
**Regulatory Analysis for Proposed Rule -
Amendments to 10 CFR Part 72
License and CoC Terms**

**U.S. Nuclear Regulatory Commission
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EXECUTIVE SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) has published a proposed rule (RIN: 3150-AI09) [NRC-2008-0361] to amend its regulations to clarify the license term limits for dry storage cask Certificates of Compliance (CoCs) and independent spent fuel storage installation (ISFSI) licenses.

The proposed rule would improve regulatory efficiency by providing a consistent basis for the scope, applicability, and terminology of CoC and Part 72 ISFSI general license regulations to better align CoC regulatory requirements with ISFSI general license requirements. The amended regulations would also provide consistency between the Part 72 ISFSI general and site-specific license requirements.

Section 2 summarizes the technical basis for this rulemaking. Section 3 identifies the two alternatives evaluated in this rulemaking: no action and implementation of the proposed rule. Section 4 describes the analysis method and input assumptions. Section 5 presents the results and Section 6 presents the decision rationale. Section 7 lists the references used in this Regulatory Analysis. Appendix 1 provides the names of storage casks currently in use, names of current licensed ISFSI locations, names of licensees pursuing a Part 72 general license, and names of licensees who have not announced plans for ISFSI licensing.

This Regulatory Analysis provides an evaluation of two alternatives, one of which is taking no action and the other is implementing the proposed rule. The preferred approach is implementing the proposed rule. The results show that the proposed rule would save about \$1.3 million or \$0.9 million over a 40 year analysis period (2008 dollars using a 3 percent or a 7 percent discount rate, respectively) compared to making no changes in the regulations. Most of the labor by licensees, CoC holders and the NRC staff is modeled in this regulatory analysis as a one-time event. Although these activities would occur in different years, the effort would occur only once in the 40 year analysis period and was modeled as occurring in 2008 to simplify the analysis. Annual savings are modeled for Part 72 general licensees and the NRC staff as a result of the proposed amendment in 10 CFR 72.212(b)(4) that would remove the requirement of the general licensee to submit an exemption request to apply changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC. The NRC would benefit the most from the proposed rule, due to the submittal of fewer license renewal applications during the 40 year analysis period. The savings achieved by industry are due primarily to more efficient management of cask expiration dates, after the initial term, and ISFSI license expiration dates, as well as preparation of fewer exemption requests seeking to apply CoC amendments to previously loaded casks.

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CoC	Certificate of Compliance
COMSECY	A paper originating from a Commissioner who wants to bring an item to the attention of his or her fellow Commissioners, or a paper that originates from the NRC Executive Director for Operations (EDO), the Chief Financial Officer (CFO), or other Commission-level office seeking guidance from the Commission.
FR	Federal Register
INL	Idaho National Laboratory
ISFSI	Independent Spent Fuel Storage Installation
NRC	Nuclear Regulatory Commission
SAR	Safety Analysis Report
SECY	A paper addressing policy, rulemaking, or adjudicatory matters submitted to the Commission for consideration in a document style and format established specifically for the purpose.
SER	Safety Evaluation Report
SOC	Statements of Consideration
SRM	Staff Requirements Memorandum

1. INTRODUCTION

The NRC is proposing to amend regulations in Part 72 of Title 10 of the Code of Federal Regulations (CFR) to clarify the license term limits for dry storage cask CoCs and ISFSI licenses, provide consistency between the general license requirements and the site-specific ISFSI license requirements, and allow Part 72 general licensees to implement changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC (a “previously loaded cask”). The Commission directed this rulemaking through a Staff Requirements Memorandum (SRM) for SECY-06-0152, dated August 14, 2006, as supplemented, by SRM for COMSECY-07-0032, dated December 12, 2007.

Specifically, the proposed amendments would allow for longer initial and renewal terms for Part 72 CoCs and licenses, clarify the general license storage term, clarify the difference between CoC “approval” and “renewal,” allow a licensee to apply the changes associated with a CoC amendment to a previously loaded cask without express NRC approval, provided the cask fully conforms to the terms, conditions, and specifications of the amended CoC, and make certain administrative and clarifying changes.

As of August 2008, there are 15 approved spent fuel storage cask designs listed in 10 CFR 72.214. However, because each amendment to a cask design is considered a separate and unique cask design, there are in practice 43 approved spent fuel storage cask designs including all amendments. There are 15 Part 72 ISFSI site-specific licensees, and 37 Part 72 ISFSI general licensees. The licensees of another 18 power reactor sites are pursuing a Part 72 ISFSI general license. Fourteen power reactor sites have not announced intentions regarding an ISFSI. Appendix 1 provides the names of storage casks currently in use, names of the ISFSI locations, names of licensees pursuing a Part 72 general license, and names of licensees who have not announced plans for ISFSI licensing.

A description of the proposed rule and the need for the rule are discussed in the following two sections. Section 2 summarizes the technical basis for this rulemaking. Section 3 identifies the two alternatives evaluated in this rulemaking – a No Action alternative and an alternative assuming implementation of the rule. Section 4 describes the analysis method and input assumptions. Section 5 describes the Results. Section 6 discusses the Decision Rationale and Implementation of the preferred alternative, and Section 7 lists the References used in this regulatory analysis. Input assumptions are documented in Appendix 2.

1.1 *Description of the Proposed Action*

10 CFR Part 72 provides the requirements for: (a) site-specific ISFSI licenses, (b) CoCs for spent nuclear fuel dry cask storage systems, and (c) general licenses for ISFSIs at reactor sites. Under this rulemaking, license terms for each type of license and CoC would be affected.

The first proposed change would be to extend the license term for Part 72 site-specific licenses from the current 20 years from the date of initial license issuance, or from the date of license renewal, to a length of time not to exceed 40 years from the date of issuance or license renewal. The exact license term would be specified by the applicant in a license application.

