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REVISION C

NUCLEAR ENERGY INSTITUTE

**GUIDANCE FOR IMPLEMENTING
A RISK-INFORMED, PERFORMANCE-BASED
FIRE PROTECTION PROGRAM UNDER 10 CFR 50.48(c)**

July 2002

ACKNOWLEDGEMENTS (later)

NOTICE (later)

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FOREWARD (later)

[Possibly include regulatory history, similar to NUMARC 93-01 Revision 3]

EXECUTIVE SUMMARY (later)

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1.0 INTRODUCTION

On [date to be determined] the Nuclear Regulatory Commission (NRC) amended 10 CFR Part 50.48 “Fire protection” to add a new subsection, 10 CFR 50.48(c), that established alternative fire protection requirements (?? Federal Register ???). The change to 10 CFR 50.48 endorses with exceptions the National Fire Protection Association’s (NFPA) 805, “Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants – 2001 Edition,” as a voluntary alternative approach for demonstrating compliance with 10 CFR 50.48 Section (b) and Section (f).

This document provides guidance for implementing the requirements of this rule change, and to the degree endorsed by the NRC, represents methods acceptable to the NRC for implementing in whole or in part a risk-informed, performance-based fire protection program.

1.1 Background

Fire protection requirements predating the [insert date] Amendment to 10 CFR 50.48 are prescriptive in nature and were established well before the emergence of risk-informed analytical techniques. Consequently, the prescriptive requirements do not include the benefits of probabilistic risk assessments (PRAs) for fires, nor do they reflect insights into fire risk evident from the significant body of operating experience developed through risk-based assessments. As PRA technology developed and additional operating experience was accumulated, the NRC, in SECY-93-143, “Report on the Re-assessment of the NRC Fire Protection Program,” determined that the situation had changed sufficiently to support a recommendation for a revised 10 CFR 50.48 that would take risk concepts into account. In addition, as discussed in SECY-96-134, “Options for Pursuing Regulatory Improvement in Fire Protection Regulations of Nuclear Power Plants,” dated June 21, 1996, a revised fire protection rule that would allow flexibility and facilitate the use of alternate approaches to meet the fire safety objectives may reduce the need for exemptions. The NRC in SECY-98-058 assessed options for developing a new risk-informed, performance-based fire protection regulation. In it, the NRC staff recommends that NRC be authorized to work with NFPA on the development of a risk-informed, performance-based standard for nuclear plant fire protection. They further recommend that rulemaking to adopt the standard and a regulatory guide to interpret the standard be initiated following issuance of the standard.

As discussed in SECY-98-058, the NRC’s adoption of NFPA 805 was considered consistent with the Commission’s policy specified in Direction Setting Issue (DSI) 13, “The Role of Industry”; Office of Management and Budget Circular A-119, “Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities”; and Public Law 104-113, “National Technology Transfer Act of 1995.” These guidance documents encourage the U.S. Government’s adoption of national consensus standards to carry out its policy objectives and activities.

NEI, representing the nuclear industry, is a proponent of the use of risk-informed, performance-based processes. NEI has worked to ensure that the adoption of a new fire protection licensing basis is optional, and not a requirement. NEI has also worked to ensure that the process of

adoption of a new fire protection licensing basis is effective and comprehensive, without placing an unnecessary burden on licensees pursuing risk-informed, performance-based initiatives.

Subsequently, NFPA 805 was developed to provide a comprehensive risk-informed, performance-based standard for fire protection. The NFPA 805 Technical Committee on Nuclear Facilities is comprised of nuclear plant licensees, the NRC, insurers, equipment manufacturers, and subject matter experts. The standard was developed in accordance with NFPA processes and consisted of a number of technical meetings, and reviews of draft documents by committee and industry representatives. The scope of NFPA 805 includes goals related to nuclear safety, radioactive release, life safety, and plant damage/business interruption. The standard addresses fire protection requirements for nuclear plants during all plant operating modes and conditions, including shutdown, degraded conditions, and decommissioning, which had not been explicitly addressed by previous requirements and guidelines. NFPA 805 became effective on February 9, 2001. Although NFPA 805 provides many of the tools and processes necessary for risk-informed, performance-based fire protection, additional guidance and clarification is warranted. This implementation guidance is intended to provide that additional guidance and clarification.

1.2 Purpose and Scope

This implementing guide for NFPA 805 has two primary purposes:

- Provide direction and clarification for adopting NFPA 805 as an alternative approach to fire protection, consistent with 10 CFR 50.48 (c), and
- Provide additional supplemental technical guidance and methods for using NFPA 805 and its appendices to demonstrate compliance with fire protection requirements.

NFPA 805 establishes a comprehensive set of requirements for fire protection programs at nuclear power plants. It incorporates both deterministic and risk-informed, performance based concepts. The deterministic aspects of NFPA 805 are comparable to current requirements, and thus need little additional guidance. Accordingly, this implementing guide focuses attention on the risk-informed, performance-based fire protection goals, objectives, and performance criteria contained in NFPA 805. Also addressed are the risk-informed, performance based tools considered acceptable for demonstrating compliance. NFPA 805 addresses primarily technical issues and does not provide a framework or guidance pertaining to the regulatory processes for adopting NFPA 805 as a new licensing basis, either in whole or in part. Nor does NFPA 805 address use of the analytical tools and processes within an existing licensing basis. Finally, although there is a significant amount of detail in NFPA 805 and its appendices, clarification and additional guidance for select issues will help ensure consistency and effective utilization of the standard.

The scope of the implementation guide includes:

- Discussion of the regulatory framework for adopting NFPA 805 as the basis for compliance to fire protection regulations (Chapter 4);
- Overview of the risk-informed, performance-based fire protection program process and available options (Chapter 5);

- Implementation guidance for transitioning to a new fire protection licensing basis (Chapter 6);
- Guidance for using NFPA 805 analysis tools within a current licensing basis (Chapter 7);
- Guidance for program maintenance and configuration control processes (Chapter 8); and
- Technical guidance and acceptable methods for conducting risk-informed, performance-based analyses (Appendices).

This implementation guide addresses only those elements of NFPA 805 that are within the scope of the NRC’s jurisdiction under 10 CFR 50.48. The goals of Life Safety and Plant Damage/Business Interruption within NFPA 805 and its appendices are outside of the scope of 10 CFR 50.48 and thus are not addressed in this guide.

1.3 Fire Protection Risk-Informed, Performance Based Applications Overview

The use of risk information and a risk-informed, performance-based methodology for fire protection implementation and regulation activities is consistent with the current state of knowledge, and also follows suit with prior nuclear industry initiatives that have relied on risk-information to focus industry efforts on issues that are safety significant. Accordingly, the NRC’s adoption of NFPA 805 reflects that movement towards using risk-informed, performance-based methods.

1.3.1 Regulatory Guide 1.174 Summary

Regulatory Guide 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis”, is of particular interest, since it addresses the use of risk-informed, performance-based methods in supporting change to a plant’s licensing basis. Regulatory Guide 1.174 is the result of a significant amount of focus within the NRC and nuclear industry, and provides methods that have been reviewed and accepted by the NRC. Therefore, it is logical that NFPA 805 and this implementing guide utilize processes that are consistent with the principles within Regulatory Guide 1.174. Although the terminology in NFPA 805 and this implementation guide are not in strict alignment with Regulatory Guide 1.174, and Regulatory Guide 1.174 is directed at licensing basis changes only, the concepts and principles of the regulatory guide are supported by NFPA 805 and its implementation guidance. Therefore, by utilizing NFPA 805 and its implementing guidance, a licensee would be using tools and principles that are consistent with those previously established and approved for use within the nuclear industry.

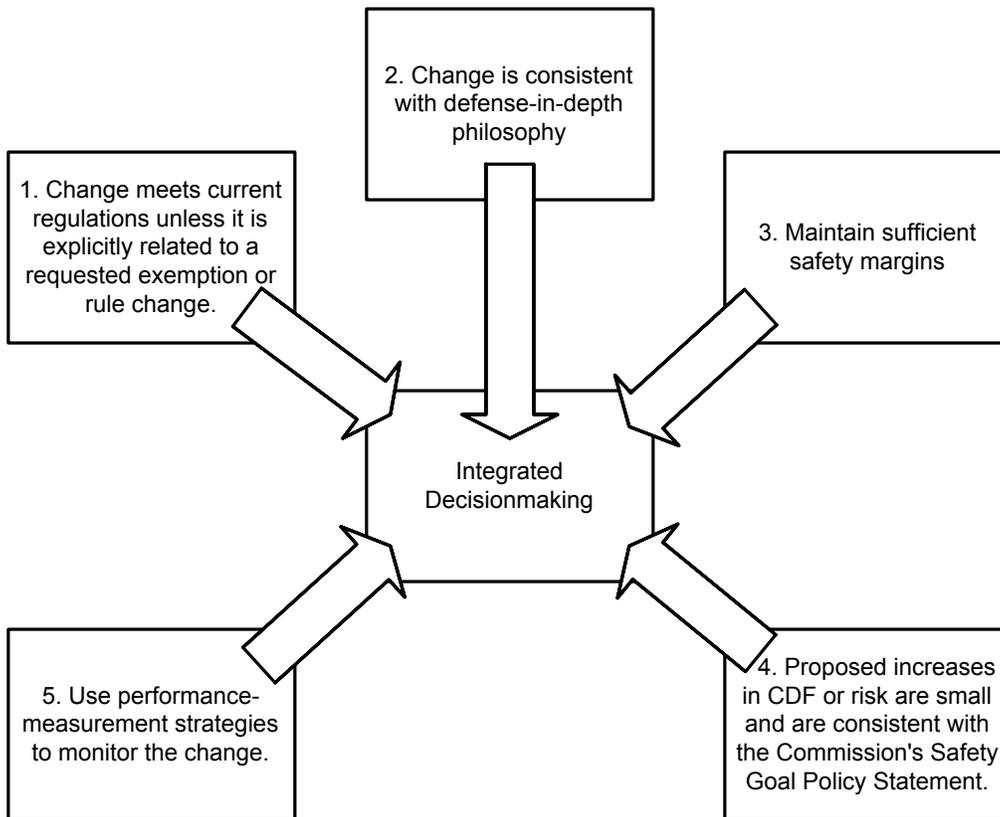
The following discussion provides an overview of the principles within Regulatory Guide 1.174 and its relationship with NFPA 805.

Regulatory Guide 1.174 describes an acceptable method which can be used by a licensee and the NRC staff in assessing the nature and impact of licensing basis changes when the licensee chooses to support or is requested by the staff to support the changes with risk information. Regulatory Guide 1.174, and its related guidance in Chapter 19 of the Standard Review Plan, (NUREG-0800) provides the principles of integrated decision-making, principal elements of risk-informed, plant-specific decisionmaking, quality assurance expectations, and documentation

expectations. Regulatory Guide 1.174 appendices also address items such as desired PRA attributes and use of risk information in the categorization of structures, systems, and components.

