

POLICY ISSUE
(Information)

February 28, 2017

SECY-17-0035

FOR: The Commissioners

FROM: Victor M. McCree
Executive Director for Operations

SUBJECT: DRAFT NUREG/BR-0058, REVISION 5, "U.S. NUCLEAR
REGULATORY COMMISSION GUIDANCE ON
PERFORMING REGULATORY AND COST-BENEFIT
ANALYSES"

PURPOSE:

The purpose of this paper is to provide the Commission with a status update of the U.S. Nuclear Regulatory Commission (NRC) staff's efforts in updating the cost-benefit guidance. Specifically, the staff is (1) notifying the Commission of its intent to request public comment on the Phase 1 portion of draft NUREG/BR-0058, "U.S. Nuclear Regulatory Commission Guidance on Performing Cost-Benefit Analyses," Revision 5 (enclosed) and (2) providing the Commission with a status update of the remaining deliverables associated with Phase 2 of the guidance update. This paper does not present any new commitments or resource implications.

SUMMARY:

Phase 1 for updating the cost-benefit guidance accomplishes three objectives. First, the update restructures the NRC cost-benefit guidance—NUREG/BR-0058, Revision 4, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," issued September 2004 (Agencywide Documents Access Management System (ADAMS) Accession No. ML042820192), NUREG/BR-0184, "Regulatory Analysis Technical Evaluation Handbook," issued January 1997 (ADAMS Accession No. ML11290858), and

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NUREG-1409, "Backfitting Guidelines," issued July 1990 (ADAMS Accession No. ML032230247). Because of a recent Executive Director for Operations tasking of the Committee to Review Generic Requirements (CRGR) to review the NRC's backfitting processes and their implementation, the staff plans to keep NUREG-1409 as a stand-alone document and address any revisions to NUREG-1409 through a separate effort once the current CRGR efforts are completed. This aspect of the update also expands the discussion of the NRC's regulatory analyses, backfitting guidelines, and National Environmental Policy Act (NEPA) analyses across NRC business lines. Second, the update incorporates improvements in methods for assessing factors that are difficult to quantify and includes relevant best practices identified in Government Accountability Office (GAO)-09-3SP, "GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs," issued March 2009 and recommendations from GAO-15-98, "Nuclear Regulatory Commission: NRC Needs to Improve Its Cost Estimates by Incorporating More Best Practices," dated December 12, 2014. Third, the update incorporates NRC experience and improvements in uncertainty analysis for use in cost-benefit analysis.

Phase 1 addresses qualitative factors (Appendix A), cost estimating and best practices (Appendix B), and the treatment of uncertainty (Appendix C). During Phase 1 of the cost-benefit guidance update, and as a result of other NRC actions, the staff identified policy issues related to cost-benefit guidance that should be addressed before making Phase 2 updates. In Phase 2 of the cost-benefit guidance update, the staff will integrate its backfitting guidance activities and present potential policy issues for the Commission's consideration and direction. Examples of policy issues to be addressed in Phase 2 are summarized in outline format in the enclosed draft NUREG/BR-0058, Revision 5: backfitting procedures (Appendix J), morbidity (Appendix K), and replacement power costs (Appendix L).

BACKGROUND:

In 2011 the accident at the Fukushima Dai-ichi nuclear power plant in Japan raised questions regarding how the NRC's regulatory framework considers offsite property damage and the associated economic consequences caused by a significant radiological release from an NRC-licensed facility. In response to these questions, the staff issued SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework," dated August 14, 2012 (ADAMS Accession No. ML12173A478). In SECY-12-0110, the staff recommended enhancing the currency and consistency of the existing regulatory framework through updates to cost-benefit analysis guidance documents. This included harmonizing cost-benefit guidance across agency business lines.

In the staff requirements memorandum (SRM) in response to SECY-12-0110, dated March 20, 2013 (ADAMS Accession No. ML13079A055), the Commission approved this recommendation and directed the staff to identify potential changes to current methodologies and tools to perform cost-benefit analysis in support of regulatory, backfit, and environmental analyses. The Commission also directed the staff to provide a regulatory gap analysis before developing new cost-benefit guidance.

