certain EP and response enhancements discussed within NRC Bulletin 2005-02, and (3) add several new requirements that resulted from NRC staff review of EP regulations and guidance.

2. Identification and Preliminary Analysis of Alternative Approaches

Prior to the rulemaking, the NRC staff conducted an extensive review of EP regulations and guidance and developed numerous recommendations. The NRC staff presented the analysis and recommendations to the Commission in SECY-06-0200, "Results of the Review of Emergency Preparedness Regulations and Guidance," dated September 20, 2006. SECY-06-0200 also prioritized the NRC staff's recommendations using specified criteria. The Commission, in a Staff Requirements Memorandum (SRM) dated January 8, 2007, approved a rulemaking effort for the various EP initiatives contained in SECY-06-0200. In SECY-07-0182, "Semi-annual Update on the Status of Emergency Preparedness Activities," the NRC staff committed to first conduct rulemaking on the issues identified as high-priority in SECY-06-0200.

Based on the preliminary analysis described above, the rulemaking will revise 10 CFR 50.47, 50.54, and 52.79, and Appendix E to Part 50 to incorporate a total of 11 regulatory initiatives:

1. Protection of onsite personnel
2. EALs for hostile action
3. Challenging drills and exercises
4. Evacuation time estimate (ETE) updating
5. Licensee coordination with OROs
6. On-shift multiple responsibilities
7. ERO augmentation and alternative facilities
8. Amended emergency plan change process
9. Emergency declaration timeliness
10. EOF – performance-based approach
11. Backup means for alert and notification systems (ANS)

The rulemaking will allow the NRC to achieve enhancements to EP at nuclear power plants as well as greater regulatory consistency across licensees.

The alternative to these initiatives is the "no-action alternative." Under the no-action alternative, NRC would not amend the current regulations regarding EP at nuclear power plant sites. Licensees would continue to comply with the Commission's Order and voluntary commitments from the generic communications. This option would avoid certain costs that the final rule will impose. However, taking no action would not enhance EP based on recent experience, would not enhance regulatory efficiency, and, moreover, would present a problem for establishing appropriate EP measures for new reactors that did not receive the Commission Order or generic communications.

3. Evaluation of Benefits and Costs

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

3.1 Identification of Affected Attributes

This section identifies the factors within the public and private sectors that the regulatory alternatives (discussed in Section 2) are expected to affect. These factors are classified as "attributes" using the list of potential attributes provided by NRC in Chapter 5 of its *Regulatory Analysis Technical Evaluation Handbook*.[1] Affected attributes include the following:

- Public Health (Accident) – The final rule will reduce the risk that public health will be affected by radiological releases resulting from an emergency.
- Occupational Health (Accident) – The final rule will reduce the risk that occupational health will be affected by radiological releases resulting from emergencies and by some hostile action.
- Industry Implementation – The final rule will require licensees to make facility modifications and to revise their emergency plans and procedures, among other implementation activities.
- Industry Operation – The final rule will require licensees to conduct additional EP activities beyond those currently being conducted. For example, licensees must track compliance over time with NRC's challenging drill and exercise requirements.
- NRC Implementation – Under the final rule, NRC must develop or revise guidance and inspection procedures as a result of the new requirements.
- NRC Operation – The final rule will require the NRC to review biennial exercise scenarios and updated ETEs for each site on an ongoing basis.
- Other government – The final rule will result in one-time and annual costs to other government agencies. FEMA and State and local government agencies coordinate with NRC and licensees on EP activities. The final rule may require these other government agencies to review and revise guidance and procedures, and to conduct trainings.
- Regulatory Efficiency – The final rule will result in enhanced regulatory efficiency through regulatory and compliance improvements.

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

- Off-Site Property – The final rule will reduce the risk that off-site property will be affected by radiological releases resulting from emergencies.

- On-Site Property – The final rule will reduce the risk that on-site property will be affected by radiological releases resulting from emergencies and some hostile action.

Attributes that are *not* expected to be affected under any of the rulemaking options include the following: safeguards and security considerations; occupational health (routine); public health (routine); environmental considerations; general public; improvements in knowledge; and antitrust considerations.

3.2 Analytical Methodology

This section describes the process used to evaluate benefits and costs associated with the various regulatory options. The benefits of the rule include any desirable changes in affected attributes (e.g., monetary savings, improved safety resulting from new physical protection requirements) while the costs include any undesirable changes in affected attributes (e.g., monetary costs, increased exposures).

The analysis evaluates several attributes on a quantitative basis. (These include industry implementation, industry operation, NRC implementation, NRC operation, other government.) Quantitative analysis requires a baseline characterization of the universe, including factors such as the number of licensees affected, the nature of the activities currently being conducted, and the types of new or modified systems and procedures that licensees will implement, or will no longer implement, as a result of the rule. In fact, however, licensees may respond to the rule in different ways depending on their own licensee-specific characteristics, such as (1) the physical characteristics of their sites, (2) the current contents of their emergency plans, (3) the organizational and managerial characteristics of their operations, (4) their approaches toward meeting new performance-based criteria, and (5) the characteristics of the local communities and their relationship with the local communities. Sections 3.2.1–3.2.4 describe the most significant analytical data and assumptions used in the quantitative analysis of these attributes. Additional details regarding the calculations used in the analysis are presented in an appendix to the analysis.

The analysis relies on a primarily qualitative (rather than quantitative) evaluation of several of the affected attributes (public health, occupational health, offsite property, and onsite property) due to the difficulty in quantifying the impact of the current rulemaking.[2] These attributes are affected by the regulatory options through the associated increases in effectiveness of emergency plans and emergency response activities. Quantification of any of these attributes would require estimation of factors such as (1) the frequency of various types of emergencies and emergency events, (2) the radiological consequences of such emergencies, and (3) pre-rule and post-rule impacts associated with such emergencies and hostile action.

[2] The regulatory efficiency attribute also is evaluated qualitatively, by definition. See NRC's *Regulatory Analysis Technical Evaluation Handbook*, Section 5.5.14.

3.2.1 Baselines for Analysis

This regulatory analysis measures the incremental impacts of the final rule relative to a "baseline," which reflects anticipated behavior in the event that the final regulation is not imposed. The primary baseline used in this analysis assumes full licensee compliance with existing NRC requirements, including current regulations, relevant orders, and voluntary industry actions initiated in response to NRC Bulletin 2005-02. Section 4.1 presents the estimated incremental costs and savings of the final rule relative to this baseline. Unless otherwise noted, the estimated costs and savings presented in this document reflect this baseline and are referred to as the "main analysis."

The NRC staff also has prepared a sensitivity analysis as part of this regulatory analysis, in accordance with the agency's regulatory analysis guidelines. The sensitivity analysis, like the main analysis, estimates the incremental savings and costs of the final rule, but it assumes an alternative baseline consisting of only the regulations that were in effect before (1) issuance of NRC Order EA-02-26 on February 25, 2002, and (2) voluntary industry actions initiated in response to NRC Bulletin 2005-02. This analysis is referred to as the "pre-order baseline analysis," and its results appear in Section 4.2.

3.2.2 EP Programs and Program Characteristics

The analysis models 65 sites administering a total of 104 operating power reactors. It assumes that incremental costs and savings will accrue to sites independent of the number of reactor facilities located at each site. It also assumes that the manner in which operating reactors comply with current EP requirements is substantially similar (except as indicated in Appendix A) and that all operating nuclear power reactors are in full compliance with the applicable baseline requirements. As a result, the analysis applies the same average cost per activity to each site, even though in reality some sites will incur higher or lower costs. Each operating licensee is assumed to apply for and receive a single 20-year license extension. Based on the extended license expiration dates, the analysis calculates the average remaining operating life across all reactors as 30 years. Therefore, costs and savings are estimated for the 65 reactor sites over a 30-year period, with each year's costs or savings discounted back at a 7-percent and 3-percent discount rate, in accordance with NUREG/BR-0058, Rev. 4, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission." (See Section 4.1 for these results.)

The final rule will also apply to any new reactors brought online after promulgation of the final rule. Watts Bar Unit 2 is assumed to be one such reactor. In addition, NRC has received applications to build other nuclear power reactors. For Watts Bar Unit 2 and the new applications that (like Watts Bar Unit 2) would co-locate new reactors with currently operating reactors, this analysis assumes that there will be no significant additional incremental cost or saving incurred (because EP program costs are primarily a site-based function, rather than a reactor-based function). For the new applications that would place new reactors at sites that are not co-located with operating reactors, this analysis estimates that one-time and annual impacts will be less than or equal to the corresponding impacts for operating reactors (i.e., because the development of EP plans for the new sites will not require that existing plans be analyzed and reworked). Nevertheless, Section 4 does not reflect any additional incremental cost for the non-co-located reactors due to the uncertainty associated with when and if these facilities actually will be licensed and operated.

The final rule also makes a conforming change to Part 52 that affects combined license applicants. The conforming change points applicants to the EP requirements in Part 50, Appendix E, instead of the EP requirements in Section 50.34(f). This change will have a cost impact only for combined license applications that have been or will have been submitted prior to promulgation of this final rule. Specifically, applications may cite Section 50.34(f) as the regulatory basis for some of the EP features disclosed in the application. Under the final rule, these applications instead will need to cite Part 50, Appendix E as the regulatory basis. NRC estimates that the cost impact associated with this revision will be insignificant relative to the overall cost of the final rule.

In addition, one of the final rule's regulatory initiatives will apply to non-power reactor licensees.[3] As a result, the analysis also models the cost incurred by the 32 operating non-power reactors.

3.2.3 Incremental Requirements in the Final Rule

The NRC evaluated each of the 11 regulatory initiatives contained in the final rule relative to the applicable baselines described in Section 3.2.1. Based on this analysis, the NRC developed equations to estimate costs and savings using available data, augmented by assumptions when necessary. Appendix A documents this analysis, including the specific equations used to quantify costs and savings. The purpose of Appendix A is to show the per site cost assumptions used for this analysis.

3.2.4 Other Data and Assumptions

Information on operating non-power reactors, power reactors, and shutdown dates has been taken from NUREG-1350, Vol. 21, *NRC Information Digest, 2009-2010 Edition.* To the extent practical, quantitative information (e.g., costs and savings) and qualitative information (e.g., the nature and magnitude of impacts) on attributes affected by the rule have been developed by NRC staff. The analysis also considered input provided by stakeholders at public meetings.

The analysis assumes that the final rule becomes effective in August 2011, and that any one-time implementation costs are incurred during the first year. Ongoing (annual) costs of operation are assumed to begin in 2012, and are modeled on an annual cost basis. Costs and savings are expressed in 2010 dollars.

[3] Amended Emergency Plan Change Process applies to both nuclear power reactor and non-power reactor licensees. See Section 4.1.8 and Appendix A.8.b.

4. Results

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

- Section 4.1 presents results on the benefits and costs of the rule as a whole under the main analysis, as well as disaggregated results for each of the 11 regulatory initiatives that comprise the rule.
- Section 4.2 presents the results of the analysis under the pre-order baseline.
- Section 4.3 considers the findings relative to NRC's backfit rule.
- Section 4.4 addresses the applicability of a safety goal evaluation to the current rulemaking.
- Section 4.5 describes the information required for review by the Committee to Review Generic Requirements (CRGR).

4.1 Benefits and Costs Under the Main Analysis

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

Exhibits 4-1 and 4-2 summarize the results for the final rule as a whole, and Exhibit 4-3 shows the incremental costs for each of the 11 regulatory initiatives contained in the final rule. Relative to the no-action alternative (Option 1), the rule as a whole (Option 2) will result in a net quantitative cost estimated between $73.5 million and $94.0 million (7-percent and 3-percent discount rate, respectively). The majority of the costs associated with Option 2 will be incurred by industry ($63.3 million - $80.4 million, 7-percent and 3-percent discount rate, respectively).

The analysis estimates that Option 2 will result in qualitative benefits in the following attributes: public health (accident), occupational health (accident), regulatory efficiency, off-site property, and on-site property. Specifically, the benefits include a reduced risk that public health and occupational health will be affected by radiological releases resulting from radiological emergencies, including hostile action. There also will be enhanced regulatory efficiency through regulatory and compliance improvements, including changes in industry's planning efforts and in NRC's review and inspection efforts.

The final rule also will reduce the risk that off-site and on-site property will be affected by radiological releases resulting from emergencies, including hostile action. Although EP cannot affect the probability of the initiating hostile action, a high level of EP increases the likelihood of accident mitigation if the initiating event proceeds beyond the need for initial operator actions. An augmented EP program will reduce the risk that off-site and on-site property will be affected by radiological releases by improving the response to initiating events that could lead to severe accidents in the absence of mitigative response.

Exhibit 4-1
Summary of Overall Benefits and Costs

Net Monetary Savings (or Costs) - Total Present Value	Non-Monetary Benefits/Costs
Option 1: No Action $0	*Qualitative Benefits and Costs:* None.
Option 2: Final Rule **Industry:** ($63.3 million) using a 7% discount rate ($80.4 million) using a 3% discount rate **NRC:** ($2.9 million) using a 7% discount rate ($4.2 million) using a 3% discount rate **Other Government:** ($7.3 million) using a 7% discount rate ($9.4 million) using a 3% discount rate	*Qualitative Benefits:* Public Health (Accident): Reduced risk that public health will be affected by radiological releases resulting from radiological emergencies. Occupational Health (Accident): Reduced risk that occupational health will be affected by radiological releases resulting from radiological emergencies and by some hostile action. Regulatory Efficiency: Enhanced regulatory efficiency through regulatory and compliance improvements, including changes in industry's planning efforts and in NRC's review and inspection efforts. Off-Site Property: Reduced risk that off-site property will be affected by radiological releases resulting from radiological emergencies. On-Site Property: Reduced risk that on-site property will be affected by radiological releases resulting from radiological emergencies and some hostile action. *Qualitative Costs:* None.