Current 10 CFR 72.42 specifies that the duration of a Part 72 site-specific license, either initial or license renewal, must be for a fixed period of time not to exceed 20 years from the date of issuance.

Another change would be to extend the license term of a storage cask CoC from a period of at least 20 years to a period not to exceed 40 years. The current regulations require that the license applicant for a CoC submit a safety analysis report (SAR) showing that the cask is suitable for storage of spent fuel for a period of at least 20 years. The proposed rule would allow the CoC applicant, in a new CoC application, or the CoC holder, in a renewal application of a CoC, to submit the application for a proposed term not to exceed 40 years.

A general ISFSI license is available for use as long as the licensee is authorized to possess or operate a nuclear power reactor, under the provisions of Part 50. Therefore, the "term" for a general license is directly tied to the term of the associated Part 50 reactor license. However, the use of a specific cask design under a general license is otherwise tied to the CoC. If the license term of a storage cask CoC is extended to 40 years, the authority to use a specific cask design under a general license would also be extended to 40 years. Currently, the general licensee's authority to use a particular cask design for the storage of spent fuel in each cask fabricated under an approved CoC terminates 20 years after the date that the general licensee first uses the particular cask to store spent fuel. Under the proposed rule, the exact "term" to use a specific cask design under a general license would depend on action taken by the CoC holder to extend the term of the storage cask CoC. If the CoC holder does not extend the term of the storage cask, then the Part 72 general licensee could seek approval from the NRC for a renewal of the storage cask CoC.

Another action in this proposed rule would allow general licensees to apply newer amendments to previously loaded casks, provided that the loaded cask meets all terms and conditions of the amended CoC. Partial implementation of the changes in an amendment is prohibited as it would result in a cask that is in an unanalyzed condition and not fully compliant with any of the CoCs listed in 10 CFR 72.214. Currently, 10 CFR Part 72 does not allow for general licensees to apply changes authorized by CoC amendments to previously loaded casks without prior NRC approval, if the changes alter the terms or conditions of the CoC under which that cask was loaded. General licensees that want to implement such changes must apply to the NRC for an exemption.

The proposed rule evaluated in this regulatory analysis would make editorial corrections to other Part 72 rule text, but these corrections would generate little or no impact on stakeholders or the NRC. For example, one rule text change that is considered to have no impact on stakeholders or the NRC is a change in terminology in 10 CFR 72.240 from CoC "reapproval" to CoC "renewal."

The proposed rule has no impact on Agreement States because 10 CFR Part 72 has a compatibility category of "NRC" which establishes regulatory program elements that cannot be relinquished to Agreement States under the Atomic Energy Act, as amended, or under provisions of Title 10 of the CFR.

1.2 Need for the Proposed Action

The amended regulations are necessary to improve regulatory efficiency because they would provide a consistent basis for the scope, applicability, and terminology of CoC and Part 72 ISFSI license regulations. The amended regulations would also better align CoC regulatory requirements with ISFSI general license requirements.

2. TECHNICAL BASIS FOR THE PROPOSED RULE

Sections 2.1 through 2.5 provide the technical basis supporting the proposed rule. These sections cover (1) a longer term for an initial CoC application; (2) a longer term for a renewal CoC application; (3) term limit for an approved storage cask design approved for use at a general site; (4) implementation of later amendments to previously loaded casks; and (5) a new requirement for a CoC renewal application to include an aging management program related to the characteristics of the storage cask.

2.1 Specify a Maximum Term for an Initial CoC Application

Currently, Part 72 does not specify an explicit limit on the initial term of a CoC for a spent fuel storage cask design. NRC has historically authorized 20-year initial terms, as supported by the requirements of 10 CFR 72.230(b) and 72.236(g), and the Statements of Consideration (SOC) in the Federal Register (FR) notice for the final rule that added the general license provisions to Part 72 (55 FR 29184; July 18, 1990). Section 72.230(b) of 10 CFR specifies that for a cask design certified for transportation of spent fuel under 10 CFR Part 71, an SAR showing that the cask is suitable for storage of spent fuel for a period of at least 20 years must be included in an application for a CoC for a spent fuel storage cask design. Section 72.236(g) of 10 CFR requires that the spent fuel storage cask must be designed to store the spent fuel safely for a minimum of 20 years. The referenced SOC indicate that, “[t]he Commission believes that 20-year increments are appropriate for such cask design approvals, after which designs may be renewed.” Furthermore, the 20-year initial term for a Part 72 CoC is consistent with the initial term of a site-specific ISFSI license specified in 10 CFR 72.42(a).

Proposed rule changes to 10 CFR 72.230(b) and 72.236(g) would change the length of the term from a minimum of 20 years to a maximum term not to exceed 40 years for an initial CoC application.

Although CoC license applicants would have the flexibility to request a longer than 20-year initial term under this proposed rule, the maximum initial term would be limited to 40 years because of relatively limited empirical data available to evaluate the long-term material degradation issues of dry spent fuel storage casks. In 2003 and 2004, during the review for the Surry and H. B. Robinson renewal applications, the staff evaluated technical data resulting from an NRC-supported research program at the Idaho National Laboratory (INL) and dry spent fuel storage casks used at Surry. Under the INL research program, INL opened and inspected a dry storage cask after the fuel had been stored for approximately 15 years. At Surry, several

casks were also opened after less than 15 years of storage as a result of some faulty weather covers which were corrected. Summaries of the findings regarding the condition of the fuel and cask components follow:

(1) Cladding creep is a time-dependent change in the dimension of the cladding resulting from high temperature and stress. It was considered as a potential degradation mechanism during storage. Confirmatory inspection of the spent fuel stored at INL verified that no cladding creep had occurred. The spent fuel in dry storage at Surry also supports this finding. The NRC staff expects very little to no fuel degradation at the end of an extended licensing period. The established limits for cladding temperature during storage, and continually decreasing level of cladding stress and temperature, further remove creep as a degradation mechanism. Assessment indicated that cladding creep would not be an issue.