Integrated Decisionmaking

Regulatory Guide 1.174 describes the term “Integrated Decisionmaking” as a set of key principles expected to be met in risk-informed decisionmaking. These key principles are illustrated below:



Principles of Risk-Informed Integrated Decisionmaking

The concepts of integrated decisionmaking are consistent with the processes described in NFPA 805 and this implementation guide. Regulatory Guide 1.174 is referred to within the Appendices of NFPA 805 as providing guidance on key risk-informed, performance-based topics such as:

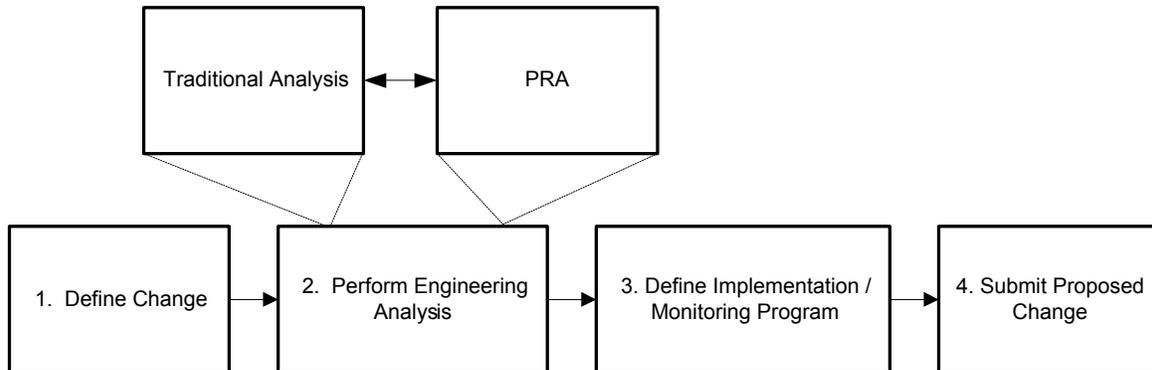
- Acceptance criteria for changes in risk (Section A.2.4.4.1 of NFPA 805)
- Maintaining safety margins (Section A.2.4.4.3 of NFPA 805)
- Monitoring (Section A.2.6 of NFPA 805)

- Uncertainty (Section D.3.6 of NFPA 805)

Refer to Chapter 8 of this guide for guidance on the application of these principles for fire protection.

Elements of Risk-Informed, Plant-Specific Decisionmaking

Four elements of risk-informed, plant-specific decisionmaking have been defined in Regulatory Guide 1.174, and are shown graphically below:



Elements of Risk-Informed, Plant Specific Decisionmaking

The processes associated with a fire protection risk-informed application, as described in Section 2 of NFPA 805 and Section 8 of this implementation guide, are consistent with the elements provided in Regulatory Guide 1.174. Specifically, plant change analysis, engineering analysis (both deterministic/traditional and risk-informed, performance-based), and implementation/monitoring as discussed in Section 2 of NFPA 805 and Chapter 8 of guide, is consistent with Regulatory Guide 1.174.

1.3.2 NFPA 805 – Regulatory Guide 1.174 Differences

There are several differences between the use of PRA in Regulatory Guide 1.174 and NFPA 805. These differences do not invalidate the principles of the different documents, but are items of interest that should be understood in the preparation of risk-informed, performance-based analyses within a plant’s current licensing basis or in the adoption of a new licensing basis. These differences are discussed below.

1.3.2.1 Changes Within a Plant’s Current Licensing Basis

NFPA 805 incorporates a broader scope for the application of PRA techniques to licensing basis changes. It is clear from Regulatory Guide 1.174 that its guidance is limited to the use of PRA and risk insights in support of licensing basis changes that require prior NRC approval, and does not address licensee-initiated changes to the licensing basis that do not require NRC review and approval. By contrast, the processes described in NFPA 805 and this implementation guidance

are not intended to be limited to changes to a current licensing basis. Refer to Section 4.7 and 7 for guidance on the use of risk-informed, performance-based tools and processes to support changes within an existing licensing basis.

1.3.2.2 *Defense-in-Depth and Safety Margins*

Regulatory Guide 1.174 contains generally applicable concepts of Defense-in-Depth and Safety Margin that are applied to the specific aspects of fire protection in NFPA 805. A key attribute of performing a risk-informed engineering analysis, per Regulatory Guide 1.174, is ensuring that adequate defense-in-depth is maintained and that safety margins are maintained. It is noted that “defense-in-depth” in Regulatory Guide 1.174 is described as a balance between:

1. Core damage prevention,
2. Containment failure, and
3. Consequence mitigation.

Traditional fire protection “defense-in-depth” involves:

1. Preventing fires from starting,
2. Rapidly detect, control, and extinguish fires that do occur, and
3. Protecting structures, systems and equipment important to safety so that a fire that is not promptly extinguished by fire suppression activities will not prevent safe shutdown of the plant.

Acceptable methods of evaluating defense-in-depth and safety margins are discussed in Section 8.3.

1.4 *Relationship with Other Rules, Regulatory Guidance, Standards, and Programs*

NOTE: Below is preliminary list of documents seen to interface with NFPA 805 and this implementing guide. The relationship of these documents to rulemaking will be elaborated upon in the next revision.

- 10 CFR 50.48 and 10 CFR 50, Appendix R - refer to discussion of new rule language
- NEI 00-01 - discuss use of NEI 00-01 as an acceptable method of demonstrating compliance with certain aspects of NFPA 805 and refer to appropriate Appendices of the document
- Regulatory Guide 1.189 - state the NEI position that this applies only to licensees who commit to it to the extent that it adopts new positions
- 10 CFR 50.59 and NEI 96-07 - discuss the relationship to the change and configuration control processes
- 10 CFR 50.72 and 10 CFR 50.73 - discuss the responsibilities to report findings that are within the scope of these sections of the regulations

- Reactor Oversight Process/Significance Determination process – discuss the role, if any, of this process in an NFPA 805 program
- 10 CFR 50.65 and NUMARC 93-01 - Maintenance Rule - discuss the relationship of the maintenance rule program to the “monitoring” program in NFPA 805
- Corrective Action Program - discuss the relationship of the corrective action program to the “monitoring” program in NFPA 805
- NUMARC 91-06 (Shutdown) and NUREG 1409 - discuss the use of processes identified within these documents as a method of demonstrating compliance to NFPA 805
- Generic Letter 91-18, Rev.1 – discuss the guidance given in this document on compensatory actions during temporary non-compliances during change over to new licensing basis
- RIS 2000-17 adopting NEI 99-04 - discuss how licensees can modify regulatory commitments made under the new rule

2.0 RESPONSIBILITIES

Licensees adopting 10 CFR 50.48 (c) should use this guideline to assist in developing and maintaining plant-specific risk-informed, performance-based programs.

3.0 APPLICABILITY

As stated in 10 CFR 50.48 (c)(3)(i), the adoption of the alternative risk-informed, performance-based rule by any licensee is voluntary. This rule may be adopted as an alternative to either 10 CFR 50.48 (b) or (f). Accordingly, this guide is also voluntary.

If a licensee chooses not to adopt NFPA 805 as its new fire protection licensing basis, that licensee may still use the methods in NFPA 805 to support proposed changes to its current licensing basis. Specifically, a licensee may use risk-informed/performance based methods to support requests for deviations from commitments or exemptions from requirements. In those cases, the NRC would not question the acceptability of the method used but only would review the licensee’s application of the methodology in the particular situation for which a deviation or exemption is being requested.

4.0 REGULATORY FRAMEWORK

4.1 Introduction

The NRC has adopted with exceptions NFPA 805 as an acceptable means of satisfying risk-informed, performance-based criteria for a fire protection program at nuclear power plants. Licensees may continue to comply with current regulatory requirements or voluntarily transition to the alternative requirements of 10 CFR 50.48 (c). If a licensee elects to maintain its current licensing basis, the licensee may still use the risk-informed, performance-based tools in NFPA 805 to support proposed changes to the fire protection program within its current licensing basis (CLB), as discussed in Section 7 of this implementation guide.

4.2 Overview of the Rule

The NRC, in 10 CFR 50.48(c)(1), has adopted with the exceptions noted in 10 CFR 50.48(c)(2) NFPA 805, 2001 Edition, (for convenience, the modified version adopted by the NRC will be referred to as “NFPA 805”), to replace certain aspects of the NRC’s current fire protection requirements (10 CFR 50.48(c)(3)). Details about this new, alternative rule are provided below.

4.2.1 Incorporation by Reference

To avoid the need to reprint NFPA 805 in the CFR, the NRC obtained permission from the Director of the Federal Register to incorporate NFPA 805 by reference. Incorporation by reference means that the NRC adopts an industry standard, perhaps with some changes, and makes that modified standard an NRC rule, just as if the modified standard had been included in its entirety in the CFRs. Details about how the NRC uses incorporation by reference and has applied it to NFPA 805 are provided below.

4.2.2 NRC Practice

The NRC has exercised the option of incorporation by reference with other industry standards, such as the Boiler and Pressure Vessel Code that was promulgated by the American Society of Mechanical Engineers (“ASME”) and adopted by the NRC as 10 CFR 50.55a. After the NRC adopts an industry standard through incorporation by reference, that industry standard is treated like any other NRC rule, to the extent that the NRC has adopted the standard and modified it. Examples of limits on the extent to which an industry standard has been adopted and of modifications to an industry standard can be found in conjunction with the NRC’s adoption of the Boiler and Pressure Vessel Code which was promulgated by ASME (“ASME Code”). Thus, useful insights are available from experience with implementation of the ASME Code. [An example will be added in the next version of this guidance.]

4.2.3 Implications of Incorporation by Reference

Of particular importance in the process of adopting the new rule is the impact of subsequent changes to NFPA 805 that may be made by the National Fire Protection Association (“NFPA”). As with any industrial code adopted by the NRC, each edition of the code must be adopted by rulemaking. Therefore, if the NFPA were to revise NFPA 805, NRC licensees cannot apply the changes unless the NRC adopts the revised version through the rulemaking process. [See 10 CFR 50.48(c)(1)]. Examples of this process are provided by the NRC’s rulemaking proceedings to adopt changes to the ASME Boiler and Pressure Vessel Code.

Similarly, licensees may not rely on interpretations of NFPA 805 by the NFPA unless the NRC has accepted those interpretations. Generally, the NRC would not adopt such interpretations through rulemaking. Instead, a licensee can request the Office of General Counsel (“OGC”) for an informal NRC opinion on the acceptability of an interpretation by the NFPA. It should be noted that the line between interpretations and substantive changes to NFPA 805 will not always be clear. In some cases, the NRC will determine that an “interpretation” is really so extensive that it is a change to the rule that can be adopted only through rulemaking. Therefore, licensees should not rely on the NFPA’s ultimate adoption of an interpretation but wait until the NRC actually adopts it.

4.2.4 Exceptions from Incorporation by Reference

Consistent with its practice regarding incorporation by reference of consensus industry standards, the NRC has taken some exceptions to certain provisions in NFPA 805. These exceptions are listed in 10 CFR 50.48(c)(2)(i)-(viii).

- The exceptions in 10 CFR 50.48(c)(2)(i)-(ii) for life safety goal and plant damage/business interruption reflect the NRC's lack of jurisdiction over these areas.
- The exceptions to 10 CFR 50.48(c)(2)(iii), for feed-and-bleed, (vi) for existing cables, and (vii) for water supply and distribution are NRC rejections of the NFPA's technical positions on these matters. However, the NRC has also modified Section 3.3.5.3 of NFPA-805 to accept flame retardant coatings or an automatic fixed fire protection system that provides a level of protection equivalent to the level provided by qualified cables.
- The exception in 10 CFR 50.48(c)(2)(iv) for uncertainty analyses deletes the requirement in NFPA 805.

4.3 Consistency with Other Fire Protection Requirements

The NRC's Amendment to the fire protection rule that adopts NFPA 805 is codified as 10 CFR 50.48 (c). Placement of the new rule in this location is not arbitrary and is important in showing how the new rule relates to existing fire protection requirements. Details of the changes are discussed below.