Exhibit 4-2
Summary of One-Time, Annual, and Overall Benefits and Costs

	Total Savings and Costs				**Average per Nuclear Power Plant Site**		**Average per Non-Power Reactor**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($31,970,550)	($2,582,300)	($63,312,212)	($80,425,107)	($484,962)	($39,728)	($14,000)	$0
NRC	($597,600)	($192,400)	($2,932,780)	($4,207,814)	n/a	n/a	n/a	n/a
Other Government	($3,449,600)	($315,900)	($7,283,713)	($9,377,182)	n/a	n/a	n/a	n/a
Total	($36,017,750)	($3,090,600)	($73,528,706)	($94,010,103)	($484,962)	($39,728)	($14,000)	$0

Exhibit 4-3
Summary of One-Time, Annual, and Overall Benefits and Costs, by Regulatory Initiative

	Total Savings and Costs				Average per Site	
Section	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Protection of Onsite Personnel						
Industry	($2,613,000)	$0	($2,613,000)	($2,613,000)	($40,200)	$0
NRC	($18,800)	$0	($18,800)	($18,800)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($2,631,800)*	*$0*	*($2,631,800)*	*($2,631,800)*	*($40,200)*	*$0*
Emergency Action Levels for Hostile Action						
Industry	($487,500)	$0	($487,500)	($487,500)	($7,500)	$0
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($487,500)*	*$0*	*($487,500)*	*($487,500)*	*($7,500)*	*$0*
Challenging Drills and Exercises						
Industry	($832,000)	($468,000)	($6,512,168)	($9,613,603)	($12,800)	($7,200)
NRC	($52,000)	($64,000)	($828,775)	($1,252,903)	n/a	n/a
Other Government	$0	($279,500)	($3,392,323)	($5,244,568)	n/a	n/a
Subtotal	*($884,000)*	*($811,500)*	*($10,733,266)*	*($16,111,074)*	*($12,800)*	*($7,200)*
Evacuation Time Estimate Updating						
Industry	($7,228,000)	($785,200)	($16,758,060)	($21,961,578)	($111,200)	($12,080)
NRC	($376,000)	($36,400)	($817,791)	($1,059,014)	n/a	n/a
Other Government	($364,000)	($36,400)	($805,791)	($1,047,014)	n/a	n/a
Subtotal	*($7,968,000)*	*($858,000)*	*($18,381,641)*	*($24,067,605)*	*($111,200)*	*($12,080)*
Licensee Coordination with Offsite Response Organizations						
Industry	($133,250)	$0	($133,250)	($133,250)	($2,050)	$0
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	($715,000)	$0	($715,000)	($715,000)	n/a	n/a
Subtotal	*($848,250)*	*$0*	*($848,250)*	*($848,250)*	*($2,050)*	*$0*
On-Shift Multiple Responsibilities						
Industry	($5,824,000)	$0	($5,824,000)	($5,824,000)	($89,600)	$0
NRC	($65,600)	$0	($65,600)	($65,600)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($5,889,600)*	*$0*	*($5,889,600)*	*($5,889,600)*	*($89,600)*	*$0*

	Total Savings and Costs				**Average per Site**	
Section	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Emergency Response Organization Augmentation and Alternative Facilities						
Industry	($1,417,000)	($65,000)	($2,205,912)	($2,636,667)	($21,800)	($1,000)
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($1,417,000)*	*($65,000)*	*($2,205,912)*	*($2,636,667)*	*($21,800)*	*($1,000)*
Amended Emergency Plan Change Process – Power Reactor Licensees						
Industry	($1,183,000)	($154,100)	($3,053,329)	($4,074,549)	($18,200)	($2,371)
NRC	$0	($92,000)	($1,116,614)	($1,726,298)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	($1,183,000)	($246,100)	($4,169,943)	($5,800,847)	($18,200)	($2,371)
Amended Emergency Plan Change Process – Non-Power Reactor Licensees						
Industry	($448,000)	$0	($448,000)	($448,000)	($14,000)	$0
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($448,000)*	*$0*	*($448,000)*	*($448,000)*	*($14,000)*	*$0*
Emergency Declaration Timeliness						
Industry	($286,000)	$0	($286,000)	($286,000)	($4,400)	$0
NRC	($15,600)	$0	($15,600)	($15,600)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($301,600)*	*$0*	*($301,600)*	*($301,600)*	*($4,400)*	*$0*
Emergency Operations Facility - Performance Based Approach						
Industry	$0	$0	$0	$0	$0	$0
NRC	($54,000)	$0	($54,000)	($54,000)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($54,000)*	*$0*	*($54,000)*	*($54,000)*	*$0*	*$0*
Backup Means for Alert and Notification Systems						
Industry	($11,518,800)	($1,110,000)	($24,990,993)	($32,346,960)	($177,212)	($17,077)
NRC	($15,600)	$0	($15,600)	($15,600)	n/a	n/a
Other Government	($2,370,600)	$0	($2,370,600)	($2,370,600)	n/a	n/a
Subtotal	*($13,905,000)*	*($1,110,000)*	*($27,377,193)*	*($34,733,160)*	*($177,212)*	*($17,077)*

	Total Savings and Costs				**Average per Site**	
Section	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
TOTAL (All Regulatory Initiatives)						
Industry	($31,970,550)	($2,582,300)	($63,312,212)	($80,425,107)	Nuclear Power Plant: ($484,962) Non-Power Reactor: ($14,000)	Nuclear Power Plant: ($39,728) Non-Power Reactor: $0
NRC	($597,600)	($192,400)	($2,932,780)	($4,207,814)	n/a	n/a
Other Government	($3,449,600)	($315,900)	($7,283,713)	($9,377,182)	n/a	n/a
Total	**($36,017,750)**	**($3,090,600)**	**($73,528,706)**	**($94,010,103)**	**Nuclear Power Plant: ($484,962)** **Non-Power Reactor: ($14,000)**	**Nuclear Power Plant: ($39,728)** **Non-Power Reactor: $0**

*Results in 2010 dollars.
**Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.1 Protection of Onsite Personnel

The new measures for this regulatory initiative will protect onsite emergency responders and other onsite personnel in emergencies resulting from hostile actions. The NRC conducted analyses following the terrorist attacks of September 11, 2001, and determined that the current guidance for protection of personnel during an emergency would not be protective in hostile action scenarios. A lack of protection for emergency responders who are expected to implement the emergency plan could result in the plan not being implemented as required. These emergency responders are best able to mitigate any damage caused by the hostile action and to provide notifications to OROs to consider protective actions for the public should such be necessary. A lack of protection for onsite emergency responders could result in the responders not being able to provide an adequate protective response during hostile action scenarios. The final rule will require licensees to develop new protective measures, such as evacuating personnel from target buildings, taking cover during an armed attack, accounting for personnel after an attack, and providing emergency response training. Such measures are prudent to protect personnel necessary to safely shut down the reactor. The primary benefit of this initiative, therefore, is potentially saving lives and reducing exposures during hostile action, both in terms of the emergency responders and the local population.

- Total Cost to Industry. The regulatory initiative will lead to in a total one-time cost across all power reactor licensees of approximately $2.6 million.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $40,000.

- Costs to NRC. The regulatory initiative will result in a one-time cost to NRC of approximately $19,000.

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because, in the event of hostile action, the provision potentially will result in significant saving of lives and reduction in exposures for onsite personnel. Appendix A.1 presents more detailed information on the costs for the protection of onsite personnel regulatory initiative.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($2,613,000)	$0	($2,613,000)	($2,613,000)	($40,200)	$0
NRC	($18,800)	$0	($18,800)	($18,800)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($2,631,800)*	*$0*	*($2,631,800)*	*($2,631,800)*	*($40,200)*	*$0*

Appendix A.1 presents additional detail on the cost analysis for the regulatory initiative addressing protection of onsite personnel. Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.2 Emergency Action Levels for Hostile Action

This regulatory initiative codifies generically applicable requirements similar to those imposed by the anticipatory EALs of the ICM Order and industry initiatives responding to NRC Bulletin 2005-02. In the aftermath of the terrorist attacks of September 11, 2001, the staff became aware that the currently approved nuclear plant EALs may not appropriately characterize hostile actions. Changes to EALs were warranted due to the potentially rapid and purposefully damaging nature of hostile actions. Without proper declaration of emergencies based on hostile action, OROs may not receive adequate and timely notification and the ERO may not activate in a timely manner to provide an adequate protective response during hostile action scenarios. The regulatory initiative will increase assurance that licensees are adequately prepared to conduct appropriate assessment and emergency classification during hostile action, thereby resulting in emergency personnel onsite and offsite receiving proper notification to rapidly respond with the appropriate resources. The benefit of these new measures is to provide licensees and EROs more time to prepare for and respond to emergency events, thereby potentially saving lives, radiation exposure and property.

- Total Cost to Industry. The regulatory initiative will lead to a total one-time cost across all power reactor licensees of approximately $488,000.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $8,000.

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will allow emergency responders more time to coordinate a response effort in the event of hostile action. The additional time will potentially enable emergency responders to save more lives.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($487,500)	$0	($487,500)	($487,500)	($7,500)	$0
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($487,500)*	*$0*	*($487,500)*	*($487,500)*	*($7,500)*	*$0*

Appendix A.2 presents additional detail on the cost analysis for the regulatory initiative addressing EALs for hostile action. Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.3 Challenging Drills and Exercises

The challenging drills and exercises initiative originated from NRC Bulletin 2005-02, as well as from an SRM issued on June 29, 2006. NRC regulations are designed to ensure that licensee ERO personnel are prepared to respond to any emergency. Drill and exercise programs are intended to ensure that ERO personnel develop and maintain the key skills necessary for mitigating emergencies. In the aftermath of the terrorist attacks of September 11, 2001, the staff became aware that hostile actions pose circumstances that are different from the conditions traditionally practiced in EP drill and exercise programs. The ERO is the primary organization trained to effectively mitigate damage caused by an emergency and to notify OROs of the event and, if necessary, of the need to take protective actions. Including hostile action in licensee drill and exercise programs will better prepare the ERO to respond to such events. This regulatory change will require enhanced scenario content for drills and exercises to include hostile action scenarios, and reduce preconditioning of licensee staff through a wider spectrum of challenges, thus improving licensee ERO capabilities under all accident scenarios. The benefit will be increased assurance that emergency plans would be implemented during any emergency and as a result, improved protection of public health and safety during an emergency.

- Total Cost to Industry. The regulatory initiative will lead to a total one-time cost across all power reactor licensees of approximately $832,000, followed by total annual costs on the order of $468,000. The total present value of these costs is approximately $6.5 million (using a 7-percent discount rate) and $9.6 million (using a 3-percent discount rate) over the next 30 years.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $13,000 followed by annual costs of approximately $7,000.

- Costs to NRC. The regulatory initiative will result in a one-time cost to NRC of approximately $52,000, followed by annual costs of approximately $64,000. The total present value of these NRC costs is $829,000 (using a 7-percent discount rate) and $1.3 million (using a 3-percent discount rate).

- Costs to Other Government Agencies. The rule will result in annual costs to other government agencies to participate in hostile action drills and exercises. The annual cost is approximately $279,500. The total present value of these costs is $3.4 million (using a 7-percent discount rate) and $5.2 million (using a 3-percent discount rate).

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will improve the execution of EP plans and better protect public health and safety during an emergency.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($832,000)	($468,000)	($6,577,951)	($9,812,197)	($12,800)	($7,200)
NRC	($52,000)	($64,000)	($837,771)	($1,280,061)	n/a	n/a
Other Government	$0	($279,500)	($3,392,323)	($5,244,568)	n/a	n/a
Subtotal	*($884,000)*	*($811,500)*	*($10,733,266)*	*($16,111,074)*	*($12,800)*	*($7,200)*

Appendix A.3 presents additional detail on the cost analysis for the regulatory initiative addressing challenging drills and exercises.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.4 Evacuation Time Estimate Updating

The purpose of ETEs is to analyze expected traffic flow during an evacuation and identify any constraint that could challenge efficient evacuation. The ETE facilitates evacuation planning to provide an adequate protective response in the unlikely event of a severe accident. ETE results provide emergency planners information to support protective action decisions, including whether evacuation or sheltering in place is the better response to a severe accident. Existing EP regulations are ambiguous on updating ETEs. The changes to the regulations and guidance, which originated from NRC staff review, will require the periodic review and updating of the ETEs as well as information on evacuation plan improvements. The staff is in the process of changing its guidance for the recommendation of protective actions to protect the public. The best protective action strategy is conditional on the evacuation time for some accident scenarios. ETEs performed in accordance with standard methods will improve the information used for determining the best protective action strategy for each site. The primary benefit of this change will be to aid in the

development of the appropriate protective action strategy for each site. In addition, the identification of potential evacuation challenges and the consideration of methods to improve evacuation plans will lead to enhanced protection of public health and safety.

- Total Cost to Industry. The regulatory initiative will lead to a total one-time cost across all power reactor licensees of approximately $7.2 million, followed by total annual costs on the order of $785,000. The total present value of these costs is approximately $16.8 million (using a 7-percent discount rate) and $22.0 million (using a 3-percent discount rate) over the next 30 years.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $111,000 followed by annual costs of approximately $12,000.

- Costs to NRC. The regulatory initiative will result in a one-time cost to NRC of approximately $376,000, followed by annual costs of approximately $36,000. The total present value of these NRC costs is $818,000 (using a 7-percent discount rate) and $1.1 million (using a 3-percent discount rate).

- Costs to Other Government Agencies. The rule will result in a one-time cost to other government agencies of approximately $364,000, followed by annual costs of approximately $36,000. The total present value of these other government costs is $806,000 (using a 7-percent discount rate) and $1.1 million (using a 3-percent discount rate).

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will result in updated EP plans, more effective emergency responses, and better protection to the local population in case of an emergency event.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($7,228,000)	($785,200)	($16,758,060)	($21,961,578)	($111,200)	($12,080)
NRC	($376,000)	($36,400)	($817,791)	($1,059,014)	n/a	n/a
Other Government	($364,000)	($36,400)	($805,791)	($1,047,014)	n/a	n/a
Subtotal	*($7,968,000)*	*($858,000)*	*($18,381,641)*	*($24,067,605)*	*($111,200)*	*($12,080)*

Appendix A.4 presents additional detail on the cost analysis for the regulatory initiative addressing ETE updating.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.5 Licensee Coordination with Offsite Response Organizations

This regulatory initiative originated in the Order and from the NRC staff's observation of Department of Homeland Security (DHS) Comprehensive Reviews. Currently, licensees are not explicitly required to coordinate with OROs and identify in their emergency plans the

assistance expected from ORO personnel during hostile action directed at a nuclear power plant. The DHS Comprehensive Review program determined that, at many sites, OROs had not planned for the competing resource demands that would occur during hostile action. The final rule will require licensees to identify in their emergency plans the assistance expected from State, local, and Federal agencies with responsibilities for coping with emergencies, including hostile action at the site. These regulations require licensees to know which OROs would respond during an emergency and how to communicate with those OROs. The primary benefit will be to increase assurance that resources are available to respond to hostile action at a nuclear power plant. This change will enhance protection of public health and safety.

- Total Cost to Industry. The regulatory initiative will lead to a total one-time cost across all power reactor licensees on the order of $133,000.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $2,000.

- Costs to Other Government Agencies. Additionally, the regulatory initiative will result in a one-time cost to other government agencies of approximately $715,000.

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will increase the effectiveness of important aspects of the EP plan, thereby potentially saving lives in the event of an emergency.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($133,250)	$0	($133,250)	($133,250)	($2,050)	$0
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	($715,000)	$0	($715,000)	($715,000)	n/a	n/a
Subtotal	*($848,250)*	*$0*	*($848,250)*	*($848,250)*	*($2,050)*	*$0*

Appendix A.5 presents additional detail on the cost analysis for the regulatory initiative addressing licensee coordination with OROs.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.6 On-Shift Multiple Responsibilities

This regulatory initiative will codify generically applicable requirements similar to those imposed by the 2002 ICM Order requirements limiting on-shift staff multiple responsibilities for individuals performing emergency plan functions. The final rule requires nuclear power reactor licensees to perform a detailed analysis, such as a job task analysis (JTA) or a time motion analysis, to demonstrate that on-shift personnel could implement the plan effectively without having competing responsibilities that could prevent them from performing their primary emergency plan tasks. The regulatory initiative will increase assurance that

appropriate shift resources are available for emergency plan implementation so that during an emergency, licensees will be able to carry out their emergency plans in timely fashion as needed to protect public health and safety. The lack of adequate staff on shift has the potential to delay implementation of the emergency plan during plant transients that may lead to an emergency. The primary benefit of this requirement will be to increase assurance of effective and timely emergency plan implementation and timely protective action recommendations to OROs, should that be necessary. This will enhance protection of public health and safety in the event of an emergency.

- Total Cost to Industry. The final rule will lead to a total one-time cost across all power reactor licensees of approximately $5.8 million.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $90,000.

- Costs to NRC. The regulatory initiative will result in a one-time cost to NRC of approximately $66,000.

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will reduce the possibility that emergency plans will fail as a result of foreseeable conflicts caused by multiple responsibilities. Therefore, the public will be better protected because onsite staff will be able to better fulfill all aspects of the emergency plan, and protective action recommendations to State and local government authorities will be more timely and accurate.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($5,824,000)	$0	($5,824,000)	($5,824,000)	($89,600)	$0
NRC	($65,600)	$0	($65,600)	($65,600)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($5,889,600)*	*$0*	*($5,889,600)*	*($5,889,600)*	*($89,600)*	*$0*

Appendix A.6 presents additional detail on the cost analysis for the regulatory initiative addressing on-shift multiple responsibilities.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.7 Emergency Response Organization Augmentation and Alternative Facilities

This regulatory initiative will codify generically applicable requirements for the use of an alternative emergency response facility or facilities similar to those requirements imposed by Order EA-02-26 and addressed in NRC Bulletin 2005-02. The alternative facility or facilities will protect ERO personnel from hostile action and increases assurance of timely ERO augmentation so responders can travel quickly to the site. In the event of hostile action, the

onsite EP facilities may not be accessible by emergency response personnel, which may prevent the ERO from taking the necessary actions to mitigate facility damage or implementing measures to protect public health and safety. Alternative facilities provide a place where the ERO can gather and prepare to enter the site as soon as it is safe to do so. If the ERO cannot gather in a timely manner, the full augmentation of the on shift ERO would be delayed. The alternative facility would be equipped to allow the ERO to begin preparations for damage mitigation efforts when they can access the site. The primary benefit of this regulatory initiative is greater assurance that the emergency response effort will be effective in the event that hostile action compromises primary emergency response facilities.