(2) The NRC staff also expects limited degradation of other internal components because there are no significant corrosive influences in the inert environment, either for the fuel or for other components. The INL inspection verified that there was no indication of corrosion for any internal canister components. The NRC staff has also concluded that radiation levels are too low to significantly alter the properties of the metals for any storage canister components.

(3) At Surry, the helium-filled region used metallic seals as the first and second containment seals. These were the only safety-related seals.

(4) The other external components of the storage systems (which are exposed to weathering effects) would already be covered by an inspection and corrective action program, or routine maintenance, to ensure that any degradation will be identified and assessed for its importance to safety, and will be addressed through corrective actions to ensure continued safe operation of the storage system.

Based on these findings, the staff believes that, with appropriate aging management and maintenance programs, not to exceed 40-year terms are reasonable without undue risk to the public or to the environment. License terms longer than 40 years would require additional information on the long-term material degradation of dry spent fuel storage casks and would need to be evaluated by the staff.

The flexibility to request a longer initial CoC term does not involve any change to the design criteria for spent fuel storage casks. Consequently, new cask designs would meet the same design requirements as previously certified designs. Each applicant for a longer initial-term CoC must justify in its application that its proposed cask design and associated support/operational programs (for example, including surveillance and maintenance) are suitable for storage of spent fuel for that requested term. This proposed change would affect applicants who request a longer initial CoC term. The staff would develop regulatory guidance to address the additional analyses or measures necessary to justify CoC initial terms of greater than 20 years to a maximum of 40 years.

2.2 Specify a Maximum Term for a Renewal CoC Application

Current regulations do not explicitly call out the renewal term of a Part 72 CoC. The SOC referenced above (55 FR 29184) specify that the Commission believes that 20-year increments are appropriate for reapproval of a storage cask CoC and consistent with the 20-year license renewal period for site-specific licenses.

Proposed rule changes to 10 CFR 72.240(a) would provide CoC holders with the flexibility to request a reapproval term not to exceed 40 years.

For similar reasons as stated in Section 2.1, the NRC staff supports a renewal term not to exceed 40 years. If a CoC holder (applicant) requests a renewal term for a storage cask CoC, then the applicant must justify in the renewal application that the spent fuel storage cask design is suitable for the requested renewal term. This proposed change would affect applicants who seek to request a CoC renewal term longer than 20 years. As planned for the change in term length for an initial CoC application, the staff would develop regulatory guidance to address the additional analyses or measures necessary to justify CoC renewal terms.

2.3 Clarify Term Limit for Cask Designs Approved for Use at General License Sites

A Part 50 power reactor licensee may use a Part 72 ISFSI general license for spent fuel storage as long as the Part 50 license is maintained. Under current regulations, the Part 72 ISFSI general licensee's authority to use an approved cask design terminates 20 years after the date that the general licensee first loads spent fuel into the cask. In the event the CoC was to expire in the interim, any loaded spent fuel storage casks of that design would need to be removed from service after a storage period not to exceed 20 years. Neither the regulation nor the associated SOC for the final rule promulgating the regulation are clear as to whether each individual cask, once it is loaded with spent fuel under a valid CoC, may remain in service for a full 20 years, or whether a "20-year clock" is started at each site with the first loading of a cask of a given design. The 20-year expiration date is approaching for a number of storage casks at several generally licensed ISFSIs, requiring those terms to be extended. Since the use of a specific cask design under a general license is tied to the CoC, general licensees would depend on the certificate owners to obtain renewal from the NRC for the cask designs used at their sites. If this is done, the general license authority for the continued use of the storage cask terminates 20 years after the CoC renewal date. If the CoC expires before a renewal is approved, spent fuel storage casks of that design need to be removed from service after the storage period not to exceed 20 years.

Since (1) the use of a specific cask design under a general license is tied to the CoC and (2) the proposed rule would increase CoC terms from 20 years to up to 40 years, the Commission proposes to amend 10 CFR 72.212(a)(3) to specify that the license for storage of spent fuel in each cask would terminate after that particular cask is first used by the general licensee for a length of time equivalent to the licensed lifetime as certified by the cask's CoC at the time of loading. If a CoC expires, casks of that design must be removed from service after a storage period not to exceed a length of time equivalent to the licensed lifetime as certified by the cask's CoC at the time of loading. However, if the cask's CoC is renewed, the general

license would then terminate when the CoC for that particular cask design expires. This change is not only consistent with the intent of the current regulations for general licenses, but also updates the current regulations due to revisions in other sections of Part 72 in this rulemaking. The proposed change would affect all general licensees.

2.4 Implementation of Later Amendments to Previously Loaded Casks

CoC amendments are routinely requested by the cask manufacturer or vendor (also referred to as the certificate holder). Upon NRC approval of a CoC amendment, general licensees can load empty casks meeting the technical specifications of that CoC amendment. However, general licensees that want to apply changes approved by a later CoC amendment to a previously loaded cask must request an exemption from the NRC if such changes alter the terms or conditions of the CoC under which that cask was loaded. Even if a general licensee requested the certificate holder of the cask to submit an amendment request that is specific to the general licensee and obtained NRC approval for such an amendment, the general licensee still could not apply this amendment to previously loaded casks. To take advantage of the CoC amendment under the current requirements, the licensee must apply to NRC for an exemption.