4.3.1 Superseded Requirements

The new rule, 10 CFR 50.48(c)(3)(i), provides that, for operating plants, compliance with NFPA 805 is an alternative to complying with either 10 CFR 50.48(b), for plants licensed to operate before January 1, 1979 ("Appendix R Plants"), or the fire protection license conditions in the licenses for plants licensed to operate after January 1, 1979 ("Post-Appendix R Plants"). For plants that have shut down and submitted the certifications required by 10 CFR 50.82(a)(1), compliance with NFPA 805 may be adopted as an alternative to compliance with 10 CFR 50.48(f).

The new rule also supersedes compliance with certain requirements contained in 10 CFR 50.48(a), which mandates compliance with General Design Criterion 3 ("GDC 3"). The transition process described in 10 CFR 50.48(c)(3)(ii) provides, in pertinent parts, that a licensee who intends to adopt the new rule must, among other things, "modify the fire protection plan required by paragraph (a) of that section to reflect the licensee's decision to comply with NFPA 805." Therefore, to the extent that the contents of the fire protection plan required by 10 CFR 50.48(a) are inconsistent with NFPA 805, the fire protection plan must be modified.

A comparison of the requirements in 10 CFR 50.48(a)(1) and 10 CFR 50.48(a)(2) with the comparable requirements in Chapter 3 of NFPA 805 shows that the two sets of requirements for a fire protection plan and program are consistent in most respects. A notable difference is the treatment of equipment important to safety. Although 10 CFR 50.48(a)(2)(iii) requires the specific features necessary for implementing the required fire protection program include a description of the "means to limit fire damage to structures, systems, or components important to safety so that the capability to shut down the plant safely is ensured," NFPA 805 does not

incorporate the concept of important to safety. Therefore, a fire protection plan can comply with NFPA 805 and GDC 3 without specifically addressing equipment important to safety. This is acceptable since the compliance with NFPA 805 ensures that the equipment necessary to provide reasonable assurance that the fuel is maintained in a safe and stable condition will not be damaged by fire during any operational mode or plant configuration. This level of protection required by NFPA 805 is considered equivalent and acceptable and satisfies the overall intent of 10 CFR 50.48(a)(2)(iii).

4.3.2 Process for Transitioning to the New Licensing Basis

For a licensee to transition to a new licensing basis that complies with NFPA 805, the licensee must apply for a license amendment under 10 CFR 50.90 and 10 CFR. 50.48(c)(3)(i). The applicant must identify all orders and license conditions that will need to be revised or superseded, identify technical specifications that must be revised and provide the proposed revisions as well as the supporting bases for them. The acceptance criteria for granting such a license amendment request are 1) that the licensee has identified all of the orders, license conditions and technical specifications that must be revised or superseded and 2) that the proposed revisions are adequate. Because these requirements for the contents of a license amendment request address the process of adopting a new fire protection licensing basis, adequacy of the request appears to focus on completeness of the changes to enable adoption of the new licensing basis and not on the safety of the changes. Safety will be assured automatically by complying with the new requirements. This view is reinforced by requiring prior NRC approval for substantive alternatives to the requirements in NFPA 805. The prior approval will be obtained by an NRC Safety Evaluation Report (SER).

A licensee must complete certain activities before adopting a fire protection program and implementing program changes that comply with NFPA 805. In accordance with 10 CFR 50.48(c)(3)(ii), the licensee is required first to “complete its implementation of the methodology in Chapter 2 of NFPA 805, (including all required evaluations and analyses),” and to modify the fire protection plan required under GDC 3 to be consistent with NFPA 805. Where a licensee can show that the NRC has previously approved certain fundamental attributes of the fire protection, those fundamental attributes may, at the licensee’s discretion, supersede the applicable requirements in Chapter 3 of NFPA 805. Otherwise, a licensee will have to modify its current fire protection program plan to comply with the new requirements in Chapter 3 of NFPA 805 or propose an alternative to the NRC via the exemption process.

4.3.3 Alternative Methods and Analytical Approaches

If a licensee elects to use a method or analytical approach different from those specified in NFPA 805 to demonstrate compliance, the licensee must obtain prior NRC approval. Three criteria must be satisfied by the alternative: (1) the goals, performance objectives, and performance criteria specified in NFPA 805 for nuclear safety and radiological release must be met; (2) the margin of safety must be maintained; and (3) fire protection defense-in-depth (i.e. prevention, suppression and post-fire safe shutdown capability) must be maintained. The prior approval will be obtained by an SER.

4.4 Effect of NRC Approval of CLB

Where a licensee chooses to rely on an aspect of the CLB as previously approved by the NRC, those elements relied upon remain subject to NRC inspection within the context of existing regulations. These reliances will be documented as part of the transition (See Chapter 6). Alternatively, the licensee will have the opportunity to demonstrate compliance with the new requirement. Moreover, an NRC finding that a licensee mistakenly claimed prior NRC approval will not result in a violation for that mistaken claim. The licensee will be exposed, however, to a violation for the previous non-compliance with its licensing basis. [Note: This applies only to the aspects of the CLB that can be “brought forward” on the basis of some provision in NFPA 805.] An example of this situation is discussed below:

- Assume that a licensee had designed the installation of fire hydrants to be 300 feet apart on the yard main system but that the NRC required spacing of no more than 275 feet. Also assume that the NRC’s SER approved the licensee’s design of the system without addressing specific design aspects like the spacing of fire hydrants. Further assume that the licensee adopts NFPA 805 and relies on this NRC SER to claim prior NRC approval that supersedes Section 3.5.15 of NFPA 805, which requires hydrants to be spaced no greater than 250 feet apart. Finally, assume that during the most recent inspection the NRC discovers the improper spacing of hydrants. Under these circumstances, the licensee will not receive a violation for claiming that prior NRC approval of the fire hydrant design supersedes the requirement in NFPA 805 because the licensee was entitled to rely on the NRC’s tacit approval in the SER. However, because the licensee did not meet its own licensing basis, that failure will still be subject to a violation. To take corrective action, the licensee will have two choices. One, the licensee can comply with its initial licensing basis by moving the hydrants to comply with the initial spacing requirements. Two, the licensee can comply with NFPA 805 by invoking the exception in Section 3.5.15 that permits the use of mobile hoses and equipment.

4.6 Regulatory Transition Process

In adopting this alternative fire protection requirement, the NRC has simplified the transition process by requiring a “housekeeping” license amendment that identifies the changes that must be made in order to adopt the new requirements but which does not address substantive, safety issues.

Refer to Section 6 for details on the process for transition to a new fire protection licensing basis.

4.7 Licensee Transition Documentation

A licensee is required to submit to the NRC only a license amendment request covering the housekeeping items in 10 CFR 50.48(c)(3)(i). A licensee is not required to submit to the NRC any information describing the licensee’s plan for transitioning to the new fire protection licensing basis. Nevertheless, a licensee should maintain complete files of the transition process as a basis of supporting demonstrations of compliance during future inspections.

In addition to the License Amendment Request, the submittal should address the following:

- The date upon which the transition will be completed, description of the milestones for completion of the transition, and identification of any new elements in the fire protection licensing basis.
- The licensee should describe its methodology for implementing Chapter 2 of NFPA 805 (including how it determined which analyses and evaluations were needed), the results of its implementation of Chapter 2 of NFPA 805, how it determined that its fire protection program complies with Chapters 2, 3 and 4 of NFPA 805, including how it identified the fundamental fire protection program attributes that have been previously approved by the NRC for the purposes of Chapter 3 of NFPA 805. Note: The determination of “prior NRC approval of fundamental program attributes” may include changes to those attributes that were made under an NRC approved process, such as Generic Letter 86-10 and 10 CFR 50.59 after the licensee’s initial compliance program was approved by the NRC. This is consistent with the concept of the Fire Protection Standard License Condition, which allows changes to the “approved fire protection program without prior approval of the Commission if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.” Refer to Sections 6.2.1 and 6.2.2 for additional guidance on the determination of compliance with Chapters 2, 3, and 4 of NFPA 805.
- The licensee should identify which of the fire areas are acceptable under the CLB and those that will be analyzed for compliance using risk-informed, performance-based techniques. Refer to Section 6.2.2 and Appendix B-2 for additional guidance on the transition process for plant fire areas and method of determining acceptability.
- The licensee should describe the qualifications of the personnel involved in performing and maintaining fire modeling and risk analyses.
- Where physical changes will be made to the plant in order to comply with NFPA 805, the licensee should commit to apply the plant’s configuration management and change control processes to those changes. Refer to Section 8 for additional guidance on program maintenance and configuration control.
- Where physical or other changes to the plant or procedures will temporarily cause the licensee to be out of compliance with current regulatory requirements, the licensee should identify the specific program attributes affected and provide a timetable for completing the transition to compliance with the new regulatory requirements and describe the compensatory measures that will be taken during the interim period. Refer to Section 8 for additional guidance on program maintenance and configuration control, including guidance on compensatory measures.
- Any proposed alternatives to the requirements in NFPA 805 will be identified in a licensee submittal to the NRC. Each request will be supported by a demonstration that the goals, performance objectives, and performance criteria for nuclear safety and radiological releases as stated in Chapter 1 of NFPA 805 are met and by a showing that defense-in-depth is maintained. The prior approval will be obtained by an SER.
- The licensee should provide clear documentation of the transitioned licensing basis. This is intended to provide a bridge between the CLB and the new licensing basis and should be comprised of the individual technical and licensing reviews described above. Since the plant’s previous licensing basis will no longer be in effect following the transition, the documentation of the items “brought forward” and those “new” items must be clear to effectively maintain the program and provide a baseline for inspection and oversight. Refer to Sections 6.2.1 and 6.2.2 for guidance on the transition reviews for fundamental fire

protection program and design elements and nuclear safety. Sample formats for documenting the transition reviews are provided in Appendices B-1 and B-2. Refer to Section 8 for guidance on maintenance of the new licensing basis following the transition.

The NRC will provide formal review and approval of the licensee's submitted transition documentation. This implementing guide will provide NRC staff with guidance on how to determine a licensee's compliance during the transition period. A licensee's compliance with the new requirements will be determined through inspection.

It is expected that a licensee will not announce its intentions to transition to the new regulatory requirements until it has completed evaluations of the extent to which: (1) the CLB has been previously approved by the NRC; and (2) the plant, programs and procedures will need to be modified to demonstrate compliance with the new requirements. A licensee may submit such evaluations to the NRC for its review and determination of agreement. Such NRC agreement will provide clear guidance to inspectors on the extent to which the CLB will supersede any of the new requirements.

4.8 Use of NFPA Tools within the CLB

A licensee may use the risk-informed, performance-based tools in NFPA 805 to support any available regulatory alternatives for demonstrating compliance with the CLB irrespective of whether they have adopted the standard in whole or in part. Depending on whether a plant is licensed under 10 CFR 50, Appendix R or under the Standard Review Plan, NUREG-0800, a licensee may use risk-informed, performance-based tools to justify either an exemption or a deviation, as appropriate or as the basis for an engineering evaluation (i.e., Generic Letter 86-10 evaluation, fire protection standard license condition evaluation, or 10 CFR 50.59 evaluation). The use of these tools and processes within NFPA 805 and its implementation guidance may be considered a viable option for addressing issues within a CLB, since the NRC and licensees have a set of common requirements and guidance.

Although a licensee might have applied risk-informed, performance-based tools prior to NRC's adoption of new fire protection requirements that are based on NFPA 805, the NRC's adoption of those requirements implies that a licensee can no longer be challenged for using the tools that the NRC has now found acceptable. Of course, a licensee's use of risk-informed, performance-based tools in a specific situation and the implications to be drawn from having applied those tools may still be subject to NRC review and approval.