- Total Cost to Industry. The regulatory initiative will lead to a total one-time cost across all power reactor licensees on the order of $1.4 million, followed by total annual costs of approximately $65,000. The total present value of these costs is $2.2 million (using a 7-percent discount rate) and $2.6 million (using a 3-percent discount rate) over the next 30 years.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $22,000 followed by annual costs of approximately $1,000.

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will increase assurance that EP plans would be executed effectively in the event of hostile actions, thereby better protecting public health and safety.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($1,417,000)	($65,000)	($2,205,912)	($2,636,667)	($21,800)	($1,000)
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($1,445,000)*	*($65,000)*	*($2,205,912)*	*($2,636,667)*	*($21,800)*	*($1,000)*

Appendix A.7 presents additional detail on the cost analysis for the regulatory initiative addressing ERO augmentation and alternative facilities.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.8 Amended Emergency Plan Change Process

Current regulations require licensees to “maintain in effect” their emergency plans. The objective of this regulatory initiative, which originated in NRC staff review and applies both to power reactors and non-power reactors, is not an improvement in current safety, but rather ensuring that the current level of safety is not reduced by changes to the emergency plan. The final rule will substantially clarify what changes would reduce the effectiveness of the

licensee's plans, minimizing licensees' uncertainty regarding what changes would require prior NRC staff review and what changes would not. This outcome, if achieved, will result in the following benefits:

- Facilitate the decision process for changes, resulting in less review and evaluation time.
- Minimize licensee's exposure to potential violations for making changes without needed prior NRC staff review.
- Minimize the increasing trend by some licensees of avoiding enforcement action by submitting all EP plan changes for NRC review, resulting in fewer costs of submittal and NRC staff charges.

- Total Cost to Industry. The regulatory initiative will lead to a total one-time cost across all power reactor licensees of approximately $1.2 million, followed by total annual costs of about $154,000. In addition, the regulatory initiative will result in a one-time cost across all non-power reactors of approximately $448,000. Non-power reactors do not incur annual costs. The total present value of these costs is $4.6 million (using a 7-percent discount rate) and $6.3 million (using a 3-percent discount rate) over the next 30 years.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $18,000 followed by annual costs of approximately $2,000. The average non-power reactor will incur a one-time cost of approximately $14,000 and no annual costs.

- Costs to NRC. The regulatory initiative will result in an annual cost of $92,000. The total present value of these NRC costs is $1.1 million (using a 7-percent discount rate) and $1.7 million (using a 3-percent discount rate).

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will increase assurance that current levels of safety will not be reduced and the licensee's emergency plan, as modified, will continue to meet the requirements in Appendix E to Part 50, and for nuclear power reactors, the planning standards of 10 CFR 50.47(b).

	Total Savings and Costs				Average per Site	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Nuclear Power Reactor Licensees						
Industry	($1,183,000)	($154,100)	($3,053,329)	($4,074,549)	($18,200)	($2,371)
NRC	$0	($92,000)	($1,116,614)	($1,726,298)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Non-Power Reactor Licensees						
Industry	($448,000)	$0	($448,000)	($448,000)	($14,000)	$0
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($1,631,000)*	*($246,100)*	*($4,617,943)*	*($6,248,847)*	*($16,814)*	*($2,371)*

Appendix A.8 presents additional detail on the cost analysis for the regulatory initiative addressing Amended Emergency Plan Change Process.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.9 Emergency Declaration Timeliness

Current EP regulations do not establish timeliness criteria for the emergency declaration process. This regulatory initiative, which originated from NRC staff review, will require licensees to have the capability to assess, classify, and declare an emergency within 15 minutes of the availability of information that an EAL has been exceeded and to promptly declare the emergency as soon as possible following identification of the appropriate classification. While this action already is largely conducted on a voluntary basis by the industry, codification of the rule will result in increased assurance that the emergency plan will be effectively implemented. Thus, the objective of the regulatory initiative is to ensure that licensee emergency declarations are performed in a timely manner so as to support timely implementation of emergency response actions. The primary benefit will be to enhance the NRC's assurance that protective actions can be implemented on a timely basis, thereby protecting public health and safety.

- Total Cost to Industry. The regulatory initiative will lead to a total one-time cost across all power reactor licensees of approximately $286,000.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $4,000.

- Costs to NRC. The regulatory initiative will result in a one-time cost to NRC of approximately $16,000.

- Decision Rationale. Although the NRC did not quantify the benefits of this provision, the NRC staff did qualitatively examine benefits and concluded that the provision will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will increase assurance in the ability of licensees to conduct timely emergency declarations in the event of an emergency, which, in turn, will allow emergency personnel to respond as quickly as possible to protect the public.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($286,000)	$0	($286,000)	($286,000)	($4,400)	$0
NRC	($15,600)	$0	($15,600)	($15,600)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($301,600)*	*$0*	*($301,600)*	*($301,600)*	*($4,400)*	*$0*

Appendix A.9 presents additional detail on the cost analysis for the regulatory initiative addressing the timeliness of emergency declarations.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.10 Emergency Operations Facility – Performance-Based Approach

This provision will revise the EP regulations to make the requirements for EOFs more performance-based. This regulatory initiative, which originated from NRC staff review, will allow licensees to locate an EOF more than 25 miles from a site and multi-site licensees to consolidate their EOFs if those licensees can demonstrate their emergency response strategies will adequately cope with an emergency at any of the associated plants. The new measures will provide specific functional requirements for EOFs, thereby ensuring that the necessary capabilities will be in place for the protection of public health and safety. The primary benefit of this provision will be the reduction in costs achieved by licensees that choose to locate their EOFs more than 25 miles from a site or consolidate their EOFs.

- Total Savings to Industry. The analysis assumes there will be no incremental costs to licensees for this regulatory initiative because the rule will not require location of an EOF more than 25 miles from a site or consolidation of EOFs. Instead, a licensee voluntarily will choose to pursue consolidation only if the incremental savings will exceed the incremental costs. These savings have not been quantified in the analysis.

- Costs to NRC. The regulatory initiative will result in a one-time cost to NRC of approximately $54,000.

- Decision Rationale. The provision's savings to licensees will exceed the costs to the NRC and, therefore, that the provision is cost-justified.

	Total Savings and Costs				Average per Site	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	$0	$0	$0	$0	$0	$0
NRC	($54,000)	$0	($54,000)	($54,000)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($54,000)*	*$0*	*($54,000)*	*($54,000)*	*$0*	*$0*

Appendix A.10 presents additional detail on the cost analysis for the regulatory initiative addressing the EOF performance-based approach.
Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.1.11 Backup Means for ANS

This regulatory initiative, which originated from NRC staff review, will require that the public ANS has backup methods for both the alert and notification functions. Licensees (or the responsible offsite authorities) must demonstrate that the site's alert and notification capability includes administrative and physical means for a backup method. A backup means of alerting and notifying the public will increase the likelihood that an adequate protective response can be implemented when the primary means of alert and notification is unavailable. The primary benefit of this provision will be to provide increased assurance that the public will be alerted and notified of any emergent event at the nuclear power plant, thereby increasing the effectiveness of the emergency plan, saving lives, and increasing public safety and confidence.

- Total Cost to Industry. The regulatory initiative will result in a total one-time cost across all power reactor licensees of approximately $11.5 million, followed by total annual costs on the order of $1.1 million. The total present value of these costs is $25.0 million (using a 7-percent discount rate) and $32.3 million (using a 3-percent discount rate) over the next 30 years.

- Average Cost per Site. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $177,000 followed by annual costs of approximately $17,000.

- Costs to NRC. The regulatory initiative will result in a one-time cost to NRC of approximately $16,000.

- Costs to Other Government Agencies. The regulatory initiative will result in a one-time cost to other government agencies of approximately $2.4 million.

- Decision Rationale. Although the NRC did not quantify the benefits of this regulatory initiative, the NRC staff did qualitatively examine benefits and concluded that the regulatory initiative will provide health and safety-related benefits, as discussed above. The regulatory initiative is cost-justified because it will increase assurance that the local population will be notified of emergency events, thereby increasing the effectiveness of the emergency plan, saving lives, and increasing

public confidence and safety. Appendix A.11 contains a more detailed analysis of the costs associated with the backup means for ANS provisions of the final rule.

	Total Savings and Costs				**Average per Site**	
Entity	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Industry	($11,518,800)	($1,110,000)	($24,990,993)	($32,346,960)	($177,212)	($17,077)
NRC	($15,600)	$0	($15,600)	($15,600)	n/a	n/a
Other Government	($2,370,600)	$0	($2,370,600)	($2,370,600)	n/a	n/a
Subtotal	*($13,905,000)*	*($1,110,000)*	*($27,377,193)*	*($34,733,160)*	*($177,212)*	*($17,077)*

Appendix A.11 presents additional detail on the cost analysis for the regulatory initiative addressing the backup means for ANS. Not all 65 sites will incur certain costs resulting from the provision. As a result, the cost for the average site (which is shown above) will be less than the cost per affected site (both figures are shown in Appendix A).

4.2 Sensitivity Analysis – Pre-Order Baseline

The NRC has performed a sensitivity analysis using an alternative baseline (called the "pre-order baseline") that considers the incremental costs of the final rule relative to only those regulations that were in effect before the NRC issued Order EA-02-26 and Bulletin 2005-02. The purpose of this sensitivity analysis is to account for relevant cost impacts of the orders and post-Bulletin industry initiatives in addition to those that are incremental to the final rule. These impacts already have been incurred, but they have not previously been quantified. The key findings of the sensitivity analysis are presented below:

- Total Cost to Industry. The final rule will lead to a total one-time cost across all reactor sites of approximately $59.0 million, followed by total annual costs on the order of $2.6 million. The total present value of these costs is $90.3 million (using a 7-percent discount rate) and $107.4 million (using a 3-percent discount rate) over the next 30 years.

- Average Cost per Site for Power Reactors. The average nuclear power plant site, which may include multiple units, will incur a one-time cost of approximately $901,000 followed by annual costs of approximately $40,000.

- Average Cost per Site for Non-Power Reactors. The average non-power reactor will incur a one-time cost of approximately $14,000. The final rule will not impose any annual costs on non-power reactors.

- Value of Benefits Not Reflected Above. With the exception of some monetary savings to industry, the cost figures shown above do not reflect the value of the benefits of the final rule. These benefits are evaluated qualitatively in Section 4.1. (See Sections 4.1.1 - 4.1.11 for a detailed discussion on the benefits of each regulatory initiative of the final rule.)

- Costs to NRC. The rule will result in a one-time cost to NRC of approximately $1.6 million, followed by annual costs of approximately $236,000. The total present value of these costs is $4.4 million (using a 7-percent discount rate) and $6.0 million (using a 3-percent discount rate).

- Costs to Other Government Agencies. The final rule will result in a one-time cost to other government agencies of approximately $12.1 million, followed by annual costs of approximately $316,000. The total present value of these costs is $15.9 million (using a 7-percent discount rate) and $18.0 million (using a 3-percent discount rate).

- Decision Rationale. Although the NRC did not quantify the benefits of this rule, the NRC staff did qualitatively examine benefits and concluded that the rule will provide substantial health and safety-related benefits. The rule is cost-justified because the regulatory initiatives for increased and consistent EP measures will increase the effectiveness of emergency planning and response efforts, thereby saving lives of emergency personnel (during hostile action) and the public in the event of an emergency (hostile action or non-hostile action). Exhibit 4-4 below presents a more detailed cost analysis.

Exhibit 4-4
Sensitivity Analysis under the Pre-Order Baseline:
Industry, NRC, and Other Government Savings and Costs, by Regulatory Initiative

	Total Savings and Costs				Average per Site	
Section	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Protection of Onsite Personnel						
Industry	($4,771,000)	$0	($4,771,000)	($4,771,000)	($73,400)	$0
NRC	($38,800)	$0	($38,800)	($38,800)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($4,809,800)*	*$0*	*($4,809,800)*	*($4,809,800)*	*($73,400)*	*$0*
Emergency Action Levels for Hostile Action						
Industry	($6,428,500)	$0	($6,428,500)	($6,428,500)	($98,900)	$0
NRC	($94,000)	$0	($94,000)	($94,000)	n/a	n/a
Other Government	($143,000)	$0	($143,000)	($143,000)	n/a	n/a
Subtotal	*($6,665,500)*	*$0*	*($6,665,500)*	*($6,665,500)*	*($98,900)*	*$0*
Challenging Drills and Exercises						
Industry	($9,594,000)	($468,000)	($15,274,168)	($18,375,603)	($147,600)	($7,200)
NRC	($791,000)	($107,200)	($2,092,098)	($2,802,512)	n/a	n/a
Other Government	($5,060,000)	($279,500)	($8,452,323)	($10,304,568)	n/a	n/a
Subtotal	*($15,445,000)*	*($854,700)*	*($25,818,589)*	*($31,482,683)*	*($147,600)*	*($7,200)*
Evacuation Time Estimate Updating						
Industry	($7,228,000)	($785,200)	($16,758,060)	($21,961,578)	($111,200)	($12,080)
NRC	($376,000)	($36,400)	($817,791)	($1,059,014)	n/a	n/a
Other Government	($364,000)	($36,400)	($805,791)	($1,047,014)	n/a	n/a
Subtotal	*($7,968,000)*	*($858,000)*	*($18,381,641)*	*($24,067,605)*	*($111,200)*	*($12,080)*
Licensee Coordination with Offsite Response Organizations						
Industry	($1,066,000)	$0	($1,066,000)	($1,066,000)	($16,400)	$0
NRC	($37,800)	$0	($37,800)	($37,800)	n/a	n/a
Other Government	($4,160,000)	$0	($4,160,000)	($4,160,000)	n/a	n/a
Subtotal	*($5,263,800)*	*$0*	*($5,263,800)*	*($5,263,800)*	*($16,400)*	*$0*
On-Shift Multiple Responsibilities						
Industry	($12,337,000)	$0	($12,337,000)	($12,337,000)	($189,800)	$0
NRC	($103,400)	$0	($103,400)	($103,400)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($12,440,400)*	*$0*	*($12,440,400)*	*($12,440,400)*	*($189,800)*	*$0*

	Total Savings and Costs				Average per Site	
Section	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
Emergency Response Organization Augmentation and Alternative Facilities						
Industry	($2,925,000)	($65,000)	($3,713,912)	($4,144,667)	($45,000)	($1,000)
NRC	($47,800)	$0	($47,800)	($47,800)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($2,972,800)*	*($65,000)*	*($3,761,712)*	*($4,192,467)*	*($45,000)*	*($1,000)*
Amended Emergency Plan Change Process – Nuclear Power Reactor Licensees						
Industry	($1,183,000)	($154,100)	($3,053,329)	($4,074,549)	($18,200)	($2,371)
NRC	$0	($92,000)	($1,116,614)	($1,726,298)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($1,183,000)*	*($246,100)*	*($4,169,943)*	*($5,800,847)*	*($18,200)*	*($2,371)*
Amended Emergency Plan Change Process – Non-Power Reactor Licensees						
Industry	($448,000)	$0	($448,000)	($448,000)	($14,000)	$0
NRC	$0	$0	$0	$0	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($448,000)*	*$0*	*($448,000)*	*($448,000)*	*($14,000)*	*$0*
Emergency Declaration Timeliness						
Industry	($1,488,500)	$0	($1,488,500)	($1,488,500)	($22,900)	$0
NRC	($15,600)	$0	($15,600)	($15,600)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($1,504,100)*	*$0*	*($1,504,100)*	*($1,504,100)*	*($22,900)*	*$0*
Emergency Operations Facility – Performance-Based Approach						
Industry	$0	$0	$0	$0	$0	$0
NRC	($54,000)	$0	($54,000)	($54,000)	n/a	n/a
Other Government	$0	$0	$0	$0	n/a	n/a
Subtotal	*($54,000)*	*$0*	*($54,000)*	*($54,000)*	*$0*	*$0*
Backup Means for ANS						
Industry	($11,518,800)	($1,110,000)	($24,990,993)	($32,346,960)	($177,212)	($17,077)
NRC	($15,600)	$0	($15,600)	($15,600)	n/a	n/a
Other Government	($2,370,600)	$0	($2,370,600)	($2,370,600)	n/a	n/a
Subtotal	*($13,905,000)*	*($1,110,000)*	*($27,377,193)*	*($34,733,160)*	*($177,212)*	*($17,077)*

	Total Savings and Costs				**Average per Site**	
Section	One-Time Saving (Cost)	Annual Saving (Cost)	NPV (7 percent)	NPV (3 percent)	One-Time Saving (Cost)	Annual Saving (Cost)
TOTAL (All Regulatory Initiatives)						
Industry	($58,987,800)	($2,582,300)	($90,329,462)	($107,442,357)	Nuclear Power Plant: ($900,612) Non-Power Reactor: ($14,000)	Nuclear Power Plant: ($39,728) Non-Power Reactor: $0
NRC	($1,574,000)	($235,600)	($4,433,503)	($5,994,824)	n/a	n/a
Other Government	($12,097,600)	($315,900)	($15,931,713)	($18,025,182)	n/a	n/a
Total	**($72,659,400)**	**($3,133,800)**	**($110,408,679)**	**($131,462,362)**	**Nuclear Power Plant: ($900,612)** **Non-Power Reactor: ($14,000)**	**Nuclear Power Plant: ($39,728)** **Non-Power Reactor: $0**

Results in 2010 dollars.