The proposed change would revise 10 CFR 72.212 to allow a general licensee to apply CoC amendment changes to a previously loaded cask provided that the licensee perform written evaluations meeting the requirements of 10 CFR 72.212(b). This proposed process is parallel to an existing process which general licensees must follow before loading an empty cask under the general license. Specifically, Subpart K of Part 72 allows general licensees to select from the list of approved spent fuel storage casks from 10 CFR 72.214. Because NRC has made a safety determination on each of the casks and amendments listed in 10 CFR 72.214, a later amendment that is codified by NRC would automatically be included in the list. The proposed revision to 10 CFR 72.212 would require that, after application of the changes authorized by a CoC amendment, the loaded cask must conform to the terms and conditions of the subject CoC amendment.

This proposed change would improve the effectiveness and efficiency of the regulatory process by reducing the regulatory burdens of both the NRC and general licensees. It would affect general licensees who desire to implement the changes from a later CoC amendment to a previously loaded cask.

2.5 CoC Renewal Application Requires Aging Analyses

In 2004, the Commission authorized the staff to approve 40-year license renewal terms for the site-specific license for the Surry ISFSI [Reference 1]. In doing so, the NRC imposed, by license condition, certain aging management requirements to be performed by the licensees. Licensees must develop aging management plans to evaluate performance characteristics of the storage casks at those sites over time. If the regulations are changed to allow general and site-specific licensees to use storage casks over a renewed term not to exceed 40 years, then the NRC staff believes that requirements need to be added to the regulations to ensure that

aging analyses are performed and submitted in the application for the period requested by the CoC renewal application.

The proposed rule would amend 10 CFR 72.24(c) to specify that the license term for an ISFSI license cannot exceed 40 years and would amend Section 72.42(a) to require specific licensees to implement an aging management program, as described by the CoC holder in its renewal application. The proposed rule would also amend 10 CFR 72.240(c) to require the contents of the SAR for the cask renewal application must include aging analyses that demonstrate that structures, systems, and components important to safety will perform their intended function for the period of extended operation requested in the license renewal. This new requirement would apply to the CoC holder or to the Part 72 general licensee if the CoC holder does not apply for renewal of a particular cask. The aging management requirements for general licensees are tied to the CoC; if the storage cask CoC requires an aging management program, general licensees would be required to comply with these requirements.

The proposed changes to 10 CFR 72.42(a) and 72.240(c) would provide consistent program activities performed by site-specific and general license ISFSI installations during the period of extended operation.

3. IDENTIFICATION OF ALTERNATIVE APPROACHES

The NRC considered two alternatives for the proposed rule, described below.

3.1 *Alternative 1: No-Action*

The No-Action alternative is to maintain the status quo. Under the No-Action alternative, the Commission would make no changes to the current regulations and, as a result, there would be no incremental costs or benefits. This is the baseline of the Regulatory Analysis.

3.2 *Alternative 2: Implement the Regulations in the Proposed Rule*

This alternative would amend the regulations as described in Sections 2.1 through 2.5 to implement the proposed rule. Appendix 2 of this Regulatory Analysis shows the input assumptions for Alternative 2.

4. ANALYSIS OF VALUES AND IMPACTS

This section examines the values (benefits) and impacts (costs) expected to result from NRC's proposed rule. The benefits and costs are analyzed for Alternative 2 and are broken out by societal attributes considered important to evaluate a proposed rule. Because the benefits

would exceed the costs, the overall impact of this proposed rule would be a net savings to both licensees and to the NRC.

Table 4-1 lists the attributes significant for this proposed rule with reference to their expected change. The benefits and costs for each attribute are quantified using a methodology described in Section 4.1. The attributes not expected to be affected by the proposed rule are listed below Table 4-1. All of these attributes are recommended for consideration during a rulemaking effort, in the Regulatory Analysis Technical Evaluation Handbook [Reference 2].

Table 4-1: Listing of Societal Attributes that May Be Affected by the Proposed Rule

Attribute	Expected Change
<i>Industry Implementation</i>	Part 72 licensees and CoC holders would realize one time costs and savings associated with specific sections of rule text in Alternative 2.
<i>Industry Operation</i>	Part 72 general licensees would realize annual savings associated with proposed amendment in section 72.212(b)(4) in Alternative 2.
<i>NRC Implementation</i>	NRC would achieve one time savings associated with the review of fewer license renewal applications by Part 72 site-specific licensees and CoC holders in Alternative 2.
<i>NRC Operation</i>	NRC would realize annual savings associated with fewer exemption requests submitted in proposed section 72.212(b)(4) in Alternative 2.
<i>Regulatory Efficiency</i>	Licensees, CoC holders and the NRC would realize overall improved efficiencies as estimated in the total savings for the four attributes above.

The following attributes are not expected to be affected by the proposed rule

<i>Public Health (Accident)</i>	<i>Offsite Property</i>	<i>Occupational Health (Accident)</i>
<i>Public Health (Routine)</i>	<i>Onsite Property</i>	<i>Occupational Health (Routine)</i>
<i>Antitrust Considerations</i>	<i>General Public</i>	<i>Safeguards and Security</i>
<i>Environmental Considerations</i>	<i>Other Government</i>	<i>Other Considerations</i>
<i>Improvements in Knowledge</i>		

Section 5 presents the results, in constant 2008 dollars. The results are shown for the one-time costs and savings and annual costs and savings that result from implementation of Alternative 2. The total costs and savings over the 40-year implementation period are estimated using 7 percent and 3 percent real discount rates. This proposed rule would result in a reduction in costs, so there would be net savings to both licensees and to the NRC.

The estimated total savings for Alternative 2 compared to Alternative 1 are \$1.3 million and \$0.9 million, discounted at 3 percent and 7 percent, respectively, over the 40 year analysis period.