Refer to Section 7 for the guidance on use of NFPA 805 tools within the CLB.

5.0 RISK-INFORMED, PERFORMANCE-BASED FIRE PROTECTION PROCESS AND AVAILABLE OPTIONS

5.1 Process Summary

The adoption of a fire protection program that complies with the new risk-informed, performance-based option and the use of risk-informed, performance-based methods to demonstrate compliance with a current licensing basis are elements of a process. The process for

adoption of a new regulation versus making changes within an existing license are different however, the engineering analyses performed within each are the same.

Certain elements of the process that need to be followed are not established by NFPA 805 and its appendices, since NFPA 805 does not address the details of how to achieve regulatory compliance and feasibility evaluations. NFPA 805, due to its structure and content, does not always provide a clear process of the steps that should be followed. The following simplified flowchart (Figure 5-1) is intended to show the overall process for implementing a risk-informed, performance-based fire protection application:

- The left hand branch depicts the adoption of the new rule, while the right hand branch shows the use of the tools and processes. As shown in the flowchart, adoption of the new rule and use of the tools and processes are very similar, but levels of detail and complexity vary based upon the nature of the issue.
- The chart shows the group of processes addressed within NFPA 805. The intent is to allow plant specific licensing and cost-benefit work to be performed prior to entry into the standard, followed by technical work in accordance with the details in NFPA 805 and this implementation guide, and completion of associated licensing activities.
- The flowchart does not show continuous processes (monitoring, regulatory interface, etc.) and feedback loops (adjusting effort due to unfavorable results, requests for additional information, iterative decisions on practicality of risk-informed, performance-based approach, and iterative decisions on whether to adopt the new rule or use the process).

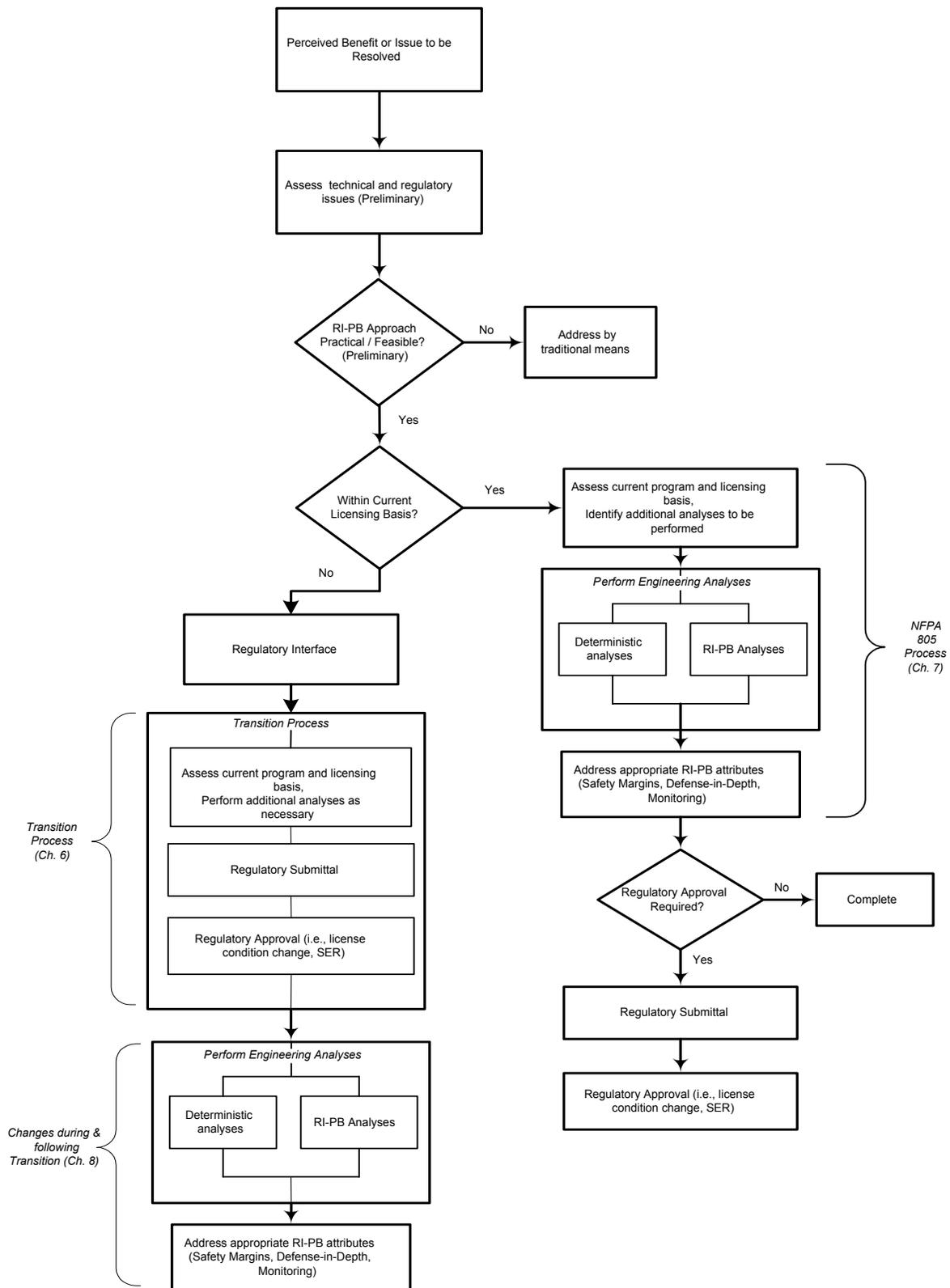


Figure 5-1

The following table discusses the major steps in the processes:

Step - Process	NFPA 805 Section	Step
Perceived Benefit or Issue to be Resolved	N/A	Entry point into use of RI-PB system. Plant must have an impetus for considering the use of RI-PB processes for adoption of a new regulation.
Preliminary Technical and Regulatory Assessment	N/A	This is intended to be a preliminary review based upon extent of issue requiring resolution, cost-benefit, regulatory precedent, etc.
<i>Decision – Is RI-PB Feasible / Practical?</i>	N/A	Based on the preliminary assessment, a decision is made on whether to pursue RI-PB approach. <i>Note: This decision may occur at many steps in the process.</i>
<i>Decision – Is scope of change going to be pursued as a new licensing basis or within current licensing basis?</i>	N/A	Based on the preliminary assessment, a decision is made on whether to pursue RI-PB approaches by adopting a new licensing basis or to use the tools and techniques within the current licensing basis. <i>Note: This decision may occur at many steps in the process.</i>
Regulatory Interface	N/A	If adoption a new fire protection licensing basis, regulatory interface would be established and maintained throughout the process. Regulatory interface may also be desired prior to pursuing the use of RI-PB methods within a current licensing basis, whether or not prior approval is anticipated.
Detailed Assessment of Fire Protection Program	2.2(a) – 2.2(d)	<p>These steps follow the technical guidance in NFPA 805.</p> <ul style="list-style-type: none"> • Establish the fundamental fire protection program (see Chapter 3). • Identify fire areas and associated fire hazards • Identify the performance criteria that apply to each fire area (Section 1-5). • Identify systems, structures, and components (SSCs) in each fire area to which the performance criteria apply. <p>When adopting a new licensing basis, this step would be the transition process shown in the flowchart.</p>
Engineering Analyses	2.2(e) – 2.2(g)	<p>These steps follow the technical guidance in NFPA 805.</p> <ul style="list-style-type: none"> • Select the Deterministic and/or risk informed performance-based approach for the performance criteria (see Chapter 4). • When applying a deterministic approach, demonstrate compliance with the deterministic requirements (see Chapter 4). • When applying a risk informed /performance-based approach, perform engineering analyses to demonstrate that applicable requirements are satisfied. These analyses shall include, for example, engineering evaluations, probabilistic safety assessments and fire modeling calculations (see Section 2-3). <p>When adopting a new fire protection licensing basis, this step may occur when program changes are made following the transition and regulatory approval. These analyses may also need to be performed during the transition if certain program elements are outside of the current licensing basis.</p>

Step - Process	NFPA 805 Section	Step
Address RI-PB Attributes	2.2(h) – 2.2(j)	<p>These steps follow the technical guidance in NFPA 805. Note that this step includes configuration control and monitoring, which are continuous processes and would continue following approval by the NRC. These steps do not apply when the deterministic pathway is select to demonstrate compliance.</p> <ul style="list-style-type: none"> • Perform the plant change evaluation that demonstrates that changes in risk, defense-in-depth and safety margins are acceptable (see Section 2-3.4). If any one of these is unacceptable, additional fire protection features or other alternatives shall be implemented. • Develop a monitoring program to monitor plant performance as it applies to fire risk. This program shall provide feedback for adjusting the fire protection program, as necessary (Section 2-9). • For the resulting plant fire protection program, provide adequate documentation, ensure the quality of the analyses, and maintain configuration control of the resulting plant design and operation (see Section 2-5). <p>When adopting a new fire protection licensing basis, this step may occur when program changes are made following the transition and regulatory approval. These analyses may also need to be performed during the transition if certain program elements are outside of the current licensing basis.</p>
Regulatory Approval Determination	N/A	<p>When using RI-PB techniques within a current licensing basis, a decision must be made whether the change requires prior NRC approval. This step involves evaluation of the change in accordance with the fire protection license condition to determine prior regulatory approval requirements.</p>
Regulatory Submittal	N/A	<p>This step involves submittal to the NRC for approval.</p> <p>When adopting a new fire protection licensing basis, this step occurs as part of the transition process.</p>
Regulatory Approval	N/A	<p>This step is the approval of the license amendment request by the NRC. When adopting a new fire protection licensing basis, this step is the last step in the transition process.</p>

5.2 NFPA 805 Process

Included within Figure 5-2 are processes addressed specifically by NFPA 805. These processes are simplified and are represented in braces on Figure 5-1. The NPFA 805 process is discussed in Section 2.2 of the standard and is shown in Figure 2.2 of NFPA 805, which is included as Figure 5-2 of this guide.