4.3 Backfit Analysis

This section presents the NRC's evaluation of changes in the final rule in accordance with the Backfit Rule, 10 CFR 50.109. The backfit analysis examines the impacts of the rule relative to the baseline used in the regulatory analysis, which consists of existing requirements, the recently issued orders, and voluntary actions on part of the industry subsequent to NRC Bulletin 2005-02.

The backfit analysis examines the aggregation of the subset of regulatory requirements that constitute backfits as defined in 10 CFR 50.109(a)(1). The analysis excludes individual requirements that are not subject to the Backfit Rule or that do not fall within the definition of "backfitting" as defined in the Backfit Rule, which include requirements that fall into one or more of the following categories.

- Administrative matters. Revisions that make minor administrative changes, such as correction of typographic errors, correction of inconsistencies, relocating requirements from one section to another, and combining existing requirements into a single section, or changes in NRC administrative requirements, such as acceptable document formats, number of copies to be submitted, or an NRC administrative process.

- Information collection and reporting requirements. Revisions that either amend existing information collection and reporting requirements or impose new information and collection and reporting requirements, as set forth in the CRGR charter.

- Clarifications. Revisions that clarify current requirements to assure consistent understanding and implementation of the NRC's original intent for these requirements. These revisions remove the ambiguities that produced regulatory uncertainty without changing the underlying requirements stated in these sections.

- Permissive relaxations/Voluntary alternatives. Revisions that permit, but do not require, relaxations or alternatives to current requirements (i.e., licensees are free to either comply with current requirements or adopt the relaxed requirements/voluntary alternative as a binding requirement).

With the exception of two initiatives, one in Part 50, Appendix E, Section IV.E.8. allowing a performance-based approach for the EOF (which is expected to result in no cost to industry) and one in § 50.54(q) clarifying that licensees must submit for prior NRC approval under 10 CFR 50.90 any proposed change to their emergency plans that reduce the effectiveness of the emergency plans, the entire final rule qualifies as a backfit.

The amendment to § 50.54(q) requiring use of the license amendment process for changes to emergency plans that would reduce the effectiveness of the plans is not a change to existing requirements. Some confusion exists as to whether all proposed emergency plan changes submitted under § 50.4 will result in a reduction in effectiveness and whether Commission review of such submissions is necessary. The NRC is clarifying that the license amendment process is the correct process to use when reviewing submittals involving a proposed emergency plan change that the licensee has determined constitutes a reduction in effectiveness of the plan. The final rule language addresses this clarification. As part of this clarification, power reactor and non-power reactor licensees may need to review and possibly revise procedures and training to clarify the process for emergency plan changes (i.e., through 10 CFR 50.90 submittals).

This provision in the final rule is not a backfit. The Backfit Rule provides a "formal, systematic review to ensure" that "new or revised requirements or staff positions … are properly justified and suitably defined. The requirements of this process are intended to ensure order, discipline, and predictability and to enhance optimal use of NRC staff and licensee resources." NUREG-1409, "Backfitting Guidelines", July 1990, ADAMS Accession No. ML032230247. In particular, the regulatory stability provided by the Backfit Rule applies only to the activities that were originally approved by issuance of a license, license amendment, or another regulatory approval. As explained in the Statements of Consideration for this final rule, a licensee's request under 10 CFR 50.54(q) asks for Commission authority to do what is not currently permitted under its license. In this circumstance, the licensee has no valid expectations protected by the Backfit Rule regarding the means for obtaining the new authority that is not permitted under the current license. This fundamental principle of the Backfit Rule can be found in many NRC rulemakings, including the original 10 CFR Part 52 rulemaking (54 FR 15372; April 18, 1989).

In addition, to the extent that using a license amendment process for making modifications to emergency plans that reduce the effectiveness of the plans is considered a change, it is a change to the NRC's regulatory process for addressing modifications to the emergency plan. The NRC's regulatory review process is not a licensee procedure required for

operating a plant that would be subject to backfit limitations. Furthermore, a licensee's procedural changes to address NRC administrative requirements do not constitute changes to procedures to "operate" a facility within the meaning of § 50.109(a)(1). The NRC only intended to provide backfitting protection to those aspects of licensee procedures needed to comply with the NRC's substantive technical requirements involving radiological health and safety and common defense and security.[4] The Backfit Rule was not intended to address changes in aspects of licensee procedures needed to comply with changes or clarifications in NRC administrative requirements such as acceptable document formats, number of copies, or – as in this case – the process by which an NRC approval is provided. For these reasons, this clarification in 10 CFR 50.54(q) will not constitute a backfit under 10 CFR 50.109.

The NRC evaluated the aggregated set of requirements constituting backfits in accordance with 10 CFR 50.109 to determine if the costs of implementing the rule will be justified by a substantial increase in public health and safety or common defense and security. In performing this analysis, the NRC considered the quantitative and qualitative costs and benefits of the rule, as discussed below.

Collectively, the individual requirements in the final rule that qualify as backfits will result in an estimated net cost of approximately $59.8 million to industry over the next 30 years (present value), assuming a 7-percent discount rate, or approximately $75.9 million assuming a 3-percent discount rate.

For the average nuclear power plant site, these backfits will equate to an initial one-time cost of approximately $467,000, followed by annual costs of about $37,000 per year. For industry as a whole, NRC estimates that the backfits will result in approximately $30.3 million in one-time costs, and about $2.4 million in annual costs.

With regard to EP benefits afforded by the final rule's provisions, as documented in Section 4.1 of the regulatory analysis, the NRC considered them in qualitative terms. NRC also qualitatively determined whether the costs of the rule will be justified in light of the EP benefits. In contrast, the NRC evaluated costs in quantitative terms, as documented in Appendix A to the regulatory analysis.

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

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

The rulemaking aims to enhance the current EP regulations pertaining to nuclear power reactors. The goals of the final rule are as follows:

- To enhance nuclear plant EP by codifying the requirements imposed by Commission orders issued after the terrorist attacks of September 11, 2001, as modified based upon experience and insights gained

[4] The NRC notes that some NRC-compelled changes to procedures needed to comply with the NRC's substantive technical requirements involving radiological health and safety or common defense and security, would *not* constitute backfitting under § 50.109(a)(1). The most common example is an NRC-compelled change necessitated by a new statutory provision, where the statutory provision affords the NRC little discretion in implementing the statutory mandate. See U.S. Nuclear Regulatory Commission, "Criminal Penalties: Unauthorized Introduction of Weapons," *Federal Register*, Vol. 74, No. 197, October 14, 2009, pp. 52667-52675.

since implementation. These actions enhance the ability of nuclear plant EROs to respond to hostile action and implement emergency plans and an adequate protective response.

- To enhance nuclear plant EP by codifying the enhancements implemented by industry on a voluntary basis subsequent to the issuance of NRC Bulletin 2005-02. These actions enhance the ability of nuclear plant EROs to respond to hostile action and implement an adequate protective response.

- To enhance nuclear plant EP by codifying improvements to requirements in the areas of:
    - timeliness of declaration and the content of EAL schemes;
    - survivability, facilities and resources for EROs;
    - alerting and notification of the public, evacuation planning and adequate resources to implement evacuations; and,
    - training through drills and exercises that reflect the current threat environment.

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

In general terms, the final rule will ensure that all licensees consistently implement new and existing EP measures. Detailed analysis of the activities and procedural changes required by the final rule are set forth in Appendix A to the regulatory analysis. A general description of each backfit is provided below:

- Protection of Onsite Personnel

The final rule will require licensees to review and revise plans, procedures, training, and guidance to address protective measures for onsite personnel (e.g., evacuation of personnel from target buildings, accounting for personnel after attack) in order to ensure that plant announcements are timely and convey the onsite protective measures deemed appropriate. This provision will affect power reactor licensees.

- EALs for Hostile Action

The new measures will require nuclear power reactor licensees to review their existing anticipatory EALs and update their plans, procedures, and training as needed to confirm that they comply with the rule requirements.

- Challenging Drills and Exercises

The final rule language will require licensees to change how they develop drill and exercise scenarios and make related changes to the emergency plan. Specifically, the drill and exercise scenarios must be designed to avoid biennial exercise scenarios that become predictable or precondition EROs to expect a sequential escalation of emergency classifications culminating in a

large radiological release. Licensees will need to submit these scenarios for NRC review. Licensees also will be required to use scenarios that demonstrate certain key functional skills in their exercises. This provision will affect power reactor licensees.

- ETE Updating

The final rule will clarify the need for licensees to review and update ETEs following the initial licensing of a nuclear power plant and to submit them to NRC for review. Specifically, the final rule will establish a requirement for licensees to update ETEs on a stated frequency (i.e., every 10 years) and when annual reviews show that the emergency planning zone (EPZ) permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less. This provision will affect power reactor licensees.

- Licensee Coordination with OROs

The final rule will require licensees to identify in their emergency plans the assistance expected from OROs during hostile action. Licensees will need to identify in their emergency plans the assistance expected from State, local, and Federal agencies with responsibilities for coping with emergencies, including hostile action at the site. These regulations require licensees to know which OROs would respond during an emergency and how to communicate with those OROs. This provision will affect power reactor licensees.

- On-Shift Multiple Responsibilities

This change will require licensees to perform a detailed analysis, such as a JTA or a time motion analysis, to demonstrate that on-shift personnel can implement the plan effectively without having competing responsibilities that could prevent them from performing their primary emergency plan tasks. This provision will affect power reactor licensees.

- ERO Augmentation and Alternative Facilities

This change will require licensees to review and revise their plans, procedures, and training regarding ERO augmentation during hostile action. In addition, some sites may need to lease and/or equip a new facility to serve as an alternative facility. This provision will affect power reactor licensees.

- Emergency Declaration Timeliness

Nuclear power reactor licensees are already complying with the final rule language via a voluntary initiative that accomplishes the intent of the final rule. These licensees, however, will need to review and confirm or (if

necessary) revise existing site procedures and training to reflect the revised rule.

- Backup Means for ANS

The final rule will require that the public ANS has backup methods for both the alert and notification functions. Licensees must demonstrate that their site's alert and notification capability includes the administrative and physical means for a backup method of public alerting and notification. This provision will affect power reactor licensees.

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

The rulemaking will not directly affect the likelihood of core damage or spent fuel damage. The rulemaking will provide added assurance that the risk resulting from offsite releases remains acceptably low. Although EP cannot affect the probability of the initiating event, a high level of EP will increase the likelihood of accident mitigation if the initiating event proceeds beyond the need for initial operator actions. An augmented EP program will enhance the protection of public health and safety by improving the response to initiating events that could lead to an accidental off-site release of radioactive material in the absence of mitigative response.

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

The rulemaking will not directly affect the likelihood of core damage or spent fuel damage. The rulemaking will provide added assurance that nuclear industry workers are not subjected to unnecessary radiological exposures as the result of emergency situations, including hostile action.

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

The backfit analysis for the final rule sets forth the NRC's estimate of the initial costs for implementing the major elements of the final rule, and the ongoing costs to the licensees. The estimated one-time industry net cost associated with the backfits will be approximately $30.3 million (or approximately $467,000 for the average nuclear power plant site), and the annually recurring cost will be approximately $2.4 million (or approximately $37,000 for the average nuclear power plant program). Combining these initial and annual costs, this analysis estimates that the backfits associated with the final rule will cost industry approximately $59.8 million (present value, assuming a 7-percent discount rate) to $75.9 million (present value, assuming a 3-percent discount rate).

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

The final rule will make changes with respect to the design of a nuclear power plant. Specifically, the changes involve the following:

- Licensees must provide alternative facilities for use during hostile action when onsite facilities (i.e., technical support center, operational support center, and/or EOF) are not available (e.g., due to emergency conditions).

- Licensees (or the responsible offsite authorities) must demonstrate that the site's alert and notification capability includes the administrative and physical means for a backup method of alerting and notification to be used in the event that the primary ANS is unavailable.

These design changes will not affect all nuclear power plants because some currently meet these requirements. This rule is not expected to have a significant effect on operational complexity beyond those reflected in the estimated costs to licensees.

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

The majority of the one-time costs incurred by NRC will come from reviewing and revising guidance documents to comply with the final rule. NRC will face additional costs to participate in EP exercise drills, review the emergency plans, coordinate with FEMA, develop procedures for ETE reviews, and review initial updates of ETEs. These activities will result in one-time costs of approximately $544,000.

The NRC will face costs of annual operations to review biennial EP exercise scenario submittals and review ongoing updates of ETEs. These activities will result in annual costs of approximately $100,000.

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

For nuclear power reactor licensees, the EP requirements in the final rule will not directly relate to the facility type, design or age. Although the benefits and costs attributable to the final rule will vary for a variety of site-specific reasons (e.g., local population, transportation, and geography), the NRC does not believe they will vary significantly based upon the nuclear power reactor's facility type, design, or age.

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

The backfit is final.

In light of the substantial benefits of the final rule as summarized in Sections 4.1.1-4.1.11, the NRC finds that the backfits contained in the final rule, when considered in the aggregate, will constitute a substantial increase in EP.

4.4 Safety Goal Evaluation

Safety goal evaluations are applicable only to regulatory initiatives considered to be generic safety enhancement backfits subject to the substantial additional protection standard at 10 CFR 50.109(a)(3).[5] A safety goal evaluation is designed to determine whether a regulatory requirement should not be imposed generically on nuclear power plants because the residual risk is already acceptably low. The current rulemaking will apply generically to all reactors, and will provide added assurance that the public is protected from the consequences of nuclear reactor operations. Some aspects of the rule may indirectly qualify as generic safety enhancements because it is possible that they could indirectly affect the likelihood of core damage or spent fuel damage, which generally are the focus of a quantitative safety goal evaluation. However, the rulemaking will not directly affect the likelihood of core damage or spent fuel damage because EP plans are not activated until after a potential emergency situation has been identified. Therefore, a safety goal evaluation is not appropriate for the final rule.