4.1 Analytical Methodology

This section describes the process used to evaluate values and impacts of the affected attributes for Alternative 2. Values (benefits) include any desirable changes. Impacts (costs) include any undesirable changes in affected attributes, such as increased costs. The following attributes have quantifiable values and impacts due to implementation of the proposed rule:

- Industry Implementation
- Industry Operation
- NRC Implementation
- NRC Operations

NRC collected input assumptions from referenced sources when these were available. In some cases, NRC was not aware of any input data and in these cases NRC staff made an estimate based on best professional judgment. The NRC seeks public comments on the accuracy of the input assumptions used in this regulatory analysis, and on the validity of the method to estimate values and impacts of the proposed rule.

4.1.1 General Assumptions

The general input assumptions for the analysis are discussed below.

- NRC wage rate: \$100/hour. This is NRC's incremental labor rate, which includes only the variable costs associated with implementation and operation costs of the rule.
- Industry wage rate: \$100/hour for licensee management and for administrative support. This represents a blended rate for executive level and administrative personnel who support regulatory compliance of a company operating under NRC regulations.
- The time period for the analysis is 40 years. This is considered a reasonable range of time to evaluate the values and impacts of an increased term because initial and renewal terms of ISFSI licenses and CoCs would increase from 20 years to 40 years.

4.1.2 Specific Assumptions for Alternative 2

Under Alternative 2, NRC would amend its regulations to implement the proposed rule. The specific assumptions for Alternative 2 are:

- For the purposes of modeling the costs and savings associated with the proposed rule, the analysis assumes the proposed rule would be implemented in 2010.
- With regard to 10 CFR 72.42(a) and (b), it is assumed that 2 of the 14 power reactor sites that have not yet announced their intentions with respect to an ISFSI license, would apply for a Part 72 specific license for a period not to exceed 40 years. Under current regulations,

these licensees would need to submit an initial application for 20 years and a renewal application for another 20 years to match the 40-year period in the initial application that would be allowed under amended 10 CFR 72.42(a). The licensee's labor saving in not submitting a renewal application is estimated to be 160 hours. This is a one-time savings. Also, it is assumed that 12 of the current 15 licensees with a Part 72 site-specific license would apply for a license renewal for a period not to exceed 40 years. These licensees would also save an estimated 160 hours each as a result of submitting only a single license renewal to cover the 40 year analysis period. These are modeled as one-time efforts for each licensee, in constant 2008 dollars.

- With regard to 10 CFR 72.212(a)(3), there are 37 licensees who currently hold a Part 72 general license, and there are an estimated 30 new general licensees over the analysis period. It is assumed that the CoC is renewed by the CoC holder for each cask design used by all 37 current licensees and by all 30 new general licensees. There is no additional labor effort on the part of the general licensee to comply with new Section 72.212(a)(3) compared to the No Action alternative (Alternative 1). The only change in labor is due to the frequency in which the CoC holder applies for a CoC renewal, and this labor saving is modeled in 10 CFR 72.240(a).
- With regard to 10 CFR 72.212(b)(4), the same number of licensees is assumed as in Section 72.212(a)(3). Therefore, the analysis models the labor cost of 37 current general licensees and 30 new general licensees during the 40 year analysis period. Additional one-time reporting is required under amended Section 72.212(b)(4) for these licensees. It is assumed that the 37 current general licensees each have 5 cask designs for which information would need to be reported in a registration letter, and it would require 4 hours to report the information for each cask design. For the 30 new general licensees, the analysis assumes an average of 2 cask designs for each. Fewer cask designs were assumed for the new licensees because they would have fewer casks on site compared to the current general licensees. It was also assumed that it would take the same amount of time, 4 hours, to report information in the registration letter. The labor effort to submit these registration letters is modeled as a one-time expense, in 2008 dollars, occurring during the 40-year analysis period.

Also modeled under 10 CFR 72.212(b)(4) is a savings associated with Part 72 general licensees no longer being required to submit an exemption request to the NRC to apply changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC. These savings are modeled as annual recurring labor savings. The assumption is that the 37 current general licensees each would submit such an exemption request once every 10 years, or 0.1 on an annual basis. The labor effort on the part of the licensee to submit the exemption request was assumed to be 40 hours per request. For the 30 new general licensees, the analysis assumes the same frequency of exemption requests, equal to once every 10 years, or 0.1 on an annual basis. The labor effort avoided for these new general licensees was assumed to be 16 hours per request, lower than current general licensees because the new licensees would have fewer cask types on site.

- With regard to 10 CFR 72.212(b)(5)-(7), the same number of licensees is assumed as in Section 72.212(b)(4). Under Alternative 2, each of these would have an additional one-time

reporting requirement of the documentation and results supporting written evaluations of specific cask design characteristics prior to the licensee's use of the cask under the new 40-year renewal term. This must be performed for each of the cask designs for which a renewal registration letter is being submitted. To perform and document the written evaluations in the renewal application, the analysis assumes 40 hours by each of the 37 current general licensees for each of their 5 cask designs, and a labor effort of 8 hours by each of the 30 new general licensees for each of their 2 cask designs. As noted above, the labor effort is less for the new licensees because they will have fewer cask types on site.