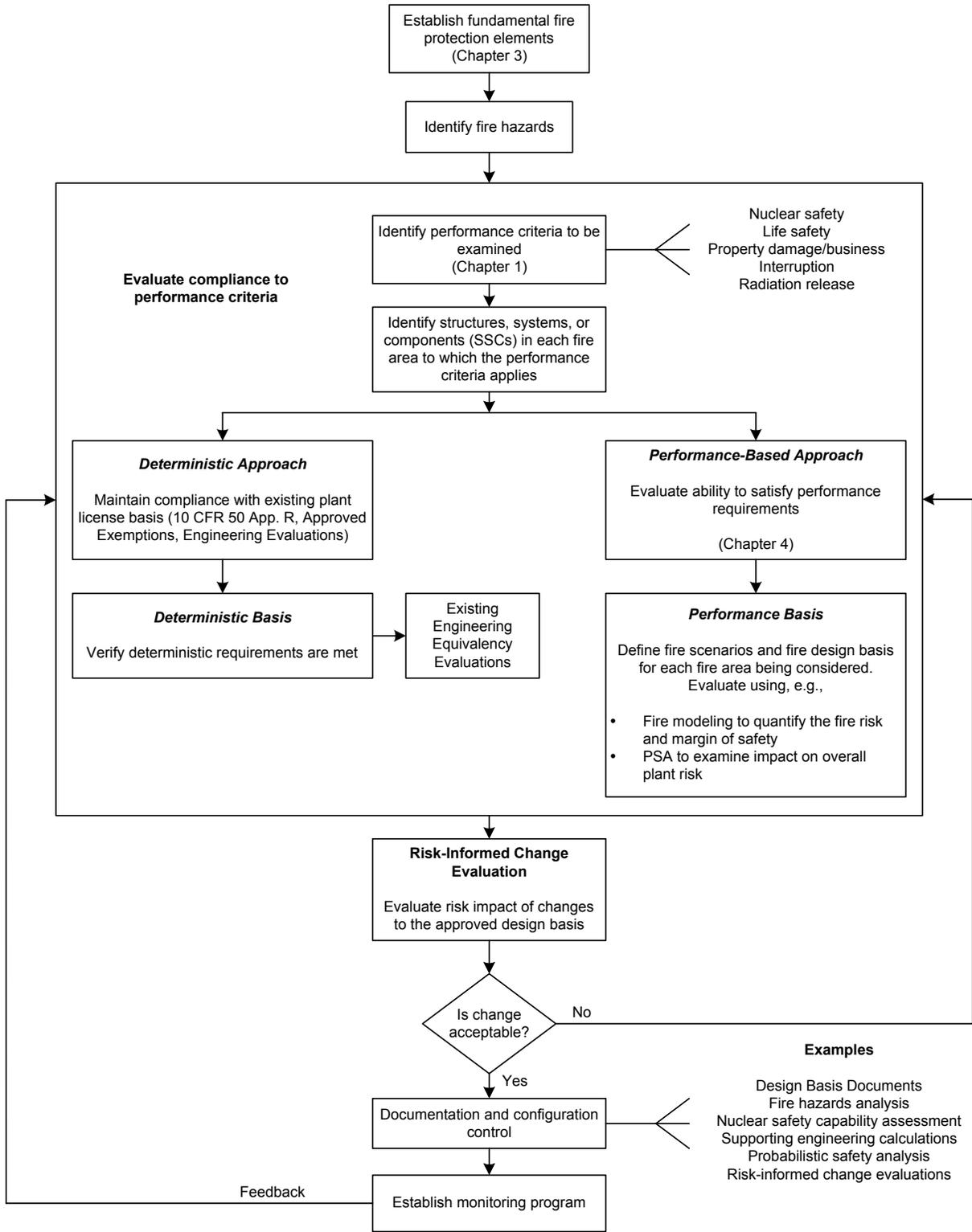


Figure 5-2 – NFPA 805 Process (Figure 2.2 of NFPA 805)

5.3 Overview of Licensee Options

There are three options a licensee may select from when considering the use of risk-informed, performance-based techniques to assess fire protection program and features. These options are:

1. Voluntary adoption of a new fire protection licensing basis by following the requirements in 10 CFR 50.48(c).
2. Use of risk-informed, performance-based tools and techniques under an existing fire protection license condition.
3. Selective resolution of issues by traditional means, without the use of performance-based tools and processes.

The selection of one of these options is a key decision point and may be influenced by a number of factors. Some of these factors, many of which are inter-related, include:

- Nature and complexity of the issue.
- “Cost of entry” associated with adoption of a new licensing basis. Examples of these costs are: evaluation against Chapter 3 requirements, new analyses for non-power operation and radioactive release, update/upgrade of the fire PRA, new programmatic controls.
- Technical quality and maintenance of existing program document documentation such as fire risk information and safe shutdown analyses.
- Uncertainty associated with a regulatory submittal involving a license change.
- Expected long term program maintenance.
- “State of the art” uncertainties associated with fire modeling and risk assessments.
- Confluence with other issues. For example, if a valve is positioned with power removed for fire protection and the PRA for the plant demonstrates that the overall safest condition is for the valve to be in the opposite position and normally energized, then the most safety significant configuration should be employed.

5.4 Licensee Entry Conditions

5.4.1 Perceived Benefit or Issue to be Resolved

The entry point motivating adoption of the new fire protection rule will usually be either a significant perceived benefit over time or an emergent issue of significance requiring resolution. The significance of this decision should not be underestimated due to the comprehensive nature of a full adoption of the rule based on NFPA 805 and the amount of analytical work that might be required to assess a plant’s fire protection program.

Examples of perceived benefits or issues to be resolved that would warrant serious consideration for full adoption of the new fire protection rule:

- Although a plant meets deterministic criteria, fire risk analyses or updates identify areas where improvement in plant safety can be achieved in a cost-effective manner by minor changes to the plant design and/or operation. For example, modification to a component

cable routing could improve plant safety by a significant amount, but may introduce situations that are not in compliance with deterministic requirements.

- Fire protection features or systems are discovered to not meet deterministic criteria, and, based upon the likelihood and expected severity of postulated fires, the impact on fire safety is not considered to be significant. For example, raceway fire barriers installed in plant areas with minimal combustible loading or fire hazards and other defense-in-depth features are installed are discovered not to meet deterministic fire resistance rating.
- Plant-specific events, not necessarily related to fire protection, require significant analytical work and potential modifications. For example, a plant component (i.e., pump) relied upon for post-fire safe shutdown cannot be maintained in an operable status, and other plant systems cannot be relied upon for compliance using deterministic criteria.
- Plant-specific technical or licensing activity (i.e., power uprate, license renewal) result in the performance of analytical work (fire risk analysis) that support a full adoption of the new fire protection rule.
- Plant-specific analysis may show that some existing fire protection features do not contribute to safety significance and the resources required for operations, maintenance and surveillance might be more effectively employed in other activities.
- More effectively manage fire risk during low power and shutdown modes.

5.4.2 Preliminary Technical and Regulatory Assessment

This step involves an initial scoping to assist in assessing the feasibility and practicality of adoption of the new fire protection rule. This step will include a cost-benefit review and will consider items such as:

- Alignment of current plant fire protection program elements with comparable NFPA 805 Chapter 3 elements and features;
- Clarity of fire protection licensing basis in documenting prior approval;
- Level of rigor associated with post-fire safe shutdown analysis and documentation of exceptions such as Generic Letter 86-10 evaluations of fire area boundaries, partial suppression/detection evaluations, manual action feasibility, etc.;
- Availability and reliability of cable and raceway data;
- Depth and status of fire risk analysis (i.e., fire PRA, IPEEE);
- “Economies of scale” that may be attained due to application of process to similar units and sites;
- Estimated plant life cycle;
- Estimated costs of additional analyses and plant implementation of other modes of operation and radioactive release;
- Estimated cost of resolving outstanding fire protection issues (i.e., condition reports, inspection/assessment findings) using traditional deterministic methods;
- Perceived regulatory risk of pursuing a risk-informed, performance-based option without a significant proven process for acceptance and approval; and
- Cost benefit associated with reduced focus on non-safety significant issues.

5.4.3 Initial Feasibility Determination

Based upon the preliminary technical and regulatory assessment (Section 5.4.2), an initial decision should be made regarding the practicality of pursuing a risk-informed, performance-based option.

Note that this decision is based upon many factors and data that may not be available until additional review and analysis is performed. The final decision may not be apparent until detailed review is performed as discussed in Sections 6 and 8.

5.4.4 Licensing Basis Determination

If risk-informed, performance-based methods are determined to be practical and feasible, another key decision must be made as part of the process. This decision is whether to pursue the methods as a new licensing basis (addressed in Section 6) or within a current licensing basis (discussed in Section 7).

This decision is largely driven by the original reasons for pursuing a risk-informed, performance-based option and the nature and complexity of issues requiring resolution. It is expected that full implementation of a new licensing basis would be pursued where clearly demonstrable benefit would be achieved and the “cost of entry” would clearly be justified by long term payback of those benefits. The “cost of entry” would be better understood as the process becomes more mature.

Conversely, for isolated issues related to a few fire protection features or plant areas, licensees may consider the use of risk-informed, performance-based methods within the current plant licensing basis and use these processes to support exemptions under 10 CFR 50.12 or evaluation under the fire protection license condition.

5.4.5 Regulatory Interface

Regulatory interface is a constant process in the operation of a nuclear power plant. With respect to adoption of a new fire protection rule, the regulatory approval process is defined, in part, in 10 CFR 50.48(c).

When considering adoption of the new fire protection rule, regulatory dialogue should be started as soon as practical in order to ensure that open communications are maintained throughout the process. This will ensure that expectations are understood, current technical issues are adequately addressed, and the approval process is administered effectively.

Regulatory interface should continue throughout the process, in accordance with licensee’s established processes.

6.0 TRANSITION FOR ADOPTION OF A NEW LICENSING BASIS

6.1 Transition - Introduction

6.1.1 Transition Process Overview

The transition process for adopting a new fire protection-licensing basis is a critical step in the overall process. A comparison of the potential benefits with the known burdens associated with the transition process to a new licensing basis are significant items of consideration when an individual licensee considers various options. One critical aspect of any assessment of the benefits and burdens is the extent to which the CLB can be incorporated (“brought forward”) into the new licensing basis as compared with the extent to which it will be necessary to establish various components of the new licensing basis.

The extent to which the fire protection CLB can be incorporated into the new, NFPA 805 CLB is determined by Section 3.1 of NFPA 805. It provides that:

Previously approved alternatives from the fundamental [fire] protection program attributes of this chapter by the [NRC] take precedence over the requirements contained herein [Chapter 3].

The term “fundamental [fire] protection program attributes” is not defined in NFPA 805. However, the structure of Chapter 3 of NFPA 805 implies that they should be defined as the sections in Chapter 3 of NFPA 805 (second level headings – i.e., 3.2, 3.3, etc.). This definition of “fundamental [fire] protection program attributes” also is consistent with the NFPA’s characterization of subsections in NFPA 805 (third level headings – i.e., 3.2.1, 3.2.2, etc.) as *design control requirements* in Section 3.3 - “The design control requirements listed in the remainder of this section shall be provided as described.” The characterization of paragraphs (fourth level headings – i.e., 3.3.1.1, 3.3.1.2, etc.) as *programmatic elements* in Section 3.3.1 of NFPA 805 also supports this definition. This definition supports the assessment of fundamental [fire] protection program attributes against previously approved alternatives, without the need to specifically meet the detailed subsection and paragraph criteria in NFPA 805 Chapter 3. Such a definition would implement the NRC’s determination that a plant that is safe today will be safe tomorrow even though today’s licensing basis for the plant may have changed tomorrow.

The transition reviews and documentation of the CLB necessary for establishing just which fundamental program attributes the NRC has previously approved are discussed in this section.

All licensees choosing to adopt NFPA 805 as basis for compliance to fire protection regulations, independent of whether they choose a deterministic or risk-informed, performance-based compliance strategy, must demonstrate compliance with Chapters 2, 3, and 4 of the standard. Chapter 2 of NFPA 805 sets forth the general methodology for establishing fire protection requirements and engineering analyses requirements, including the analyses that support a risk-informed fire protection design. Chapter 3 of NFPA 805 contains the fundamental elements expected for a fire protection program and specifies the minimum design requirements for fire protection systems and features. Chapter 4 of NFPA 805 provides a method for determining the

required fire protection systems and features to satisfy the performance criteria of Section 1.5 of the standard.