4.5 CRGR Results

This section addresses regulatory analysis information requirements for rulemaking actions or staff positions subject to review by the CRGR. All information called for by the CRGR is presented in this regulatory analysis, or in the Federal Register Notice for the final rule. As a reference aid, Exhibit 4-5 provides a cross-reference between the relevant information and its location in this document or the Federal Register Notice.

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

Exhibit 4-5
Specific CRGR Regulatory Analysis Information Requirements

CRGR Charter Citation	Information Item to be Included in a Regulatory Analysis Prepared for CRGR Review	Where Item is Discussed
IV.B(1)	Proposed generic requirement or staff position as it is proposed to be sent out to licensees. When the objective or intended result of a proposed generic requirement or staff position can be achieved by setting a readily quantifiable standard that has an unambiguous relationship to a readily measurable quantity and is enforceable, the proposed requirements should specify the objective or result to be attained rather than prescribing how the objective or result is to be attained.	Final rule text in Federal Register Notice.
IV.B(iii)	The sponsoring office's position on whether the proposed action would increase requirements or staff positions, implement existing requirements or staff positions, or relax or reduce existing requirements or staff positions.	Regulatory Analysis, Section 4.1.
IV.B(iv)	The proposed method of implementation.	Regulatory Analysis, Section 6.
IV.B(vi)	Identification of the category of power reactors or nuclear materials facilities/activities to which the generic requirement or staff position will apply.	Regulatory Analysis, Section 3.2.2.
IV.B(vii) IV.B(viii)	If the proposed action involves a power reactor backfit and the exceptions at 10 CFR 50.109(a)(4) are not applicable, the items required at 10 CFR 50.109(c) and the required rationale at 10 CFR 50.109(a)(3) are to be included.	Regulatory Analysis, Section 4.3.
IV.B(x)	For proposed relaxations or decreases in current requirements or staff positions, a rationale is to be included for the determination that (a) the public health and safety and the common defense and security would be adequately protected if the proposed reduction in requirements or positions were implemented, and (b) the cost savings attributed to the action would be substantial enough to justify taking the action.	Federal Register Notice for the final rule.
IV.B(xii)	Preparation of an assessment of how the proposed action relates to the Commission's Safety Goal Policy Statement.	Regulatory Analysis, Section 4.4.

5. Decision Rationale

5.1 Regulatory Analysis

Relative to the “no-action” alternative, the final rule as a whole is expected to result in a net cost of approximately $73.5 million (total present value over a 30-year period), assuming a 7-percent discount rate, or approximately $94.0 million assuming a 3-percent discount rate. All of this cost will accrue to industry, except for approximately $2.9 million (7 percent) or $4.2 million (3 percent) and approximately $7.3 million (7 percent) or $9.4 million (3 percent) that will accrue to the NRC and other government agencies, respectively. The rule is expected to result in one-time industry costs of approximately $32.0 million. This is equivalent to approximately $485,000 for the average power reactor site, and $14,000 for the average non-power reactor. The final rule language will generate annual industry costs of about $2.6 million ($40,000 per nuclear power plant site). Offsetting this net cost, the rule will result in substantial non-quantified benefits related to EP, as well as enhanced regulatory efficiency and effectiveness. The analysis discusses these benefits in Section 4.1 of this document. Based on the NRC's assessment of the costs and benefits of the final rule on licensee facilities, the agency has concluded that the final rule provisions are justified.

5.2 Backfit Analysis

The NRC conducted a backfit analysis of the final rule relative to the backfit requirements in 10 CFR 50.109. The final rule constitutes a backfit because it will impose new requirements on licensees. These new measures include developing measures and revising procedures and training related to protection of onsite personnel; reviewing and revising plans, procedures, and training regarding EALs; revising drill and exercise scenarios; reviewing and updating ETEs; requiring coordination with OROs; reviewing plans, procedures, and training regarding the assignment of multiple responsibilities; reviewing and revising plans, procedures, and training regarding ERO augmentation; reviewing and revising existing site procedures and training to include new timeliness requirements for emergency declarations; and selecting and implementing a backup method of alerting and notification to be used in the event that the primary ANS is unavailable. These measures fall under the definition of a backfit because such efforts are new and are the result of a change in NRC’s position.

In light of the substantial benefits of the final rule as summarized in Sections 4.1.1-4.1.11, the NRC finds that the backfits contained in the final rule, when considered in the aggregate, will constitute a substantial increase in EP and are justified in view of this increased protection of the public health and safety. Although EP cannot affect the probability of the initiating event, a high level of EP will increase the likelihood of accident mitigation if the initiating event proceeds beyond the need for initial operator actions. An EP program, augmented in compliance with the final EP rule, will substantially enhance public health and safety by improving the licensee and ORO response to events that could pose a threat to public health and safety.

6. Implementation

This section identifies how and when the final rule will be implemented, the required NRC actions to ensure implementation, and the impact on NRC resources.

6.1 Schedule

The final rule will be effective 30 days after its publication in the Federal Register. Licensees would be permitted to defer implementation of the final rule until 180 days after publication of the final rule in the Federal Register, except for the following rule changes: (1) the requirements under 10 CFR 50.54(q), which will become effective 30 days after publication of the final rule in the Federal Register; (2) the requirements under Part 50, Appendix E, Section IV.A.7., which each applicable licensee will be required to implement no later than 365 days after publication of the final rule in the Federal Register; (3) the requirements under Part 50, Appendix E, Section IV.F.2., which each applicable licensee will be required to implement over recurring eight year exercise planning cycles, with the first planning cycle beginning no later than the licensee's first biennial exercise conducted more than one year after the effective date of the final rule; and (4) the requirements under Part 50, Appendix E, Section IV.D.3., which each applicable licensee will be required to implement no later than its first biennial exercise conducted more than one year after the effective date of the final rule.

6.2 Impacts on Other Requirements

As discussed in Section 4.1, affected licensees will experience most of the impact of the revisions to the requirements. Nevertheless, the NRC expects the rulemaking to have a noticeable impact on agency resources, both initially and annually thereafter. In terms of one-time implementation costs, the NRC will face impacts to review the emergency plans and develop Temporary Instructions, and interact with FEMA. Furthermore, the NRC must develop procedures for ETE reviews, and review initial updates of ETEs. As shown in Exhibit 4.3, the one-time cost to NRC to comply with the requirements set forth in the 11 initiatives will be approximately $598,000.

Additionally, the NRC expects the rulemaking to result in increased annual expenditures of agency resources. The NRC will face annual costs to review biennial EP exercise scenario submittals and review ongoing updates of ETEs. These activities will result in annual costs of approximately $192,000.

Appendix A

Regulatory Analysis Assumptions, Inputs, and Results Per Facility, by Regulatory Initiative

A.1: Protection of Onsite Personnel

NRC regulations do not currently require emergency plan provisions to protect onsite emergency responders and other onsite personnel in emergencies resulting from hostile action. The final rule codifies generically applicable requirements similar to the changes recommended in Bulletin 2005-02 requiring licensees to develop new protective measures (e.g., evacuation of personnel from target buildings, accounting for personnel after attack) and revise their procedures and training to ensure plant announcements are timely and convey the onsite protective measures deemed appropriate.

Assumptions:

(1) Revised training materials (including content addressing onsite protective measures) replace existing training materials.
(2) Revised procedures (including new onsite protective measures) are integrated into the current drill and exercise program at an insignificant cost to licensees.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Develop new protective measures	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	8 hrs/site	$ (1,600)	$ (1,600)
	Manager	$150.00/hr	65	0 hrs/site	$ -	$ -	20 hrs/site	$ (3,000)	$ (3,000)
	EP staff	$100.00/hr	65	0 hrs/site	$ -	$ -	80 hrs/site	$ (8,000)	$ (8,000)
	Clerical	$50.00/hr	65	0 hrs/site	$ -	$ -	8 hrs/site	$ (400)	$ (400)
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	8 hrs/site	$ (800)	$ (800)
Review and revise emergency plan	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	8 hrs/site	$ (1,600)	$ (1,600)
	Manager	$150.00/hr	65	0 hrs/site	$ -	$ -	20 hrs/site	$ (3,000)	$ (3,000)
	EP staff	$100.00/hr	65	0 hrs/site	$ -	$ -	80 hrs/site	$ (8,000)	$ (8,000)
	Clerical	$50.00/hr	65	0 hrs/site	$ -	$ -	8 hrs/site	$ (400)	$ (400)
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	8 hrs/site	$ (800)	$ (800)
Review and revise existing procedures	Executive	$200.00/hr	65	4 hrs/site	$ (800)	$ (800)	4 hrs/site	$ (800)	$ (800)
	Manager	$150.00/hr	65	20 hrs/site	$ (3,000)	$ (3,000)	20 hrs/site	$ (3,000)	$ (3,000)
	EP staff	$100.00/hr	65	80 hrs/site	$ (8,000)	$ (8,000)	40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	20 hrs/site	$ (1,000)	$ (1,000)	20 hrs/site	$ (1,000)	$ (1,000)
	Licensing	$100.00/hr	65	8 hrs/site	$ (800)	$ (800)	8 hrs/site	$ (800)	$ (800)
Review and revise training	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	8 hrs/site	$ (1,200)	$ (1,200)	4 hrs/site	$ (600)	$ (600)
	EP staff	$100.00/hr	65	20 hrs/site	$ (2,000)	$ (2,000)	20 hrs/site	$ (2,000)	$ (2,000)
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	8 hrs/site	$ (400)	$ (400)
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Coordinate and develop industry guidance (NEI White Paper)	Executive	$200.00/hr	65	8 hrs/site	$ (1,600)	$ (1,600)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	24 hrs/site	$ (3,600)	$ (3,600)	0 hrs/site	$ -	$ -
	EP staff	$100.00/hr	65	80 hrs/site	$ (8,000)	$ (8,000)	0 hrs/site	$ -	$ -
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	16 hrs/site	$ (1,600)	$ (1,600)	0 hrs/site	$ -	$ -
Total Industry Implementation Cost				320 hrs/site	$ (33,200)	$ (33,200)	372 hrs/site	$ (40,200)	$ (40,200)
INDUSTRY OPERATIONS (ANNUAL)									
None.									
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (NRC inspection guidance, bulletin preparation)	Executive	$100.00/hr		0 hrs	$ -		8 hrs	$ (800)	
	Manager	$100.00/hr		0 hrs	$ -		20 hrs	$ (2,000)	
	Staff	$100.00/hr		200 hrs	$ (20,000)		100 hrs	$ (10,000)	
	Clerical	$100.00/hr		0 hrs	$ -		40 hrs	$ (4,000)	
	Attorney	$100.00/hr		0 hrs	$ -		20 hrs	$ (2,000)	
Total NRC Implementation Cost				200 hrs	$ (20,000)		188 hrs	$ (18,800)	
NRC OPERATIONS (ANNUAL)									
None.									
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
None.									
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL				**520 hrs**			**560 hrs**		

Notes:

(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.

A.2: Emergency Action Levels for Hostile Action

NRC regulations currently do not require an emergency action level scheme for hostile action and do not address the issue of anticipatory response to hostile action. For nuclear power reactor licensees, the final rule codifies generically applicable requirements similar to the anticipatory EALs contained in the Interim Compensatory Measures Order (EA-02-26) and the recommended changes in NRC Bulletin 2005-02 in Part 50, Appendix E to require licensees to consider hostile action that may adversely affect the plant in their EAL schemes, which will allow the licensees to make event declarations based on credible threats and hostile action.

Assumptions:

(1) Current industry practice is sufficient to comply with the rule. Nonetheless, licensees must review their existing anticipatory EALs and training to confirm that they comply with the rule requirements.

	Cost Inputs			Incremental Effort Due to Order & Bulletin				Additional Incremental Effort Due to Final Rule			
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**		**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**		**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)											
Review existing EALs - Nuclear Power Reactor Licensees	Executive	$200.00/hr	65	0 hrs/site	$	-	$ -	0 hrs/site	$	-	$ -
	Manager	$150.00/hr	65	0 hrs/site	$	-	$ -	4 hrs/site	$	(600)	$ (600)
	EP Staff	$100.00/hr	65	0 hrs/site	$	-	$ -	24 hrs/site	$	(2,400)	$ (2,400)
	Clerical	$50.00/hr	65	0 hrs/site	$	-	$ -	0 hrs/site	$	-	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$	-	$ -	8 hrs/site	$	(800)	$ (800)
Review and revise EAL training Nuclear Power Reactor Licensees	Executive	$200.00/hr	65	0 hrs/site	$	-	$ -	0 hrs/site	$	-	$ -
	Manager	$150.00/hr	65	8 hrs/site	$	(1,200)	$ (1,200)	2 hrs/site	$	(300)	$ (300)
	EP staff	$100.00/hr	65	80 hrs/site	$	(8,000)	$ (8,000)	8 hrs/site	$	(800)	$ (800)
	Clerical	$50.00/hr	65	8 hrs/site	$	(400)	$ (400)	0 hrs/site	$	-	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$	-	$ -	0 hrs/site	$	-	$ -
Review and revise emergency plan - Nuclear Power Reactor Licensees	Executive	$200.00/hr	65	2 hrs/site	$	(400)	$ (400)	0 hrs/site	$	-	$ -
	Manager	$150.00/hr	65	24 hrs/site	$	(3,600)	$ (3,600)	2 hrs/site	$	(300)	$ (300)
	EP staff	$100.00/hr	65	80 hrs/site	$	(8,000)	$ (8,000)	8 hrs/site	$	(800)	$ (800)
	Clerical	$50.00/hr	65	16 hrs/site	$	(800)	$ (800)	0 hrs/site	$	-	$ -
	Licensing	$100.00/hr	65	16 hrs/site	$	(1,600)	$ (1,600)	4 hrs/site	$	(400)	$ (400)
Review and revise procedures Nuclear Power Reactor Licensees	Executive	$200.00/hr	65	4 hrs/site	$	(800)	$ (800)	0 hrs/site	$	-	$ -
	Manager	$150.00/hr	65	40 hrs/site	$	(6,000)	$ (6,000)	2 hrs/site	$	(300)	$ (300)
	EP staff	$100.00/hr	65	200 hrs/site	$	(20,000)	$ (20,000)	8 hrs/site	$	(800)	$ (800)
	Clerical	$50.00/hr	65	40 hrs/site	$	(2,000)	$ (2,000)	0 hrs/site	$	-	$ -
	Licensing	$100.00/hr	65	16 hrs/site	$	(1,600)	$ (1,600)	0 hrs/site	$	-	$ -
Conduct initial EAL training (30 managers at 4 hour training; 12 security managers at 4 hour training; 50 ERO staff members at 2 hour training; one trainer per 30 trainees)	Executive	$200.00/hr	65	0 hrs/site	$	-	$ -	0 hrs/site	$	-	$ -
	Manager	$150.00/hr	65	176 hrs/site	$	(26,400)	$ (26,400)	0 hrs/site	$	-	$ -
	EP staff	$100.00/hr	65	104 hrs/site	$	(10,400)	$ (10,400)	0 hrs/site	$	-	$ -
	Clerical	$50.00/hr	65	4 hrs/site	$	(200)	$ (200)	0 hrs/site	$	-	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$	-	$ -	0 hrs/site	$	-	$ -
Total Industry Implementation Cost				818 hrs/site	$	(91,400)	$ (91,400)	70 hrs/site	$	(7,500)	$ (7,500)
INDUSTRY OPERATIONS (ANNUAL)											
None.											
NRC IMPLEMENTATION (ONE-TIME)											
Review and revise guidance (six month effort for Bulletin preparation) and endorse security EALs in a regulatory guide	Executive	$100.00/hr		100 hrs	$	(10,000)		0 hrs	$	-	
	Manager	$100.00/hr		120 hrs	$	(12,000)		0 hrs	$	-	
	Staff	$100.00/hr		560 hrs	$	(56,000)		0 hrs	$	-	
	Clerical	$100.00/hr		60 hrs	$	(6,000)		0 hrs	$	-	
	Attorney	$100.00/hr		100 hrs	$	(10,000)		0 hrs	$	-	
Total NRC Implementation				940 hrs	$	(94,000)		0 hrs	$	-	
NRC OPERATIONS (ANNUAL)											
None.											
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)											
State and Local Government - Conduct initial ORO training (10 staff per site at 2 hour training; one trainer per 30 trainees)	Executive	$100.00/hr	65	0 hrs/site	$	-		0 hrs/site	$	-	
	Manager	$100.00/hr	65	0 hrs/site	$	-		0 hrs/site	$	-	
	Staff	$100.00/hr	65	22 hrs/site	$	(2,200)		0 hrs/site	$	-	
	Clerical	$100.00/hr	65	0 hrs/site	$	-		0 hrs/site	$	-	
	Attorney	$100.00/hr	65	0 hrs/site	$	-		0 hrs/site	$	-	
Total State and Local Implementation Cost				22 hrs	$	(2,200)		0 hrs/site	$	-	
OTHER GOVERNMENT OPERATIONS (ANNUAL)											
None.											
TOTAL				**1,780 hrs**				**70 hrs**			

Notes:

(1) Hour estimates based on judgment of NRC staff.
(2) State and Local Government labor rates assumed to be the same as NRC wage rates.
(3) See discussion of methodology in Section 3.2 of the Regulatory Analysis.