- With regard to 10 CFR 72.236(g), the analysis assumes no incremental costs or savings to CoC holders to design their casks to last for the longer term (i.e., a term not to exceed 40 years as opposed to the current 20 year term).
- With regard to the changes in 10 CFR 72.240(a), the following five companies are the holders of CoCs: General Nuclear Systems, Transnuclear, BNG Fuel Solutions, Holtec International, and Nuclear Assurance Corporation. An estimate is made that these holders apply for the renewal of 15 CoCs, not to exceed 40 years, for a cask design and that during the 40 year analysis period holders of an additional 10 CoCs of not yet approved cask designs apply for the extended term renewal. Thus, the holders of a total of 25 CoCs apply only once for term renewal under the proposed rule instead of twice as would occur under the alternative No Action. It is assumed that the labor savings is 160 hours for each of the renewals that are not required to be submitted.
- With regard to the changes to 10 CFR 72.240(c), the analysis assumes that the one-time labor effort for the aging analyses requires 40 hours for each for the 25 CoCs held by companies who apply for term renewal.
- For NRC costs, an estimate of \$50,000 is made to support preparation of the final rule and a guidance document to implement the changes in this rule. Additional annual costs to review Part 72 licensee and CoC holder applications are not modeled because it is assumed these are offset by the savings in not reviewing exemption requests.
- For NRC savings, the analysis assumes that each of the 14 site-specific licensees would apply only once for license renewal over the 40 year analysis period, instead of twice, for a savings to the NRC staff of 200 labor hours. This is consistent with the site specific licensee costs modeled under 10 CFR 72.42(a), and is modeled as a one-time labor saving. The analysis also assumed that there would be labor savings due to the holders of 25 CoCs applying only once for license renewal instead of twice over the 40-year analysis period, for a one-time labor saving of 200 hours per application. Annual savings to the NRC would occur due to fewer exemption requests being submitted by Part 72 general licensees to allow the licensee to apply CoC amendment changes to a previously loaded cask. The NRC's labor saving is modeled with the same input assumptions as the savings for the Part 72 general licensee under Section 72.212(b)(4).

5. RESULTS

This section presents results of values and impacts that are expected to be derived from the proposed rule. The results are shown for each of the following four attributes:

- Industry Implementation
- Industry Operation
- NRC Implementation
- NRC Operation

The proposed rule is expected to provide values in other attributes, such as improvements in regulatory efficiency and improvements in general public confidence, but these are not quantified because they are expected to be small. The quantified values are presented in constant 2008 dollars, for both one-time and recurring annual efforts. The impact of the proposed rule over a 40 year analysis period is estimated using 3 percent and 7 percent real discount rates to show an overall net effect in terms of 2008 dollars. Alternative 1, the No-Action Alternative, provides a baseline against which the other alternative is assessed.

5.1 Summary of Results

Table 5-1 presents the net impact of the rule. A positive value below is a cost. A number in parentheses is a negative cost, or a savings.

Table 5-1: Net Impact of Alternatives 1 and 2

Regulatory Alternative	40-year total at 3% discount rate (\$)	40-year total 7% discount rate (\$)
1. No Action	0	0
2. Implement the proposed regulations	(1,274,099)	(890,603)

There are no costs or benefits associated with Alternative 1, the No Action alternative. No changes would be made to the regulation. The Part 72 licensees and CoC holders would continue to operate under existing terms for ISFSI and cask renewals, and the NRC would review and approve the applications based on the 20-year term length, with a 40-year term approved for individual exceptions to the regulation.

The major contributing savings under Alternative 2 are due to:

- A total of about \$450,000 in savings, in 2008 dollars at 3 percent discount rate over a 40 year analysis period, is due to the proposed change in Section 72.212(b)(4) that would allow Part 72 general licensees to apply the changes in an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC. This savings is offset by an estimated one-time cost of about \$100,000 in new reporting requirements associated with a

registration letter to apply the changes authorized by an earlier amended CoC, and a one-time cost of about \$790,000 to perform the written evaluations prior to applying for the changes noted above.

- One-time savings of about \$225,000 would be realized by Part 72 site-specific licensees due to fewer license amendment submittals over the 40 year analysis period.
- One-time savings of about \$400,000 would be realized by CoC holders due to the need to apply for fewer license renewals, but this is offset by an estimated one-time cost of \$100,000 associated with the preparation of an aging analysis in the SAR for the period of extended operation for the cask design.
- The NRC would realize a total of \$1.2 million in savings at 3 percent discount rate over the 40 year analysis period. This is due to \$280,000 in savings due to the submittal of fewer Part 72 site-specific license renewal applications, \$500,000 in savings due to fewer CoC license renewal applications, and about \$450,000 in savings due to the submittal of fewer exemption requests from Part 72 general licensees.

Table 5-2 shows the estimated costs, by attribute, over the 40-year analysis period.

Table 5-2: Estimated Values and Impacts by Attribute

Attribute	Alternative 2 40-Year Total Cost (\$ 000)	
	3% Discount	7% Discount
Industry Implementation	362	362
Industry Operation	(453)	(261)
NRC Implementation	(730)	(730)
NRC Operation	(453)	(261)
Total	(1,274)	(891)

Note: Total may differ from sum of values due to rounding.

Table 5-3 shows the NRC proposed amendments that are included in the proposed rule, and whether or not the amendment is estimated as a cost to industry and to regulators, or is insignificant and not included in the cost-benefit calculations. The line item input assumptions and results are shown in Appendix 2 for those amendments modeled as a cost to industry and to regulators.

Table 5-3: Proposed Rule Amendments and Significance in the Cost-Benefit Analysis