The methodology requirements in Chapters 2 and 4 of NFPA 805 are very similar to the current NRC requirements (other than for fires originating in non-power operational modes and radioactive release). Accordingly, a plant's previously approved CLB for compliance with safe shutdown fire protection requirements satisfies the nuclear safety requirements established by the amended regulation, 10 CFR 50.48 (c), for implementing a fire protection program based upon NFPA 805 Chapter's 2 and 4. Therefore, a licensee's compliance with 10 CFR 50, Appendix R, Section III.G and III.L or applicable sections of NUREG-0800, either as a requirement or as a licensing commitment, serves as a basis for transitioning to the new fire protection licensing basis without the need to demonstrate line-by-line compliance with the nuclear safety requirements in Chapters 2 and 4 of NFPA 805. Exemptions/deviations from the original licensing basis are part of a licensee's CLB, and are therefore considered acceptable as previously approved alternatives.

In summary, demonstrating compliance with Chapters 2, 3, and 4 of NFPA 805 is accomplished by:

1. Demonstrating that the fire protection program meets the literal requirements contained within these sections of the standard, or
2. Demonstrating that the CLB basis is sufficient to allow a transition to a new licensing basis, or
3. By a combination of meeting the requirements and demonstrating that the current licensing basis is sufficient to allow a transition.

Although the current fire protection requirements contained in 10 CFR 50.48 are not in direct alignment with those under the new rule, the requirements are similar enough to allow a structured transition without a complete design and licensing basis reconstitution. The intent of the transition assessment is to:

- Provide confirmation that the transitioning fire protection program, to the extent that the NRC has not previously approved its fundamental program attributes, meets the fundamental program and design elements of Chapter 3 of NFPA 805, or has acceptable documented bases for exceptions. (Section 6.2.1)
- Provide confirmation that the transitioning fire protection program meets the nuclear safety deterministic criteria, or has acceptable documented bases for exceptions. (Section 6.2.2)
- Identify acceptable approaches and perform analyses to address fires originating in non-power operational modes and fire protection to effectively minimize radioactive release. (Sections 6.2.3, 6.2.4)
- Perform engineering analyses to address areas where the requirements of NFPA 805 are not met and are not previously approved in the licensee's CLB. (Section 6.3)
- Address risk-informed, performance-based attributes (i.e., safety margin, defense-in-depth) where the requirements of NFPA 805 are not met and are not previously approved

in the licensee’s CLB. This may include performance of a change evaluation for nuclear safety aspects of the transition. (Section 6.4)

- Verify/establish a monitoring program to ensure the availability and reliability of fire protection systems and features and to assess the fire protection program. (Section 6.4)
- Confirm/establish adequate quality, documentation and configuration control to transition to a new licensing basis. (Section 6.4)

A simplified flowchart is provided below:

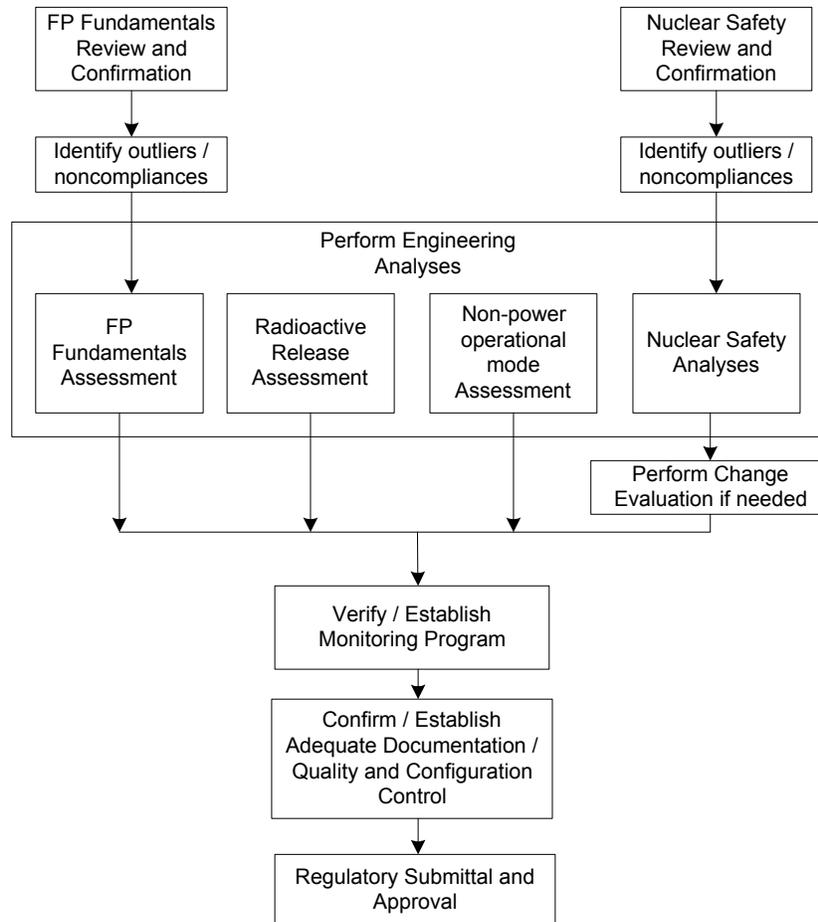


Figure 6-1 Transition Process (Simplified)

6.1.2 Prior Approval Determination

A licensee’s previously approved licensing basis might include docketed material that has been tacitly approved by the NRC. To implement the transition to compliance with NFPA 805, a licensee must accurately determine its plant’s fire protection CLB and the extent to which the NRC has approved the CLB, either explicitly or tacitly. Determination of the extent of prior NRC approval, especially tacit NRC approval, requires a detailed review and assessment of the plant’s docket. This section of the implementation guide addresses technical areas outlined in Sections 2.1.1 through 2.2.8 of NFPA 805, but is intended only to provide a process for

confirming the previously approved fire protection program as a precursor to transitioning to the new licensing basis and for performing new analyses necessary to support adoption of the new licensing basis.

Previous NRC acceptance or approval is found by comparing licensee submittals with NRC responses. For each instance for which a licensee wants to demonstrate prior NRC approval of a particular fire protection program attribute, the following strategy should be followed:

1. Review correspondence from the NRC to determine whether the NRC has explicitly accepted or approved the attribute. If so, retain supporting documentation as evidence of prior NRC approval. No additional steps need to be taken.
2. If final correspondence, such as an SER from the NRC, contains only general statements of acceptance or approval, it is necessary to find the related chain of supporting correspondence between the NRC and licensee and other related documentation, such as meeting minutes, to determine what information the NRC requested from the licensee and what information the licensee provided in addition to responding to the NRC's request. Examples of supporting correspondence are letters, requests for and grants of exemptions, licensee responses to Notices of Violation (NOVs) and NRC acknowledgements of the corresponding corrective actions, licensee responses to Unresolved Issues (URIs) *and NRC acknowledgement of resolution of its concerns*, licensees' responses to requests for additional information and NRC closeouts of them, and licensee presentations at NRC management *meetings followed by NRC acknowledgement of them*. Reliance on Inspection Reports (IRs) *alone as demonstrating NRC acceptance of a specific aspect of the CLB* is problematic *without further documented interaction with the NRC on that aspect of the CLB* because the lack of a finding of non-compliance can result from inspector inexperience or failure to inspect a particular aspect of the fire protection program. The NRC has consistently rejected licensees' attempts to rely on IRs as a basis for demonstrating a prior NRC position for the purposes of backfit. That NRC position likely would apply to licensee attempts to rely on IRs to demonstrate prior approval. This position is more likely in the case of isolated regional inspections. However, in the case of multiple inspections on an attribute or NRR staff involvement in the inspection process, additional reliance could be placed on IRs as the basis for approval.
3. Finally, if no correspondence from the NRC covers the attribute, then it will be necessary to search the docket for licensee correspondence that informed the NRC that certain changes in the fire protection program would be taken by a certain date.

6.2 Detailed Transition Assessment of Fire Protection Program

6.2.1 Fundamental Fire Protection Program and Design Elements Transition Review

NFPA Chapter 3 contains the fundamental elements of the fire protection program and specifies the minimum design requirements for fire protection systems and features. Chapter 3 states "These fire protection program elements and minimum design requirements shall not be subject

to the performance-based methods permitted elsewhere in this guide. Previously approved alternatives from the fundamental program attributes of Chapter 3 of NFPA 805 [by the NRC] take precedence over the requirements contained herein.”

It is important that the “previously approved alternatives” be clearly determined in order to understand the level of review and potential upgrades necessary to meet the requirements in Chapter 3 of NFPA 805. This includes determination and interpretation of whether the approval was considered explicit, tacit, or potential tacit (refer to the definitions in Appendix A).

Note that fire protection program features and systems, although previously reviewed and approved, may have been changed since initial approval. This process is allowed, in many instances, without prior NRC approval, using the guidelines of Generic Letter 86-10 and by evaluating the plant change against the requirements of 10 CFR 50.59 or the Fire Protection License Condition. Changes from the original NRC review and approval that have been made using the appropriate NRC-approved change process are considered an acceptable part of the CLB.

To the extent that fundamental fire protection program elements have been determined not to have been previously approved by the NRC, a systematic approach should be taken when assessing the transitioning plant fire protection program against the requirements of Chapter 3 of NFPA 805. This is necessary to provide clear documentation of acceptability prior to moving forward with a new licensing basis. Specific acceptance of a plant configuration, as well as changes since original acceptance, should be documented.

For those cases where compliance cannot be demonstrated, the licensee may choose to comply with the deterministic requirements of NFPA Chapter 3 or prepare a risk-informed, performance-based evaluation for submittal to the NRC.

A sample table showing NFPA 805 requirements, fundamental program and design elements, items for review, method of compliance, and licensing basis references are shown in Appendix B-1.

6.2.2 Nuclear Safety Performance Criteria Transition Review

The nuclear safety performance goals, objectives, and criteria are very similar to the requirements contained in Sections III.G and III.L of 10 CFR 50, Appendix R or applicable sections of NUREG-0800. Each nuclear plant has an approved fire protection program that must demonstrate compliance with the safe shutdown requirements in Sections III.G and III.L of 10 CFR 50, Appendix R (or applicable sections of NUREG-0800), or has documented exemptions/deviations from these requirements. The deterministic branch of Figure 2.2 of NFPA 805 recognizes as an acceptable approach bringing forward the existing plant licensing basis (Approved exemptions / deviations, and engineering equivalency evaluations). For these reasons, a fire protection program can be transitioned to a new NFPA 805 licensing basis by performing a transition review and by addressing NFPA 805 topics not typically addressed in a previously approved fire protection program (i.e., fires originating in non-power operational modes and fires resulting in radioactive release).

In order to adopt a new fire protection licensing basis, a transition review must be performed to ensure that the previously approved licensing basis (i.e., compliance with 10 CFR 50 Appendix R, commitments to Sections III.G, III.J, III.L, and III.O of 10 CFR 50, Appendix R, or commitments to NUREG 0800) is sufficient to support the transition. The intent of this section is not to perform an intensive design basis reconstitution, since each plant has an approved fire protection program. Instead, the intent of the transition review is to provide summary level reviews to confirm that basic elements of meeting nuclear safety performance criteria are documented and that the supporting documentation, including current licensing basis information, is collected and tabulated in order to “move forward” to a new licensing basis.

Prior explicit NRC approval of all details of the fire protection program is not required for transition. If compliance with criteria has been evaluated appropriately, but not explicitly approved by the NRC (i.e., 10 CFR 50.59 or Generic Letter 86-10 evaluations), the evaluated elements are considered acceptable. This is applicable to, but not limited to, assessment of manual action acceptability, partial suppression/detection, fire area boundary adequacy, adequacy of radiant energy shields, etc. Note that fire protection program features and systems, although previously reviewed and approved, may have been changed since initial approval. This process is allowed, in many instances, without prior NRC approval, using the guidelines of Generic Letter 86-10 and by evaluating the plant change against the requirements of 10 CFR 50.59 or the Fire Protection License Condition. The Fire Protection Standard License Condition allows changes to the “approved fire protection program without prior approval of the Commission if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.” Because the changes from the original NRC review and approval have been made using the appropriate change process, the changes are considered an acceptable part of the CLB.