A.3: Challenging Drills and Exercises

The final rule language adopts elements of NRC Bulletin 2005-02 and requires licensees to revise drill and exercise scenarios. Specifically, the drill and exercise scenarios must be designed to avoid biennial exercise scenarios that become predictable or precondition emergency response organizations to expect a sequential escalation of emergency classifications culminating in a large radiological release. Licensees must submit these scenarios for NRC review. In addition, licensees must use certain scenarios and demonstrate certain key functional skills in their exercises and track implementation of the various scenario objectives.

Assumptions:

(1) All sites develop drill and exercise plans and conduct initial exercises by the end of CY09 in response to NRC Bulletin 2005-02.
(2) NRC reviews biennial exercise scenarios as they are used by licensees (annual cost, assuming 32.5 are submitted per year).

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Develop and review 8-year plan	Executive	$200.00/hr	65	8 hrs/site	$ (1,600)	$ (1,600)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	40 hrs/site	$ (6,000)	$ (6,000)	8 hrs/site	$ (1,200)	$ (1,200)
	EP staff	$100.00/hr	65	80 hrs/site	$ (8,000)	$ (8,000)	40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	8 hrs/site	$ (400)	$ (400)
	Licensing	$100.00/hr	65	16 hrs/site	$ (1,600)	$ (1,600)	8 hrs/site	$ (800)	$ (800)
Review and update emergency plan and exercise objective tracking scheme	Executive	$200.00/hr	65	4 hrs/site	$ (800)	$ (800)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	80 hrs/site	$ (12,000)	$ (12,000)	8 hrs/site	$ (1,200)	$ (1,200)
	EP staff	$100.00/hr	65	160 hrs/site	$ (16,000)	$ (16,000)	40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	8 hrs/site	$ (400)	$ (400)
	Licensing	$100.00/hr	65	40 hrs/site	$ (4,000)	$ (4,000)	8 hrs/site	$ (800)	$ (800)
Conduct initial hostile action pilot exercise (4 executives at 8 hour tabletop and exercise, 30 managers at 8 hour tabletop and exercise; 100 ERO and security staff members at 4 hour exercise)	Executive	$200.00/hr	65	32 hrs/site	$ (6,400)	$ (6,400)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	240 hrs/site	$ (36,000)	$ (36,000)	0 hrs/site	$ -	$ -
	EP staff	$100.00/hr	65	400 hrs/site	$ (40,000)	$ (40,000)	0 hrs/site	$ -	$ -
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Total Industry Implementation Cost				1,148 hrs/site	($134,800)	($134,800)	128 hrs/site	($12,800)	($12,800)
INDUSTRY OPERATIONS (ANNUAL)									
Track compliance with required exercise scenario elements	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	0 hrs/site	$ -	$ -	8 hrs/site	$ (1,200)	$ (1,200)
	EP staff	$100.00/hr	65	0 hrs/site	$ -	$ -	40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Submit scenario to NRC for review	Executive	$200.00/hr	32.5	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	32.5	0 hrs/site	$ -	$ -	8 hrs/site	$ (1,200)	$ (600)
	EP staff	$100.00/hr	32.5	0 hrs/site	$ -	$ -	16 hrs/site	$ (1,600)	$ (800)
	Clerical	$50.00/hr	32.5	0 hrs/site	$ -	$ -	8 hrs/site	$ (400)	$ (200)
	Licensing	$100.00/hr	32.5	0 hrs/site	$ -	$ -	8 hrs/site	$ (800)	$ (400)
Total Industry Operations Cost				0 hrs/site	$ -	$ -	88 hrs/site	($9,200)	($7,200)

Challenging Drills and Exercises (continued)

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (Bulletin 2005-02 preparation)	Executive	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
	Manager	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
	Staff	$100.00/hr		300 hrs	$ (30,000)		0 hrs	$ -	
	Clerical	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
	Attorney	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
Compile RIS 2006-12 (review NEI White Paper)	Executive	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Manager	$100.00/hr		16 hrs	$ (1,600)		0 hrs	$ -	
	Staff	$100.00/hr		360 hrs	$ (36,000)		0 hrs	$ -	
	Clerical	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Attorney	$100.00/hr		20 hrs	$ (2,000)		0 hrs	$ -	
Review NEI-06-04, Rev. 0	Executive	$100.00/hr		16 hrs	$ (1,600)		0 hrs	$ -	
	Manager	$100.00/hr		20 hrs	$ (2,000)		0 hrs	$ -	
	Staff	$100.00/hr		240 hrs	$ (24,000)		0 hrs	$ -	
	Clerical	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Attorney	$100.00/hr		20 hrs	$ (2,000)		0 hrs	$ -	
Review and endorse NEI-06-04, Rev. 1 and review RIS 2008-08	Executive	$100.00/hr		16 hrs	$ (1,600)		0 hrs	$ -	
	Manager	$100.00/hr		20 hrs	$ (2,000)		0 hrs	$ -	
	Staff	$100.00/hr		160 hrs	$ (16,000)		0 hrs	$ -	
	Clerical	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Attorney	$100.00/hr		20 hrs	$ (2,000)		0 hrs	$ -	
Participate in first 10 initial hostile action pilot drills	Executive	$100.00/hr		20 hrs	$ (2,000)		0 hrs	$ -	
	Manager	$100.00/hr		80 hrs	$ (8,000)		0 hrs	$ -	
	Staff	$100.00/hr		234 hrs	$ (23,400)		0 hrs	$ -	
	Clerical	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Attorney	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
Participate in last 55 initial hostile action pilot drills	Executive	$100.00/hr		4 hrs	$ (400)		0 hrs	$ -	
	Manager	$100.00/hr		24 hrs	$ (2,400)		0 hrs	$ -	
	Staff	$100.00/hr		100 hrs	$ (10,000)		0 hrs	$ -	
	Clerical	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Attorney	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
Review emergency plan and TI and develop inspection procedures	Executive	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Manager	$100.00/hr		16 hrs	$ (1,600)		120 hrs	$ (12,000)	
	Staff	$100.00/hr		360 hrs	$ (36,000)		280 hrs	$ (28,000)	
	Clerical	$100.00/hr		8 hrs	$ (800)		60 hrs	$ (6,000)	
	Attorney	$100.00/hr		20 hrs	$ (2,000)		60 hrs	$ (6,000)	
Interact with FEMA	Executive	$100.00/hr		420 hrs	$ (42,000)		0 hrs	$ -	
	Manager	$100.00/hr		420 hrs	$ (42,000)		0 hrs	$ -	
	Staff	$100.00/hr		4,200 hrs	$ (420,000)		0 hrs	$ -	
	Clerical	$100.00/hr		20 hrs	$ (2,000)		0 hrs	$ -	
	Attorney	$100.00/hr		200 hrs	$ (20,000)		0 hrs	$ -	
Total NRC Implementation Cost				6,678 hrs	$ (739,000)		520 hrs	$ (52,000)	
NRC OPERATIONS (ANNUAL)									
Review of biennial exercise submittals	Executive	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Manager	$100.00/hr		16 hrs	$ (1,600)		160 hrs	$ (16,000)	
	Staff	$100.00/hr		400 hrs	$ (40,000)		480 hrs	$ (48,000)	
	Clerical	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Attorney	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
Total NRC Operations Cost				432 hrs	$ (43,200)		640 hrs	$ (64,000)	
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
FEMA - Review and revise guidance (REP program FEMA exercise evaluation criteria) - 3 FTE per year for staff	Executive	$100.00/hr		420 hrs	$ (42,000)		0 hrs	$ -	
	Manager	$100.00/hr		420 hrs	$ (42,000)		0 hrs	$ -	
	Staff	$100.00/hr		4,200 hrs	$ (420,000)		0 hrs	$ -	
	Clerical	$100.00/hr		420 hrs	$ (42,000)		0 hrs	$ -	
	Attorney	$100.00/hr		420 hrs	$ (42,000)		0 hrs	$ -	
State and Local - Participate in initial hostile action pilot drills	Executive	$100.00/hr	65	32 hrs/site	$ (3,200)		0 hrs/site	$ -	
	Manager	$100.00/hr	65	240 hrs/site	$ (24,000)		0 hrs/site	$ -	
	Staff	$100.00/hr	65	400 hrs/site	$ (40,000)		0 hrs/site	$ -	
	Clerical	$100.00/hr	65	16 hrs/site	$ (1,600)		0 hrs/site	$ -	
	Attorney	$100.00/hr	65	0 hrs/site	$ -		0 hrs/site	$ -	
Total State, Local, and FEMA Implementation Cost				6,568 hrs	$ (656,800)			$ -	
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
State and Local - Participate in hostile action drills once every 8 years	Executive	$100.00/hr	8	n/a			16 hrs/site	$ (1,600)	
	Manager	$100.00/hr	8	n/a			120 hrs/site	$ (12,000)	
	Staff	$100.00/hr	8	n/a			200 hrs/site	$ (20,000)	
	Clerical	$100.00/hr	8	n/a			8 hrs/site	$ (800)	
	Attorney	$100.00/hr	8	n/a			0 hrs/site	$ -	
Total State, Local, and FEMA Operations Cost							344 hrs	$ (34,400)	
TOTAL				**14,826 hrs**			**1,720 hrs**		

Notes:

(1) Hour estimates based on judgment of NRC staff.

(2) FEMA labor rates assumed to be the same as NRC wage rates.

(3) See discussion of methodology in Section 3.2 of the Regulatory Analysis.

(4) Not all 65 sites would incur certain costs resulting from the provision. As a result, the cost for the average site would be less than the cost per affected site (both figures shown above).

A.4: Evacuation Time Estimate Updating

Under existing regulations, applicants and licensees must provide estimates of the time required to evacuate the public from the plume exposure pathway emergency planning zone (EPZ). The final rule clarifies the need to review and update the evacuation time estimates (ETEs) following the initial licensing of a nuclear power plant. Specifically, the final rule establishes a requirement for licensees to evaluate an EPZ's population and to update ETEs on a stated frequency (i.e., every 10 years) and when annual reviews show that the EPZ permanent resident population increases such that certain ETE values increase by 25 percent or 30 minutes, whichever is less, from the licensee's currently approved or confirmed ETE.

Assumptions:

(1) All sites require an initial update to ETEs using 2010 Census data.
(2) Although sites reassess population annually, ETE updates are needed once every 10 years due to new Census data.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Establish process to obtain and analyze annual Census Bureau population updates for EPZ	Executive	$200.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	n/a			8 hrs/site	$ (1,200)	$ (1,200)
	EP staff	$100.00/hr	65	n/a			32 hrs/site	$ (3,200)	$ (3,200)
	Clerical	$50.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	n/a			0 hrs/site	$ -	$ -
Review existing ETE	Executive	$200.00/hr	65	n/a			4 hrs/site	$ (800)	$ (800)
	Manager	$150.00/hr	65	n/a			8 hrs/site	$ (1,200)	$ (1,200)
	EP staff	$100.00/hr	65	n/a			40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	n/a			8 hrs/site	$ (800)	$ (800)
Initial update to existing ETEs		$ 100,000	65	n/a			1 estimate/site	$ (100,000)	$ (100,000)
Total Industry Implementation Cost							100 hrs/site	$ (111,200)	$ (111,200)
INDUSTRY OPERATIONS (ANNUAL)									
Obtain and analyze annual Census Bureau population updates for EPZ	Executive	$200.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	n/a			4 hrs/site	$ (600)	$ (600)
	EP staff	$100.00/hr	65	n/a			8 hrs/site	$ (800)	$ (800)
	Clerical	$50.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	n/a			0 hrs/site	$ -	$ -
Review Updated ETE	Executive	$200.00/hr	6.5	n/a			4 hrs/site	$ (800)	$ (80)
	Manager	$150.00/hr	6.5	n/a			8 hrs/site	$ (1,200)	$ (120)
	EP staff	$100.00/hr	6.5	n/a			40 hrs/site	$ (4,000)	$ (400)
	Clerical	$50.00/hr	6.5	n/a			0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	6.5	n/a			8 hrs/site	$ (800)	$ (80)
Update ETEs		$ 100,000	65	n/a			1 time/10 years	$ (10,000)	$ (10,000)
Total Industry Operations Cost							72 hrs/site	$ (18,200)	$ (12,080)
NRC IMPLEMENTATION (ONE-TIME)									
Develop procedures for ETE reviews (Standard Review Plan)	Executive	$100.00/hr		n/a			0 hrs	$ -	
	Manager	$100.00/hr		n/a			16 hrs	$ (1,600)	
	Staff	$100.00/hr		n/a			80 hrs	$ (8,000)	
	Clerical	$100.00/hr		n/a			16 hrs	$ (1,600)	
	Attorney	$100.00/hr		n/a			8 hrs	$ (800)	
Review initial updates of ETEs	Executive	$100.00/hr	65	n/a			4 hrs/site	$ (400)	
	Manager	$100.00/hr	65	n/a			8 hrs/site	$ (800)	
	Staff	$100.00/hr	65	n/a			40 hrs/site	$ (4,000)	
	Clerical	$100.00/hr	65	n/a			0 hrs/site	$ -	
	Attorney	$100.00/hr	65	n/a			4 hrs/site	$ (400)	
Total NRC Implementation Cost							176 hrs	$ (17,600)	
NRC OPERATIONS (ANNUAL)									
Review ongoing updates of ETEs	Executive	$100.00/hr	6.5	n/a			4 hrs/site	$ (400)	
	Manager	$100.00/hr	6.5	n/a			8 hrs/site	$ (800)	
	Staff	$100.00/hr	6.5	n/a			40 hrs/site	$ (4,000)	
	Clerical	$100.00/hr	6.5	n/a			0 hrs/site	$ -	
	Attorney	$100.00/hr	6.5	n/a			4 hrs/site	$ (400)	
Total NRC Operations Cost							56 hrs/site	$ (5,600)	

Evacuation Time Estimate Updating (continued)

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
Review initial ETEs	Executive	$100.00/hr	65	n/a			4 hrs/site	$ (400)	
	Manager	$100.00/hr	65	n/a			8 hrs/site	$ (800)	
	Staff	$100.00/hr	65	n/a			40 hrs/site	$ (4,000)	
	Clerical	$100.00/hr	65	n/a			0 hrs/site	$ -	
	Attorney	$100.00/hr	65	n/a			4 hrs/site	$ (400)	
Total State and Local Government Implementation Cost							56 hrs	($5,600)	
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
Review updated ETEs	Executive	$100.00/hr	6.5	n/a			4 hrs/site	$ (400)	
	Manager	$100.00/hr	6.5	n/a			8 hrs/site	$ (800)	
	Staff	$100.00/hr	6.5	n/a			40 hrs/site	$ (4,000)	
	Clerical	$100.00/hr	6.5	n/a			0 hrs/site	$ -	
	Attorney	$100.00/hr	6.5	n/a			4 hrs/site	$ (400)	
Total State and Local Government Operations Cost				n/a			56 hrs	$ (5,600)	
TOTAL							**516 hrs**		

Notes:

(1) Hour estimates based on judgment of NRC staff.