10 CFR Part 72 amendment description		Cost of amendment estimated as a licensee and/or NRC cost and included in cost-benefit analysis	Cost of amendment NOT estimated as a licensee and/or NRC cost and NOT included in cost-benefit analysis
72.3	Definitions.		X
72.24(c)	Requires a description of the design of the ISFSI or MRS to support the findings in 10 CFR 72.40 for the term requested in the application.		X
72.42(a)-(b)	Requires the licensee to specify in its Part 72 specific license application a fixed period of time, not to exceed 40 years from the date of issuance, for both initial and renewal applications, including aging analyses, current design basis information, and a description of the aging management program. Also requires applications filed consistent with subpart B at least 2 years before expiration of current license, with design bases information.	X	
72.212(a)(3)	Specifies that a Part 72 general license for each cask terminates at the end of the initial term based on cask loading date, and allows the general licensee to apply for a cask term renewal based on the CoC term for a cask design that it uses under its general license, pursuant to new 10 CFR 72.240(a).	X	
72.212(b)(1) - (3)	Existing notification, registration and conformance requirements for the Part 72 general license. The analysis does not estimate the additional cost to general licensees to submit the amendment number with the existing notification, because the incremental cost is insignificant.		X
72.212(b)(4)	Specifies information that the Part 72 general licensee must submit in its registration letter after applying changes authorized by an amended CoC.	X	
72.212(b)(5) – (7)	Requires the Part 72 general licensee to perform written evaluations of three specifications prior to the cask's use and prior to applying changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC, and to review the adequacy of site parameters in the SAR and SER of a CoC, and any changes to written evaluations.	X	
72.212(b)(8) – (10)	Existing requirements of Part 72 general licensees.		X
72.212(b)(11)	Requires a general licensee to maintain a copy of the amended CoC for those casks to which the licensee has applied the changes of an amended CoC and documents referenced in the amended certificate for each cask used for storage of spent fuel. Previously this section applied only to CoCs, and not amended CoCs. The analysis does not estimate the additional cost to general licensees to maintain this record because the incremental cost is insignificant.		X
72.212(b)(12) – (14)	Existing requirements of Part 72 general licensees.		X
72.212(e)	Existing requirement specifying fee schedule.		X
72.230(b)	Specifies that casks certified for transportation of spent fuel may be approved for storage of spent fuel for a proposed term not to exceed 40 years. A copy of the CoC, a SAR, and other information must be included in the application.		X

72.234(d)(2)(vii)	Re-designates 72.236(j) to 72.236(k)		X
72.236(g)	Requires CoC holders and applicants to design the cask to store the spent fuel safely for a term proposed in the application, and to permit maintenance as required.		X
72.238	Specifies that NRC would issue a CoC for a cask model for a term not to exceed 40 years.	X	
72.240(a)	Allows a CoC holder to apply for spent fuel storage cask renewal for a term up to 40 years, and allows a Part 72 general licensee who uses a specific cask model to apply for renewal of that cask CoC if the certificate holder does not apply for renewal.	X	
72.240(c)	Requires in the renewal application a SAR including aging analyses for the cask structures, systems and components for the period of extended operation.	X	

6. DECISION RATIONALE AND IMPLEMENTATION

The assessment of costs and benefits discussed previously provides a sound basis for decision-making that leads the NRC to the conclusion that the proposed rule, if implemented, would result in net savings to industry and to the NRC due to improved efficiency of managing the terms for ISFSI licenses and for approved storage cask designs. The assessment provides a disclosure of information supporting the conclusion and an alternate approach to the regulatory objectives.

Two alternatives were evaluated in this Regulatory Analysis. Alternative 1 would take No Action and would maintain the regulations as currently written.

Alternative 2 would amend NRC regulations to allow a longer period for the term associated with a site-specific ISFSI, an ISFSI operating under a general license, and the storage cask in use at the site. The term would be extended from the current 20-year time period to a time period specified in an initial license application or a renewal license application, not to exceed 40 years. These changes would improve licensee and NRC management of relevant term expiration dates, at an estimated total savings of about \$1.3 million over a 40-year period at a 3 percent discount rate. The NRC would realize most of the savings, with licensees and CoC holders netting about \$90,000 in savings primarily due to the submittal of fewer license and CoC renewal applications as a result of the increase in term length from 20 years to 40 years. Alternative 2 is the preferred approach.

The final rule is planned for publication in the *Federal Register* in 2010.

7. REFERENCES

- (1) Staff Requirements Memorandum dated November 29, 2004 [ML043500192], in response to SECY-04-0175 dated September 28, 2004, "Options for Addressing the Surry Independent Fuel Storage Installation License – Renewal Period Exemption Request" [ML010670073].
- (2) Nuclear Regulatory Commission, "Regulatory Analysis Technical Evaluation Handbook, Final Report," NUREG/BR-0184, January 1997.

Appendix 1: Approved Storage Cask and ISFSI Number and Location Information **As of August 2008** **Approved Storage Casks in 10 CFR 72.214 Currently In Use**

Certificate Number: 1000. General Nuclear Systems, Inc.
Model Number: CASTOR V/21

Certificate Number: 1002. Nuclear Assurance Corporation
Model Number: NAC S/T

Certificate Number: 1003. Nuclear Assurance Corporation
Model Number: NAC-C28 S/T

Certificate Number: 1004. Transnuclear, Inc
Amendments Numbers 1 - 9.
Model Number: NUHOMS@-24P, -52B, -61BT, -32PT, -24PHB, and -24PTH.

Certificate Number: 1005. Transnuclear, Inc.
Model Number: TN-24.

Certificate Number: 1007. BNG Fuel Solutions Corporation.
Amendments Numbers 1 – 6.
Model Number: VSC-24.

Certificate Number: 1008. Holtec International.
Amendments Numbers 1 – 2.
Model Number: HI-STAR 100.

Certificate Number: 1014. Holtec International.
Amendments Numbers 1 – 5.
Model Number: HI-STORM 100.

Certificate Number: 1015. NAC International, Inc.
Amendments Numbers 1 – 4.
Model Number: NAC-UMS.

Certificate Number: 1021. Transnuclear, Inc.
Amendment Number 1.
Model Number: TN-32, TN-32A, TN-32B

Certificate Number: 1025. NAC International, Inc.
Amendments Numbers 1 – 5.
Model Number: NAC-MPC.

Appendix 1 continued (All data in Appendix 1 is as of August 2008)

Certificate Number: 1026. BNG Fuel Solutions Corporation.

Amendments Numbers 1 – 4.

Model Number: WSNF-220, WSNF-221, and WSNF-223 systems; W-150 storage cask; W-100 transfer cask; and the W-21 and W-74 canisters.

Certificate Number: 1027. Transnuclear, Inc.

Amendment Number 1.

Model Number: TN-68.

Certificate Number: 1029. Transnuclear, Inc.

Amendment Number 1.