A systematic approach should be taken when assessing the transitioning plant fire protection program against the nuclear safety requirements of Chapters 2 and 4 of NFPA 805. This is necessary to provide clear documentation of acceptability prior to moving forward with a new licensing basis. Specific acceptance of a plant configuration, as well as changes since original acceptance, should be documented. The review should consist of two fundamental items:

1. Review of the safe shutdown methodology for basic attributes (Chapter 2 of NFPA 805)
2. Fire area by fire area review (Chapter 4 of NFPA 805)

The safe shutdown methodology review is a programmatic level review to ensure that the scope of the fundamentals of the safe shutdown analysis are sufficient to support a transition. This review would evaluate the existing post-fire safe shutdown analyses against the guidance provided in Section 2.4.2 of NFPA 805 for the Nuclear Safety Capability Assessment to ensure that the basic elements are adequate to support transition to a new licensing basis for fires originating at power operations. This includes a review of the methodology for systems and equipment selection, circuit selection, equipment and cable location, and fire area assessment. Differences identified during the transition review must be reconciled prior to transition to a new risk-informed, performance-based licensing basis. Guidance on the performance of the NFPA 805 Chapter 2 reviews is provided in the tables in Appendix B-2 of this guide.

The fire area by fire area review is a confirmation review to ensure that the CLB is intact and documented adequately to support the transition. The review is intended to identify and document how each fire area:

1. Aligns with the NFPA 805 Chapter 4 deterministic criteria; or
2. Meets the NFPA 805 Chapter 4 criteria with approved exemptions or deviations from 10 CFR 50 Appendix R; or
3. Meets the NFPA 805 Chapter 4 criteria with supporting engineering evaluations (i.e., Generic Letter 86-10 evaluations or calculations); or
4. Does not meet the NFPA 805 Chapter 4 criteria and either can or cannot be evaluated under the CLB. Items outside the CLB would be evaluated using risk-informed, performance-based methods as part of the transition review.

Differences identified during the fire area by fire area transition review must be reconciled prior to transition to a new risk-informed, performance-based licensing basis. Items that can be addressed within the bounds of the CLB prior to the transition (i.e., by performance of a Generic Letter 86-10 evaluation) should be addressed and documented as part of the transition process.

Guidance on the performance of the NFPA 805 Chapter 4 reviews is provided in the tables in Appendix B-2 of this guide. A simplified flowchart of the fire area by fire area transition review is provided as Figure 6-2 below.

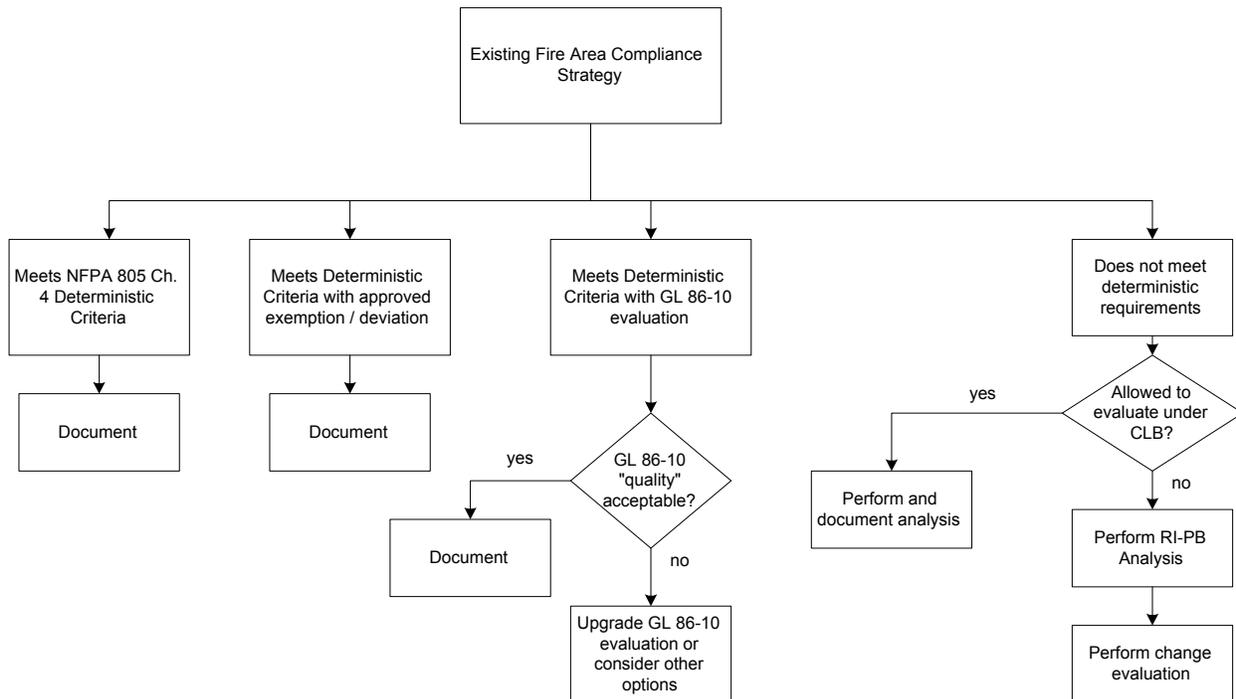


Figure 6-2 - Fire Area by Fire Area Transition Process (Simplified)

6.2.3 Non-Power Operational Modes Transition Review

{Section is under development}

6.2.4 Radioactive Release Transition Review

Independent of whether the deterministic or risk-informed, performance based option is chosen; a licensee must also show that the fire protection goals, objectives and criteria are met as they relate to potential radioactive release scenarios. Therefore, licensees must now evaluate fire risks and fire protection for various scenarios (not involving fuel damage) that could lead to radioactive release.

The treatment of radiological release due to fire is focused on potential radioactive release due to potential fuel damage and fire fighting activities:

- The Nuclear Safety Goal, Objectives, and Performance Criteria all require the prevention of fuel cladding damage. As such, radiological release due to fuel damage should not require a separate examination since no such damage can occur without violating the basic requirements of NFPA 805. This effectively limits the source of radiation (release source term). Therefore, containment integrity should not require specific examination. This means the scope of the fire protection analyses do not necessarily need to be expanded to include all containment isolation valves.
- The potential for radiological release due to fire fighting activities shall be addressed via fire pre-plans. The objective is to address the potential for the loss of boundary control for contaminated spaces

Refer to Appendix I for considerations on fire protection to ensure that radioactive release is minimized.

6.3 Engineering Analyses

Engineering analysis is a broad term within NFPA 805 that encompasses the evaluation of the fire protection program against the performance criteria. The evaluations may be qualitative or quantitative, and include both deterministic and risk-informed, performance-based approaches.

Examples of engineering analyses include:

Fire Modeling Calculations (NFPA 805 Section 2.4.1)

Nuclear Safety Capability Assessment (NFPA 805 Section 2.4.2)

Fire Risk Evaluations (NFPA 805 Section 2.4.3)

The need to perform additional engineering analyses as part of transitioning to a new fire protection licensing basis stems from results of the transition reviews as discussed in Section 6.2. Assessment of fire for radioactive release and the impact of fires occurring in non-power operational modes are not in most cases addressed in a licensee's CLB. Thus, engineering analyses should be performed to evaluate the fire protection program against the performance criteria for these elements of NFPA 805. However, engineering evaluations may or may not be required to address NFPA 805 Chapter 3 or nuclear safety issues. Only those items identified during the review that do not meet the criteria of NFPA 805 and that are not part of the CLB require engineering evaluations for acceptability.

6.4 Address Risk-Informed, Performance-Based Attributes

“Risk-informed, performance-based attributes” is a term used to describe various processes and steps involved in risk-informed, performance-based applications. These attributes have historically been addressed as part of a traditional fire protection program, but the attributes may not meet all of the requirements and level of rigor outlined in NFPA 805. This includes:

- Performing a plant change evaluation;
- Providing adequate documentation, ensuring the quality of analyses, and maintaining configuration control; and
- Developing a monitoring program;

6.4.1 Plant Change Evaluation

Addressing risk-informed, performance-based attributes includes assessing the engineering analyses that were performed for overall acceptability by performing a plant change evaluation (NFPA 805 Section 2.4.4). A change evaluation uses the process outlined in Regulatory Guide 1.174 to assess a plant change against a previously approved fire protection program for acceptability. A change evaluation includes an integrated assessment of the acceptability of risk, defense-in-depth, and safety margins.

It is expected that a plant change evaluation performed as part of the transition to a new licensing basis would be limited to cases where the nuclear safety performance criteria are not met and are outside of the CLB, although there may be instances where a change evaluation and risk-informed, performance-based methods could be used to demonstrating conformance with criteria in NFPA 805 Chapter 3 criteria. This limitation on the scope of plant change evaluations as part of the licensing basis transition is because:

1. Since an evaluation of fires originating in non-power operational modes would typically not exist prior to transition to a new licensing basis, there would be no basis for measuring or determining the acceptability of a “change.”
2. Since an evaluation of the impact of fire on radioactive release would typically not exist prior to transition to a new licensing basis, there would be no basis for measuring or determining the acceptability of a “change.”

Refer to Chapter 8 and Appendix E of this guide for additional guidance on risk-informed change evaluations.

6.4.2 Program Documentation, Configuration Control, and Quality

Program documentation, configuration control, and quality are other issues related to risk-informed, performance-based approaches. As part of the transition review, program documentation must be reviewed to ensure that the fire protection program is adequately documented to support the transition to a new licensing basis. This review is not intended to be a design basis reconstitution, but rather a review to ensure that the program documentation used to define the “going forward” licensing basis is adequate and of sufficient quality. Documentation identified during the reviews that are not of sufficient quality or that lack configuration control should be updated to meet the requirements contained in Section 2.7 of NFPA 805.

Refer to Section 8 and Appendix F of this guide for additional information on program documentation, configuration control, and quality.

6.4.3 Monitoring

Other risk-informed, performance-based attributes include the establishment of a monitoring program, as discussed in Section 2.6 of NFPA 805. This includes establishing acceptable levels of availability, reliability, and performance levels, and ensuring that processes are in place to take corrective actions when established thresholds are not met.

The intent of the monitoring transition effort is not to establish new detailed programs that define numerical values for reliability and availability for fire protection systems and features. Instead, the transition review should be performed as a “sanity check” of the existing surveillance, testing, maintenance, and compensatory measures. The review scope is based upon the adequacy of existing internal and external fire protection oversight and plant corrective action programs. The adequacy of existing plant programs is sufficient to allow a transition to a new licensing basis without extensive changes. This review should consider:

1. The adequacy of the scope of systems and equipment within existing plant programs (i.e., are important fire protection systems and features adequately inspected and tested, and are compensatory measures appropriate).
2. The adequacy of the plant corrective action program in determining causes of equipment and programmatic failures and in minimizing their recurrence.

Deficiencies identified during the monitoring transition review should be corrected and updated as part of the licensing basis transition. Refer to Appendix G of this guide for additional guidance on monitoring.

6.5 Regulatory Submittal and Approval

The regulatory submittal is the product of the process discussed above that result in the development of a documented basis for claiming regulatory compliance.