(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.

(3) "n/a" means that the issue was not in the Orders or the Bulletin.

(4) State and local government labor rates assumed to be the same as NRC wage rates.

(5) Not all 65 sites would incur certain costs resulting from the provision. As a result, the cost for the average site would be less than the cost per affected site (both figures shown above).

A.5: Licensee Coordination with Offsite Response Organizations

The current regulations do not require licensees to coordinate with offsite response organizations (OROs) to identify the assistance expected from State and local agencies during hostile action directed at the site. The final rule implements elements of Commission Order EA-02-26 explicitly requiring licensees to coordinate with OROs to identify in their emergency plans the resources expected from offsite personnel during hostile action. Licensees may need to review and update memoranda of understanding and letters of agreement executed with OROs.

Assumptions:
None.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Review and update letters of agreement and memoranda of understanding with OROs	Executive	$200.00/hr	65	16 hrs/site	$ (3,200)	$ (3,200)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	31 hrs/site	$ (4,650)	$ (4,650)	3 hrs/site	$ (450)	$ (450)
	EP staff	$100.00/hr	65	62 hrs/site	$ (6,200)	$ (6,200)	16 hrs/site	$ (1,600)	$ (1,600)
	Clerical	$50.00/hr	65	6 hrs/site	$ (300)	$ (300)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Total Industry Implementation Cost				115 hrs/site	$ (14,350)	$ (14,350)	19 hrs/site	$ (2,050)	$ (2,050)
INDUSTRY OPERATIONS (ANNUAL)									
None.									
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (Temporary Instruction 2515/148 Rev 2)	Executive	$100.00/hr		8 hrs	$ (800)		0 hrs	$ -	
	Manager	$100.00/hr		30 hrs	$ (3,000)		0 hrs	$ -	
	Staff	$100.00/hr		290 hrs	$ (29,000)		0 hrs	$ -	
	Clerical	$100.00/hr		40 hrs	$ (4,000)		0 hrs	$ -	
	Attorney	$100.00/hr		10 hrs	$ (1,000)		0 hrs	$ -	
Total NRC Implementation Cost				378 hrs	$ (37,800)		0 hrs/site	$ -	
NRC OPERATIONS (ANNUAL)									
None.									
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
State and Local Government coordination	Executive	$100.00/hr	65	34 hrs/site	$ (3,400)		0 hrs/site	$ -	
	Manager	$100.00/hr	65	68 hrs/site	$ (6,800)		0 hrs/site	$ -	
	Staff	$100.00/hr	65	136 hrs/site	$ (13,600)		34 hrs/site	$ (3,400)	
	Clerical	$100.00/hr	65	14 hrs/site	$ (1,400)		0 hrs/site	$ -	
	Attorney	$100.00/hr	65	14 hrs/site	$ (1,400)		0 hrs/site	$ -	
State and Local Government review and revise plan and procedures	Executive	$100.00/hr	65	8 hrs/site	$ (800)		4 hrs/site	$ (400)	
	Manager	$100.00/hr	65	40 hrs/site	$ (4,000)		8 hrs/site	$ (800)	
	Staff	$100.00/hr	65	160 hrs/site	$ (16,000)		40 hrs/site	$ (4,000)	
	Clerical	$100.00/hr	65	16 hrs/site	$ (1,600)		8 hrs/site	$ (800)	
	Attorney	$100.00/hr	65	40 hrs/site	$ (4,000)		16 hrs/site	$ (1,600)	
Total State and Local Government Implementation Cos				530 hrs/site	$ (53,000)		110 hrs	$ (11,000)	
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL				**1,023 hrs**			**129 hrs**		

Notes:
(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.
(3) FEMA labor rates assumed to be the same as NRC wage rates.
(4) State and local government labor rates assumed to be the same as NRC labor rates.

A.6: On-Shift Multiple Responsibilities

The current regulations do not clearly state that on-shift nuclear power reactor personnel assigned to emergency plan implementation must not have multiple responsibilities that would prevent them from performing their primary plan tasks. The final rule codifies generically applicable requirements similar to elements of the Commission Order EA 02-26 requiring that on-shift emergency response personnel must not have competing responsibilities that interfere with primary emergency response functions. To comply, the nuclear power plant licensees must conduct a detailed analysis, such as a job task analysis or time motion analysis. In addition, this change requires that nuclear power reactor licensees review plans, procedures, and training regarding assignment of multiple responsibilities, and re-assign responsibilities if necessary.

Assumptions:

(1) This analysis assumes that some plans, procedures, and training must be revised and some re-assignment is necessary because the regulations may exceed the 2002 Order.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Develop industry-wide job task analysis template	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	24 hrs/site	$ (4,800)	$ (4,800)
	Manager	$150.00/hr	65	0 hrs/site	$ -	$ -	72 hrs/site	$ (10,800)	$ (10,800)
	EP Staff	$100.00/hr	65	0 hrs/site	$ -	$ -	240 hrs/site	$ (24,000)	$ (24,000)
	Clerical	$50.00/hr	65	0 hrs/site	$ -	$ -	48 hrs/site	$ (2,400)	$ (2,400)
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	48 hrs/site	$ (4,800)	$ (4,800)
Conduct job task analysis	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	4 hrs/site	$ (800)	$ (800)
	Manager	$150.00/hr	65	0 hrs/site	$ -	$ -	16 hrs/site	$ (2,400)	$ (2,400)
	EP Staff	$100.00/hr	65	0 hrs/site	$ -	$ -	160 hrs/site	$ (16,000)	$ (16,000)
	Clerical	$50.00/hr	65	0 hrs/site	$ -	$ -	40 hrs/site	$ (2,000)	$ (2,000)
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	16 hrs/site	$ (1,600)	$ (1,600)
Review and revise emergency plan	Executive	$200.00/hr	65	8 hrs/site	$ (1,600)	$ (1,600)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	40 hrs/site	$ (6,000)	$ (6,000)	8 hrs/site	$ (1,200)	$ (1,200)
	EP Staff	$100.00/hr	65	160 hrs/site	$ (16,000)	$ (16,000)	40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	40 hrs/site	$ (4,000)	$ (4,000)	8 hrs/site	$ (800)	$ (800)
Review and revise procedures	Executive	$200.00/hr	65	8 hrs/site	$ (1,600)	$ (1,600)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	40 hrs/site	$ (6,000)	$ (6,000)	8 hrs/site	$ (1,200)	$ (1,200)
	EP Staff	$100.00/hr	65	320 hrs/site	$ (32,000)	$ (32,000)	80 hrs/site	$ (8,000)	$ (8,000)
	Clerical	$50.00/hr	65	32 hrs/site	$ (1,600)	$ (1,600)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	40 hrs/site	$ (4,000)	$ (4,000)	8 hrs/site	$ (800)	$ (800)
Review and revise training	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	8 hrs/site	$ (1,200)	$ (1,200)	0 hrs/site	$ -	$ -
	EP Staff	$100.00/hr	65	120 hrs/site	$ (12,000)	$ (12,000)	40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Conduct initial training (30 staff at 4 hour training; one trainer per 30 trainees)	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	4 hrs/site	$ (600)	$ (600)	0 hrs/site	$ -	$ -
	EP Staff	$100.00/hr	65	120 hrs/site	$ (12,000)	$ (12,000)	0 hrs/site	$ -	$ -
	Clerical	$50.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Total Industry Implementation Cost				972 hrs/site	$ (100,200)	$ (100,200)	860 hrs/site	$ (89,600)	$ (89,600)
INDUSTRY OPERATIONS (ANNUAL)									
None.									
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (Temporary Instructions, NEI job task analysis template)	Executive	$100.00/hr		8 hrs	$ (800)		16 hrs	$ (1,600)	
	Manager	$100.00/hr		30 hrs	$ (3,000)		40 hrs	$ (4,000)	
	Staff	$100.00/hr		290 hrs	$ (29,000)		480 hrs	$ (48,000)	
	Clerical	$100.00/hr		40 hrs	$ (4,000)		80 hrs	$ (8,000)	
	Attorney	$100.00/hr		10 hrs	$ (1,000)		40 hrs	$ (4,000)	
Total NRC Implementation Cost				378 hrs	$ (37,800)		656 hrs	$ (65,600)	
NRC OPERATIONS (ANNUAL)									
None.									
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
None.									
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL				**1,350 hrs**			**1,516 hrs**		

Notes:

(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.

A.7: Emergency Response Organization Augmentation and Alternative Facilities

The current regulations do not require licensees to identify alternative facilities to support emergency response organization (ERO) augmentation during hostile action. The final rule codifies generically applicable requirements similar to those elements of Commission Order EA-02-26 and industry initiatives subsequent to NRC Bulletin 2005-02 directing licensees to provide alternative facilities for use during hostile action when onsite facilities (i.e., technical support center, operational support center, and/or emergency operations facility) are not available (e.g., due to emergency conditions). This change requires licensees to review and revise their plans, procedures, and training regarding ERO augmentation during a hostile action. In addition, some sites may need to lease and equip a new facility to serve as its alternative facility.

Assumptions:

(1) This analysis assumes that most sites would use present facilities, i.e. EOF, back up EOF, back up TSC.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Review and revise emergency plan	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	10 hrs/site	$ (2,000)	$ (2,000)
	Manager	$150.00/hr	65	0 hrs/site	$ -	$ -	20 hrs/site	$ (3,000)	$ (3,000)
	EP staff	$100.00/hr	65	0 hrs/site	$ -	$ -	40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	0 hrs/site	$ -	$ -	24 hrs/site	$ (1,200)	$ (1,200)
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	40 hrs/site	$ (4,000)	$ (4,000)
Review and revise procedures	Executive	$200.00/hr	65	8 hrs/site	$ (1,600)	$ (1,600)	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	24 hrs/site	$ (3,600)	$ (3,600)	8 hrs/site	$ (1,200)	$ (1,200)
	EP staff	$100.00/hr	65	80 hrs/site	$ (8,000)	$ (8,000)	16 hrs/site	$ (1,600)	$ (1,600)
	Clerical	$50.00/hr	65	40 hrs/site	$ (2,000)	$ (2,000)	0 hrs/site	$ -	$ -
	Licensing	$250.00/hr	65	8 hrs/site	$ (2,000)	$ (2,000)	0 hrs/site	$ -	$ -
Review and revise training	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	8 hrs/site	$ (1,200)	$ (1,200)	8 hrs/site	$ (1,200)	$ (1,200)
	EP staff	$100.00/hr	65	40 hrs/site	$ (4,000)	$ (4,000)	16 hrs/site	$ (1,600)	$ (1,600)
	Clerical	$50.00/hr	65	16 hrs/site	$ (800)	$ (800)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Equip alternative facility with necessary capabilities	$2,000/site		65				1 per site	($2,000)	($2,000)
Total Industry Implementation Cost				224 hrs/site	$ (23,200)	$ (23,200)	183 hrs/site	$ (21,800)	$ (21,800)
INDUSTRY OPERATIONS (ANNUAL)									
Maintain procedures and equipment for alternative facilities	$1,000/site		65				1 per site	$ (1,000)	$ (1,000)
Total Industry Operations Cost								$ (1,000)	$ (1,000)
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (Temporary Instructions, Bulletin 2005-02 preparation)	Executive	$100.00/hr		8 hrs	(800)		0 hrs	$ -	
	Manager	$100.00/hr		30 hrs	(3,000)		0 hrs	$ -	
	Staff	$100.00/hr		390 hrs	(39,000)		0 hrs	$ -	
	Clerical	$100.00/hr		40 hrs	(4,000)		0 hrs	$ -	
	Attorney	$100.00/hr		10 hrs	(1,000)		0 hrs	$ -	
Total NRC Implementation Cost				478 hrs	(47,800)		0 hrs	$ -	
NRC OPERATIONS (ANNUAL)									
None.									
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
None.									
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL				**702 hrs**			**183 hrs**		

Notes:

(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.

A.8.a: Amended Emergency Plan Change Process - Nuclear Power Reactor Licensees

Current regulations require nuclear power reactor licensees to "maintain in effect" their emergency plan. The final rule language clarifies the existing rule language by requiring nuclear power reactor licensees: to maintain capabilities and resources relative to the emergency plan, ensure changes to the approved emergency plan are properly evaluated, and ensure that proposed changes that reduce the effectiveness of the plan receive prior review by the NRC. To comply with the final rule, nuclear power reactor licensees may need to revise procedures and training to address use of the license amendment process for emergency plan changes that result in reductions in effectiveness. In addition, for emergency plan changes that do not result in a reduction in effectiveness, nuclear power reactor licensees must submit to NRC a summary of the analysis prepared to demonstrate the change does not reduce the effectiveness of the plan.

Assumptions:

(1) Training is only for EP and licensing staff. Training is separate from other training, but is delivered at the same time as 10 CFR 50.90 training.
(2) NRC receives 12 submittals (i.e., emergency plan changes that reduce the effectiveness of the plan) per year. The base cost to licensees to prepare 10 CFR 50.90 submittals is comparable to the cost of preparing current emergency plan change requests.
(3) One of the 12 submittals results in a hearing. Hearings impose incremental costs on licensees and NRC. (4) NRC annual cost associated with participating in hearing process includes time of ASLB judges and staff.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Review and revise existing procedures - Nuclear power reactor licensees	Executive	$200.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	n/a			16 hrs/site	$ (2,400)	$ (2,400)
	EP Staff	$100.00/hr	65	n/a			60 hrs/site	$ (6,000)	$ (6,000)
	Clerical	$50.00/hr	65	n/a			40 hrs/site	$ (2,000)	$ (2,000)
	Licensing	$100.00/hr	65	n/a			16 hrs/site	$ (1,600)	$ (1,600)
Review and revise training - Nuclear power reactor licensees	Executive	$200.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	n/a			8 hrs/site	$ (1,200)	$ (1,200)
	EP Staff	$100.00/hr	65	n/a			40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	65	n/a			20 hrs/site	$ (1,000)	$ (1,000)
	Licensing	$100.00/hr	65	n/a			0 hrs/site	$ -	$ -
Total Industry Implementation Cost							200 hrs/site	$ (18,200)	$ (18,200)
INDUSTRY OPERATIONS (ANNUAL)									
Participate in hearing process	Executive	$200.00/hr	1	n/a			48 hrs/site	$ (9,600)	$ (148)
	Manager	$150.00/hr	1	n/a			160 hrs/site	$ (24,000)	$ (369)
	EP Staff	$100.00/hr	1	n/a			160 hrs/site	$ (16,000)	$ (246)
	Clerical	$50.00/hr	1	n/a			40 hrs/site	$ (2,000)	$ (31)
	Licensing	$100.00/hr	1	n/a			160 hrs/site	$ (16,000)	$ (246)
	Attorney	$250.00/hr	1	n/a			320 hrs/site	$ (80,000)	$ (1,231)
Submit summary of analysis of changes to emergency plan not resulting in reduction in effectiveness	Executive	$200.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	n/a			0 hrs/site	$ -	$ -
	EP Staff	$100.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Clerical	$50.00/hr	65	n/a			2 hrs/site	$ (100)	$ (100)
	Licensing	$100.00/hr	65	n/a			0 hrs/site	$ -	$ -
	Attorney	$250.00/hr	65	n/a			0 hrs/site	$ -	$ -
Total Industry Operations Cost							890 hrs/site	$ (147,700)	$ (2,371)
NRC IMPLEMENTATION (ONE-TIME)									
None.									
NRC OPERATIONS (ANNUAL)									
Participate in hearing process	Executive	$100.00/hr	1	n/a			80 hrs/site	$ (8,000)	
	Manager	$100.00/hr	1	n/a			160 hrs/site	$ (16,000)	
	Staff	$100.00/hr	1	n/a			320 hrs/site	$ (32,000)	
	Clerical	$100.00/hr	1	n/a			40 hrs/site	$ (4,000)	
	Attorney	$100.00/hr	1	n/a			320 hrs/site	$ (32,000)	
Total NRC Operations Cost							920 hrs	$ (92,000)	
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
None.									
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL							**2,010 hrs**		

Notes:
(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.
(3) "n/a" means that the issue was not in the Orders or the Bulletin.
(4) Not all 65 sites would incur certain costs resulting from the provision. As a result, the cost for the average site would be less than the cost per affected site (both figures shown above).