Model Number: Standardized Advanced NUHOMS®-24PT1, NUHOMS®-24PT4.

Certificate Number: 1030. Transnuclear, Inc.

Model Number: NUHOMS® HD-32PTH

ISFSI site specific licenses

1. GE Morris (wet)
2. Surry
3. H. B. Robinson
4. Oconee
5. Fort St. Vrain
6. Calvert Cliffs
7. Prairie Island
8. North Anna
9. TMI-2 Debris
10. Trojan
11. Rancho Seco
12. Diablo Canyon
13. Idaho Spent Fuel Facility
14. Humboldt Bay
15. Private Fuel Storage

ISFSI general licenses

1. Maine Yankee
2. Vermont Yankee
3. Yankee Rowe
4. Haddam Neck
5. Millstone
6. Indian Point
7. Susquehanna
8. Peach Bottom
9. Oyster Creek
10. Hope Creek
11. Salem
12. North Anna*
13. Surry*
14. McGuire
15. Catawba
16. Robinson*
17. Oconee*
18. Sequoyah
19. Hatch

Licensees Pursuing a General License

1. Seabrook
2. Limerick
3. Ginna
4. Braidwood
5. Brunswick
6. LaSalle
7. Byron
8. Cooper
9. LaCrosse
10. Turkey Point
11. Monticello
12. Cooper
13. Kewaunee
14. Comanche Peak
15. Perry
16. Fermi
17. Cook
18. Crystal River

Sites with No Announced Intentions

1. Pilgrim
2. Three Mile Island
3. Clinton
4. Callaway
5. Wolf Creek
6. South Texas Project
7. Waterford
8. Shearon Harris
9. Summer
10. Vogtle
11. Zion
12. Beaver Valley
13. Watts Bar
14. Nine Mile Point

Appendix 1 continued (All data in Appendix 1 is as of August 2008)

20. Farley
21. St. Lucie
22. Browns Ferry
23. River Bend
24. Grand Gulf
25. Arkansas Nuclear One
26. Calhoun
27. Dresden
28. Duane Arnold
29. Quad Cities
30. Columbia
31. Palo Verde
32. San Onofre
33. Davis Besse
34. Palisades
35. Big Rock Point
36. Point Beach
37. FitzPatrick

*also site specific licensees

Appendix 2: Input Assumptions and Line Item Results for Alternative 2

Licensee Costs and Savings

	Description	No. of NRC Licensees or CoC Holders	No. of cask designs per NRC Licensee or CoC Holder	Hours per Licensee or CoC Holder	Wage Rate (\$/hr)	One-time Cost or Savings	Annual Cost or Savings	Total 40 Yr 3% NPV	Total 40 Yr 7% NPV
Part 72									
72.42(a) and (b)	Requires the licensee to specify in its application for a specific license a fixed period of time for a Part 72 specific license, not to exceed 40 years from the date of issuance, including aging analyses and an aging management program: --- initial applications.	2	-	-160	100	-\$32,000	-	-	-
	--- renewals.	12	-	-160	100	-\$192,000	-	-	-
72.212(a)(3)	Specifies that a Part 72 general license for each cask fabricated under a CoC terminates when the CoC for that particular cask design expires: --- current general licensees.	37	-	0					
	--- future general licensees.	30	-	0					
72.212(b)(4)	Specifies information that the Part 72 general licensee must submit in its registration letter after applying changes authorized by an amended CoC: --- current general licensees.	37	5	4	100	\$74,000	-	-	-
	--- future general licensees.	30	2	4	100	\$24,000	-	-	-
	Allows changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC: --- current general licensees.	37	0.1	-40	100		-\$14,800	-\$342,099	-\$197,309
	--- future general licensees.	30	0.1	-16	100		-\$4,800	-\$110,951	-\$63,992
72.212(b)(5)-(7)	Requires the Part 72 general licensee to perform written evaluations of three specifications prior to its use and prior to applying changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC, and to review the adequacy of site parameters in the SAR and SER of a CoC, and any changes to written evaluations: --- current general licensees.	37	5	40	100	\$740,000	-	-	-
	--- future general licensees.	30	2	8	100	\$48,000			
72.240(a)	Allows a CoC holder to apply for spent fuel storage cask renewal for a term not to exceed 40 years.	25	1	-160	100	-\$400,000	-	-	-
72.240(c)	Requires aging analyses in the Safety Analysis Report for the period of extended operation requested by: --- the CoC holder.	25	1	40	100	\$100,000	-	-	-
SUBTOTAL								-\$453,050	-\$261,301
+ one-time costs								\$362,000	\$362,000
TOTAL								-\$91,050	\$100,699

Appendix 2 continued

NRC Costs and Savings

10 CFR	Description	No. of CoC Applications (one time) or number of general licensees	No. of cask designs, or number of exemption requests per year	NRC Review Hours per Application or Exemption	Wage Rate (\$/hr)	One-time Cost or Savings	Annual Cost or Savings	Total 40 Year 3% NPV	Total 40 Year 7% NPV
Part 72									
72.42(a)	Would allow NRC review of site specific license application under 40 year term instead of 20 year term.	14		-200	100	-\$280,000			
72.212(b)(4)	Would allow a general licensee to apply CoC amendment changes to a previously loaded cask --- current general licensees	37	0.1	-40	100		-\$14,800	-\$342,099	-\$197,309
	--- future general licensees.	30	0.1	-16	100		-\$4,800	-\$110,951	-\$63,992
72.238	Would allow NRC to issue a CoC for a cask model for a term not to exceed 40 years, instead of a term of 20 years.	25	1	-200	100	-\$500,000			
	Cost to develop final rule and guidance document.					\$50,000			
SUBTOTAL								-\$453,050	-\$261,301
+ one-time costs								-\$730,000	-\$730,000
TOTAL								-\$1,183,050	-\$991,301