The regulatory submittal process and framework is discussed in Section 4 of this guide. This includes discussion of a transition documentation, which provides administrative items as well as specifics of the technical transition process. A license amendment is also required in accordance with 10 CFR 50.90 in order to identify any orders and license conditions that must be revised or superseded, and contain any necessary revisions to the plant technical specifications. The submittal is transmitted to the NRC for its approval.

Regulatory approval is the vehicle the NRC uses to document its determination that the licensee is in compliance with the new fire protection rule.

7.0 IMPLEMENTATION GUIDANCE FOR USE OF TOOLS AND PROCESSES WITHIN EXISTING LICENSING BASIS

{Section is under development}

7.1 Detailed Assessment of Fire Protection Program

7.2 Engineering Analyses

7.3 Address Risk-Informed-Performance-Based Issues

7.4 Regulatory Approval Determination

7.5 Regulatory Submittal

7.6 Regulatory Approval

8.0 PROGRAM MAINTENANCE AND CONFIGURATION CONTROL

{Section is under development}

The purpose of this section is to provide guidance on fire protection program maintenance and configuration control following the transition to new licensing basis. This section also provides additional guidance on plant change evaluations, which may occur as part of the transition.

8.1 Background

8.2 Maintenance of New Licensing Basis

8.3 Plant Change Evaluations

8.3.1 Defining the Proposed Change

8.3.2 Performing Engineering Analysis

- Fire Modeling
- Fire PRA
- Level of Depth and Rigor
- Large Early Release Frequency (LERF) Considerations

8.3.3 Determining Acceptability of Change

- Risk Acceptance Criteria (Fire Risk, Plant Risk)
- Defense-in-Depth and Safety Margins

8.3.4 Integrated Decision-Making

- Combined Changes

- Addressing risk insights
- Addressing conflicting risk considerations (i.e., fire risk vs. risk with other events)

8.4 Program Documentation, Configuration Control, and Quality

8.4.1 General Guidance for Program Documentation

8.4.2 Fire Modeling Considerations

8.4.3 Fire PSA Considerations

8.5 Monitoring

9.0 REFERENCES

- NFPA 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants*, 2001 Edition.
- 10 CFR 50, Appendix A, General Design Criterion (GDC) 3, *Fire Protection*
- 10 CFR 50.48, *Fire Protection*
- 10 CFR 50, Appendix R, *Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979, Sections III.G, J, L, and O*
- Appendix A to Branch Technical Position BTP APCS 9.5-1, *Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976*
- Generic Letter 81-12, *Fire Protection Rule*
- Regulatory Guide 1.189, *Fire Protection for Operating Nuclear Power Plants*, dated April 2001
- Regulatory Guide 1.174, *An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*, dated July 1998.
- NUREG-0800 Chapter 19.0, *Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decision Making: General Guidance*.
- Generic Letter 86-10, *Implementation of Fire Protection Requirements*
- NRC Inspection Manual Chapter 71111.05, *Fire Protection Inspection*, Dated 4/03/00
- NRC Inspection Manual Chapter 0609, *Significance Determination Process*, dated 4/21/00.
- NEI 00-01, *Guidance for Post-fire Safe Shutdown Analysis*
- NUMARC 91-06, *Guidelines for Industry Actions to Assess Shutdown Management*
- 10 CFR 54, *Requirements for Renewal of Operating Licenses for Nuclear Power Plants, Part 3, Definitions*

Appendices

Appendix A – Definitions

The following Table provides a comparison of the definitions in NFPA 805 to existing NRC Guidance documents.

In addition to the definitions of NFPA 805 the following definitions on licensing basis are provided:

Current licensing basis (CLB) is the set of NRC requirements applicable to a specific plant and a licensee's written commitments for ensuring compliance with and operation within applicable NRC requirements and the plant-specific design basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The CLB includes the NRC regulations contained in 10 CFR Parts 2, 19, 20, 21, 26, 30, 40, 50, 51, 54, 55, 70, 72, 73, 100 and appendices thereto; orders; license conditions; exemptions; and technical specifications. It also includes the plant-specific design-basis information defined in 10 CFR 50.2 as documented in the most recent final safety analysis report (FSAR) as required by 10 CFR 50.71 and the licensee's commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports. [Reference: 10 CFR 54.3]

Explicit approval may be contained in a Safety Evaluation Report (“SER”) or other document issued by the NRC in response to a licensee’s filing. Explicit approval extends to every matter that is explicitly approved by the NRC, even where the NRC did not request the licensee to address a particular matter.

For example, assume that the NRC requests a licensee to provide information that shows that the fire barriers in a certain area have the requisite fire rating. Further assume that the licensee responds with information about the fire barrier ratings and also includes information that shows that the detection system meets regulatory requirements. If the NRC’s response explicitly accepts not only the fire barrier ratings as in compliance but also the detection system, then the licensee has explicit prior approval of both the fire barrier ratings and the detection system, even though the NRC did not request specific information concerning the detection system.

Tacit approval may be inferred if a licensee has addressed a particular matter in correspondence docketed in response to an NRC request for information, which included a specific request for information on that particular matter, and the NRC has expressly accepted the licensee’s positions in that docketed correspondence, even though the NRC did not explicitly address the particular matter.

For example, assume that the NRC requests a licensee to provide information showing that all fire protection requirements are met in a particular fire zone. Further assume that the licensee responds with information about the fire barriers, cable and equipment separation, the detection and suppression systems, and the relevant portion of the safe shutdown analysis. If the NRC’s response simply states that upon review of the material, the NRC has found the licensee to be in

compliance, then the licensee has prior tacit approval of each of the specific aspects of the fire protection program addressed in the submittal, even though the NRC has not specifically stated that it found each aspect of the program to be in compliance.

Potential tacit approval may be inferred if a licensee informs the NRC that a specific action will be taken by a certain date unless the NRC indicates otherwise and the NRC does not respond by that date.

For example, assume that licensee informs the NRC that it is adopting a new safe shutdown analysis by a certain date and that, as a result, certain fire barriers will no longer be needed after that date to ensure compliance with fire protection requirements. If the NRC does not respond before that date to express disagreement with the licensee's conclusion regarding continued compliance after the new safe shutdown analysis is adopted, the licensee can claim potential tacit approval of the new safe shutdown analysis.

Appendix A – Fire Protection Definition Comparison [SAMPLE FORMAT]

Term identified in NFPA 805, Reg. Guide 1.189 or NUREG 0800	NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants		Regulatory Guideline - 1.189 Fire Protection For Operating Nuclear Power Plants, April 2001		NUREG 0800, Fire Protection Program (Formerly NUREG 75/087)
	1.6	Definitions.		Glossary	Definitions
Acceptable	1.6.1	Considered by the authority having jurisdiction (AHJ) as adequate for satisfying the goals, performance objectives, and/or performance criteria.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Alternative Shutdown	--	Term not used in NFPA 805 Definitions	Pg. 108	The capability to safely shut down the reactor in the event of a fire using existing systems that have been rerouted, relocated, or modified	Term not used in NUREG 0800 Definitions
Approved	1.6.2	Acceptable to the authority having jurisdiction.	Pg. 108	Tested and accepted for a specific purpose or application by a recognized testing laboratory.	Tested and accepted for a specific purpose or application by a nationally recognized testing laboratory.
Associated Circuits	--	Term not used in NFPA 805 Definitions	Pg. 108	Circuits that do not meet the separation requirements for safe shutdown systems and components and are associated with safe shutdown systems and components by common power supply, common enclosure, or the potential to cause spurious operations that could prevent or adversely affect the capability to safely shut down the reactor as a result of fire-induced failures (hot shorts, open circuits, and short to ground).	Term not used in NUREG 0800 Definitions
Authority Having Jurisdiction	1.6.3	- The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Automatic	--	Term not used in NFPA 805 Definitions	Pg. 108	Self-acting, operating by its own mechanism when actuated by some monitored parameter such as a change in current, pressure, temperature, or mechanical configuration.	Self-acting, operating by its own mechanism when actuated by some impersonal influence such as a change in current, pressure, temperature, or mechanical configuration.
Availability	1.6.4	The probability that the system, structure, or component of interest is functional at a given point in time.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
BWR	1.6.5	Boiling water reactor.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Combustible	1.6.6	Capable of undergoing combustion.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Combustible Material	--	Term not used in NFPA 805 Definitions	Pg. 108	Any material that will burn or sustain the combustion process when ignited or otherwise exposed to fire conditions.	Material that does not meet the definition of noncombustible.
Combustible Liquid	1.6.7	A liquid having a flash point at or above 100°F (37.8°C). (See NFPA 30, Flammable and Combustible Liquids Code.)	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Common Enclosure	--	Term not used in NFPA 805 Definitions	Pg. 108	An enclosure (e.g., cable tray, conduit, junction box) that contains circuits required for the operation of safe shutdown components and circuits for non-safe shutdown components.	Term not used in NUREG 0800 Definitions
Common Power Supply	--	Term not used in NFPA 805 Definitions	Pg. 108	A power supply that feeds safe shutdown circuits and non-safe shutdown circuits.	Term not used in NUREG 0800 Definitions
Compensatory Actions	1.6.8	Actions taken if an impairment to a required system, feature, or component prevents that system, feature, or component from performing its intended function. These actions are a temporary alternative means of providing reasonable assurance that the necessary function will be compensated for during the impairment, or an act to mitigate the consequence of a fire. Compensatory measures include but are not limited to actions such as firewatches, administrative controls, temporary systems, and features of components.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Completeness Uncertainty	1.6.9	Uncertainty in the predictions of a model due to model scope limitations. This uncertainty reflects an unanalyzed contribution or reduction of risk due to limitations of the available analytical methods.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Containment	1.6.10	Structures, systems, or components provided to prevent or mitigate the release of radioactive materials.	--	Term not used in Reg. Guide 1.189 Glossary	Term not used in NUREG 0800 Definitions
Control Room Complex	--	Term not used in NFPA 805 Definitions	Pg. 108	The zone served by the control room emergency ventilation system.	The zone served by the control room emergency ventilation system (see SRP Section 6.4, "Habitability Systems").

Appendix B – Detailed Transition Assessment of Fire Protection Program

Appendix B-1: Transition of Fundamental Fire Protection Program and Design Elements

Included here is the mapping of the Fire Protection Fundamentals for “water supply”. This mapping will be done for each section of Chapter 3 of NFPA 805. We’ve provided an example of how a licensee would map over the first 2 sections. Once this mapping is completed all previous commitments will be superseded by compliance with the new rule.

Each section and subsection of Chapter 3 is a "Fundamental Fire Protection Program Attribute" defining the program and design elements of a nuclear fire protection program. The cross-reference table included as Appendix B-1 defines "previously acceptable" methods of compliance with that particular "fundamental program attribute". Licensees should provide specific compliance statements (deviations, exemptions, etc) to demonstrate "previous approval" of an alternative or compliance with the Chapter 3 attribute.

Appendix B-2: Transition of Nuclear Safety Performance Criteria

Appendix C – Identification of Performance Criteria, Fire Hazards, and Applicable SSCs

Appendix D – Evaluation Against Performance Criteria

D-1 – Deterministic Approaches

D-2 – Performance-Based Approaches

D-3 – Fire Modeling

D-4 – PRA

Appendix E – Risk-Informed Change Evaluation

Appendix F – Documentation and Configuration Control

Appendix G – Monitoring

Appendix H – Considerations for Non-Power Operational Modes

Appendix I – Considerations for Radioactive Release

Appendix J – Considerations for Fire Protection During Decommissioning and Permanent Shutdown

Appendix K– NFPA 805 Pilot Report Insights

Appendix L – Assumptions