A.8.b: Amended Emergency Plan Change Process - Non-Power Reactors

Current regulations require non-power reactors to "maintain in effect" their emergency plan. The final rule language clarifies the existing rule language by requiring non-power reactors: to maintain capabilities and resources relative to the emergency plan, ensure changes to the approved emergency plan are properly evaluated, and ensure that proposed changes that reduce the effectiveness of the plan receive prior review by the NRC. To comply with the final rule, non-power reactors may need to revise procedures and training to address use of the license amendment process for emergency plan changes that result in reductions in effectiveness. In addition, for emergency plan changes that do not result in a reduction in effectiveness, non-power reactors must submit to the NRC a summary of the analysis prepared to demonstrate the change does not reduce the effectiveness of the plan.

Assumptions:

(1) Training is only for EP staff. Training is separate from other training, but is delivered at the same time as other EP training.
(2) NRC does not receive any 10 CFR 50.90 submittals (i.e., emergency plan change that reduces the effectiveness of the plan) per year.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Review and revise existing procedures - Non-power reactors	Executive	$200.00/hr	32	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	32	n/a			0 hrs/site	$ -	$ -
	EP Staff	$100.00/hr	32	n/a			80 hrs/site	$ (8,000)	$ (8,000)
	Clerical	$50.00/hr	32	n/a			40 hrs/site	$ (2,000)	$ (2,000)
	Licensing	$100.00/hr	32	n/a			0 hrs/site	$ -	$ -
Review and revise training - Non-power reactors	Executive	$200.00/hr	32	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	32	n/a			0 hrs/site	$ -	$ -
	EP Staff	$100.00/hr	32	n/a			40 hrs/site	$ (4,000)	$ (4,000)
	Clerical	$50.00/hr	32	n/a			0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	32	n/a			0 hrs/site	$ -	$ -
Total Industry Implementation Cost							160 hrs/site	$ (14,000)	$ (14,000)
INDUSTRY OPERATIONS (ANNUAL)									
None									
NRC IMPLEMENTATION (ONE-TIME)									
None									
NRC OPERATIONS (ANNUAL)									
None									
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
None.									
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL							**160 hrs**		

Notes:
(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.
(3) "n/a" means that the issue was not in the Orders or the Bulletin.
(4) Not all 32 sites would incur certain costs resulting from the provision. As a result, the cost for the average site would be less than the cost per affected site (which is shown above).

A.9: Emergency Declaration Timeliness

The current emergency preparedness regulations do not establish timeliness criteria for the emergency declaration process. The final rule requires nuclear power reactor licensee to have the capability to assess, classify, and declare an emergency within 15 minutes of the availability of information that an EAL has been exceeded and to promptly declare the emergency as soon as possible following identification of the appropriate classification. Nuclear power reactor licensees are already complying with the final rule language via a voluntary initiative that accomplishes the intent of the final rule. These licensees, however, must review and revise existing site procedures and training to include the new timeliness requirements for emergency classifications.

Assumptions:

(1) New training for emergency classification timeliness is integrated within the current training program coursework and delivered at the same time as other EP training without extending the duration of training courses.
(2) Sites do not incur operating costs because the final rule only requires the capability to classify and declare an emergency within 15 minutes.

	Cost Inputs			Incremental Effort Due to Voluntary Initiative (PI)			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Review and revise existing procedures	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	20 hrs/site	$ (3,000)	$ (3,000)	4 hrs/site	$ (600)	$ (600)
	EP Staff	$100.00/hr	65	80 hrs/site	$ (8,000)	$ (8,000)	16 hrs/site	$ (1,600)	$ (1,600)
	Clerical	$50.00/hr	65	20 hrs/site	$ (1,000)	$ (1,000)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Review and revise training	Executive	$200.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
	Manager	$150.00/hr	65	10 hrs/site	$ (1,500)	$ (1,500)	4 hrs/site	$ (600)	$ (600)
	EP Staff	$100.00/hr	65	40 hrs/site	$ (4,000)	$ (4,000)	16 hrs/site	$ (1,600)	$ (1,600)
	Clerical	$50.00/hr	65	20 hrs/site	$ (1,000)	$ (1,000)	0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	65	0 hrs/site	$ -	$ -	0 hrs/site	$ -	$ -
Total Industry Implementation Cost				190 hrs/site	$ (18,500)	$ (18,500)	40 hrs/site	$ (4,400)	$ (4,400)
INDUSTRY OPERATIONS (ANNUAL)									
None.									
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (e.g., withdraw EPPOS-2, update NEI-99-02)	Executive	$100.00/hr		0 hrs	$ -		0 hrs	$ -	
	Manager	$100.00/hr		0 hrs	$ -		16 hrs	$ (1,600)	
	Staff	$100.00/hr		0 hrs	$ -		80 hrs	$ (8,000)	
	Clerical	$100.00/hr		0 hrs	$ -		40 hrs	$ (4,000)	
	Attorney	$100.00/hr		0 hrs	$ -		20 hrs	$ (2,000)	
Total NRC Implementation Cost				0 hrs	$ -		156 hrs	$ (15,600)	
NRC OPERATIONS (ANNUAL)									
None.									
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
None.									
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL				**190 hrs**			**196 hrs**		

Notes:

(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.

A.10: Emergency Operations Facility - Performance Based Approach

Current regulations do not address EOF distance criteria or the capabilities and functional requirements for a consolidated EOF (such as capabilities to handle simultaneous events at two or more sites). The final rule establishes a performance standard for single-site or consolidated EOFs and for licensees that plan to consolidate multiple EOFs into one facility. The analysis assumes there are no incremental costs to licensees for this final rule change because the rule does not require any currently approved EOFs to be relocated or consolidation of EOFs. Rather, a licensee may voluntarily choose to pursue consolidation only if the incremental savings exceed the incremental costs.

Assumptions:

(1) Consolidation of EOFs is optional. Therefore, the analysis does not calculate the incremental costs or savings incurred by licensees resulting from EOF consolidation.
(2) NRC incurs costs to revise guidance.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
None.									
INDUSTRY OPERATIONS (ANNUAL)									
None.									
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (NUREG 0696, NUREG 0737 supplement 1)	Executive	$100.00/hr		n/a			20 hrs	$ (2,000)	
	Manager	$100.00/hr		n/a			80 hrs	$ (8,000)	
	Staff	$100.00/hr		n/a			360 hrs	$ (36,000)	
	Clerical	$100.00/hr		n/a			40 hrs	$ (4,000)	
	Attorney	$100.00/hr		n/a			40 hrs	$ (4,000)	
Total NRC Implementation Cost							540 hrs	$ (54,000)	
NRC OPERATIONS (ANNUAL)									
None.									
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
None.									
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL							**540 hrs**		

Notes:
(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.
(3) "n/a" means that the issue was not in the Orders or the Bulletin.

A.11: Backup Means for Alert and Notification Systems (ANS)

Existing regulations and guidance do not address requirements for backup alerting and notification capabilities when a major portion of the primary means is unavailable. The final rule requires licensees to demonstrate that the alert and notification capability includes a backup means of alert and notification in the event that the primary ANS is unavailable.
Assumptions:

(1) Twenty-one sites already have backup power to sirens as a backup alerting mechanism. However, these sites are not fully compliant with the final rule and will need to upgrade their siren activation system in order to comply.
(2) Thirty-two sites already use route alerting as a backup means of alerting, which complies with the final rule. These sites, however, need to review and verify their procedures to ensure there are adequate resources during hostile action.
(3) Twelve sites do not have any backup means of alerting. Six of the sites need to implement backup power to sirens, while the other 6 need to implement route alerting as backup.
(4) Thirty-two sites have backup Emergency Alert System (EAS) capabilities for public notification.
(5) Thirty-three sites do not have a backup EAS capability. These sites incur incremental costs to acquire a backup EAS capability.

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
INDUSTRY IMPLEMENTATION (ONE-TIME)									
Determine in conjunction with offsite officials and design means for backup ANS	Executive	$200.00/hr	45	n/a			40 hrs/site	$ (8,000)	$ (5,538)
	Manager	$150.00/hr	45	n/a			80 hrs/site	$ (12,000)	$ (8,308)
	EP Staff	$100.00/hr	45	n/a			240 hrs/site	$ (24,000)	$ (16,615)
	Engineer	$100.00/hr	45	n/a			240 hrs/site	$ (24,000)	$ (16,615)
	Clerical	$50.00/hr	45	n/a			8 hrs/site	$ (400)	$ (277)
	Licensing	$100.00/hr	45	n/a			40 hrs/site	$ (4,000)	$ (2,769)
Implement backup alerting system	Upgrade sirens	$10,000/siren	6	n/a			50 sirens/site	$ (500,000)	$ (46,154)
	Implement route alerting	$50,000/site	6	n/a			1 plan/site	$ (50,000)	$ (4,615)
Review and verify existing ANS backup	Executive	$200.00/hr	53	n/a			0 hrs/site	$ -	$ -
	Manager	$150.00/hr	53	n/a			8 hrs/site	$ (1,200)	$ (978)
	EP Staff	$100.00/hr	53	n/a			40 hrs/site	$ (4,000)	$ (3,262)
	Clerical	$50.00/hr	53	n/a			0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	53	n/a			8 hrs/site	$ (800)	$ (652)
Implement back-up to siren activation system		$50,000/site	21	n/a			1 system/site	$ (50,000)	$ (16,154)
Implement EAS backup notification system		$50,000/site	33	n/a			1 system/site	$ (50,000)	$ (25,385)
Develop administrative controls, maintenance procedures, training and testing program for means of backup ANS (full program)	Executive	$200.00/hr	12	n/a			30 hrs/site	$ (6,000)	$ (1,108)
	Manager	$150.00/hr	12	n/a			60 hrs/site	$ (9,000)	$ (1,662)
	EP Staff	$100.00/hr	12	n/a			360 hrs/site	$ (36,000)	$ (6,646)
	Clerical	$50.00/hr	12	n/a			0 hrs/site	$ -	$ -
	Licensing	$100.00/hr	12	n/a			30 hrs/site	$ (3,000)	$ (554)
Develop administrative controls, maintenance procedures, training and testing program for means of backup ANS (partial program)	Executive	$200.00/hr	21	n/a			8 hrs/site	$ (1,600)	$ (517)
	Manager	$150.00/hr	21	n/a			8 hrs/site	$ (1,200)	$ (388)
	EP Staff	$100.00/hr	21	n/a			80 hrs/site	$ (8,000)	$ (2,585)
	Clerical	$50.00/hr	21	n/a			8 hrs/site	$ (400)	$ (129)
	Licensing	$100.00/hr	21	n/a			8 hrs/site	$ (800)	$ (258)
Revise FEMA REP-10 ANS design report	Executive	$200.00/hr	33	n/a			4 hrs/site	$ (800)	$ (406)
	Manager	$150.00/hr	33	n/a			24 hrs/site	$ (3,600)	$ (1,828)
	EP Staff	$100.00/hr	33	n/a			240 hrs/site	$ (24,000)	$ (12,185)
	Clerical	$50.00/hr	33	n/a			16 hrs/site	$ (800)	$ (406)
	Licensing	$100.00/hr	33	n/a			24 hrs/site	$ (2,400)	$ (1,218)
Total Industry Implementation Cos							1,604 hrs/site	$ (826,000)	$ (177,212)
INDUSTRY OPERATIONS (ANNUAL)									
Maintain back-up to siren system		$200/siren	27	n/a			50 sirens/site	$ (10,000)	$ (4,154)
Maintain route alerting system		$5,000/site	38	n/a			1 system/site	$ (5,000)	$ (2,923)
Maintain back-up to EAS		$10,000/site	65	n/a			1 system/site	$ (10,000)	$ (10,000)
Total Industry Operations Cost								$ (25,000)	$ (17,077)
NRC IMPLEMENTATION (ONE-TIME)									
Review and revise guidance (Inspection procedures)	Executive	$100.00/hr		n/a			8 hrs	$ (800)	
	Manager	$100.00/hr		n/a			20 hrs	$ (2,000)	
	Staff	$100.00/hr		n/a			100 hrs	$ (10,000)	
	Clerical	$100.00/hr		n/a			8 hrs	$ (800)	
	Attorney	$100.00/hr		n/a			20 hrs	$ (2,000)	
Total NRC Implementation Cost							156 hrs	$ (15,600)	
NRC OPERATIONS (ANNUAL)									
None.									

Backup Means for Alert and Notification Systems (continued)

	Cost Inputs			Incremental Effort Due to Order & Bulletin			Additional Incremental Effort Due to Final Rule		
Requirement		**Unit Cost**	**Sites Affected**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**	**Units**	**Savings (Cost) Per Affected Site**	**Savings (Cost) Per Average Site**
OTHER GOVERNMENT IMPLEMENTATION (ONE-TIME)									
FEMA to review and approve revised FEMA REP-10 ANS	Executive	$100.00/hr	33	n/a			0 hrs/site	$ -	
	Manager	$100.00/hr	33	n/a			8 hrs/site	$ (800)	
	Staff	$100.00/hr	33	n/a			160 hrs/site	$ (16,000)	
	Clerical	$100.00/hr	33	n/a			8 hrs/site	$ (800)	
	Attorney	$100.00/hr	33	n/a			0 hrs/site	$ -	
FEMA to review and revise guidance (REP-10, Guidance Memorandum AN-1, REP program manual, Civil Preparedness Guide 1-17)	Executive	$100.00/hr		n/a			8 hrs	$ (800)	
	Manager	$100.00/hr		n/a			40 hrs	$ (4,000)	
	Staff	$100.00/hr		n/a			240 hrs	$ (24,000)	
	Clerical	$100.00/hr		n/a			16 hrs	$ (1,600)	
	Attorney	$100.00/hr		n/a			40 hrs	$ (4,000)	
State and Local Government coordination	Executive	$100.00/hr	65	n/a			34 hrs	$ (3,400)	
	Manager	$100.00/hr	65	n/a			68 hrs	$ (6,800)	
	Staff	$100.00/hr	65	n/a			136 hrs	$ (13,600)	
	Clerical	$100.00/hr	65	n/a			14 hrs	$ (1,400)	
	Attorney	$100.00/hr	65	n/a			14 hrs	$ (1,400)	
State and Local Government review and revise plan and procedures	Executive	$100.00/hr	65	n/a			8 hrs	$ (800)	
	Manager	$100.00/hr	65	n/a			40 hrs	$ (4,000)	
	Staff	$100.00/hr	65	n/a			160 hrs	$ (16,000)	
	Clerical	$100.00/hr	65	n/a			16 hrs	$ (1,600)	
	Attorney	$100.00/hr	65	n/a			40 hrs	$ (4,000)	
Total Other Government Implementation Cos							1,050 hrs	$ (105,000)	
OTHER GOVERNMENT OPERATIONS (ANNUAL)									
None.									
TOTAL							**2,810 hrs**		

Notes:

(1) Hour estimates based on judgment of NRC staff.
(2) See discussion of methodology in Section 3.2 of the Regulatory Analysis.
(3) "n/a" means that the issue was not in the Orders or the Bulletin.
(4) FEMA labor rates assumed to be the same as NRC wage rates.
(5) Not all 65 sites would incur certain costs resulting from the provision. As a result, the cost for the average site would be less than the cost per affected site (both figures shown above).