In response to SRM-SECY-12-0110, the staff wrote SECY-14-0002, "Plan for Updating the U.S. Nuclear Regulatory Commission's Cost-Benefit Guidance," issued January 2, 2014 (ADAMS Accession No. ML13274A519), and identified potential changes to current methodologies and tools related to performing cost-benefit analysis in support of regulatory,

backfit, and environmental analyses. The staff recommended a two-phased approach to revise the content and structure of cost-benefit guidance documents. Phase 1 begins to align regulatory guidance across business lines by restructuring and pursuing non-policy revisions to NRC cost-benefit guidance. Subsequently, Phase 2 will identify and discuss potential policy issues for Commission consideration that could affect the NRC's cost-benefit guidance and incorporate updates to guidance on backfitting.

In SRM-SECY-12-0157, "Staff Requirements—SECY-12-0157—Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and Mark II Containments," dated March 19, 2013 (ADAMS Accession No. ML13078A017), the Commission directed the NRC staff to seek detailed Commission guidance on the use of qualitative factors. In response to the SRM, the staff wrote SECY-14-0087, "Qualitative Consideration of Factors in the Development of Regulatory Analyses and Backfit Analyses," dated August 14, 2014 (ADAMS Accession No. ML14127A458). In SECY-14-0087, the staff proposed updating the cost-benefit guidance to include a set of methods that could be used for the qualitative consideration of factors within a cost-benefit analysis for regulatory and backfit analyses. In SRM-SECY-14-0087, dated March 4, 2015 (ADAMS Accession No. ML15063A568), the Commission approved the plans for updating guidance regarding qualitative factors, including the treatment of uncertainties, and directed the staff to focus the update on capturing best practices for the consideration of qualitative factors. The Commission also directed the staff to provide a toolkit for analysts to clarify how to consider and document the use of qualitative factors.

As noted above, in SRM-SECY-12-0110, the Commission directed the staff to provide a regulatory gap analysis before developing new cost-benefit guidance. In response, the staff wrote SECY-14-0143, "Regulatory Gap Analysis of the Nuclear Regulatory Commission's Cost Benefit Regulations, Guidance and Practices," dated December 16, 2014 (ADAMS Accession No. ML14280A426). In SECY-14-0143, the staff described the review of current NRC guidance, methodologies, and tools used for cost-benefit determinations. The staff also described the results of its review of the NRC regulatory analyses that had been completed and identified differences across NRC business lines (e.g., material users, fuel cycle facilities, reactors) and across the various analyses (e.g., regulatory, backfit, NEPA). The staff's gap analysis, which was provided to the Commission in SECY-14-0143, identified where additional guidance is needed to ensure consistency across the agency. The staff will continue to use the gap analysis results, as appropriate, in both phases of the cost-benefit guidance update.

The cost-benefit guidance update would also reference the revised dollar per person-rem conversion factor contained in SECY-17-0017, "Proposed Revision to NUREG-1530, Reassessment of NRC's Dollar per Person-Rem Conversion Factor Policy," dated January 30, 2017 (ADAMS Accession No. ML16147A293), if this revision is approved by the Commission.

The staff held one public meeting and one public workshop on Phase 1 of the plan for updating the cost-benefit guidance, in July 2015¹ and March 2016², respectively. Meeting participants included industry representatives, government and nongovernment organizations, and other interested parties.

DISCUSSION:

The staff has drafted the Phase 1 update to the cost-benefit guidance, as provided in the enclosure to this paper. The following are notable elements of the Phase 1 update.

- (1) Consolidating Cost-Benefit Guidance: Draft NUREG/BR-0058, Revision 5, is a restructuring of the NRC cost-benefit guidance. The draft incorporates process information contained in NUREG/BR-0184 and provides guidance for performing cost-benefit analyses across the agency. The staff has expanded the draft document to provide additional guidance for performing the NRC's materials licensee regulatory analyses, backfit analyses, and NEPA analyses. The staff will update the detailed information in a series of appendices to draft NUREG/BR-0058, Revision 5, that will be issued and controlled separately from the main document.
- (2) Improvements in Methods: Phase 1 of the cost-benefit guidance update focuses on improving methods for quantitative analyses, including the treatment of uncertainty and the development of realistic estimates of the cost of implementing proposed requirements. Draft NUREG/BR-0058, Revision 5, provides methods for assessing factors that are difficult to quantify, incorporates cost-estimating best practices, and expands on methods to quantify uncertainties. The draft document provides guidance intended to enhance clarity, transparency, and consistency of analyses for the decisionmaker.
- (3) Appendices for Draft NUREG/BR-0058, Revision 5: The staff will issue appendices containing process information from NUREG/BR-0184 during Phase 1. The NRC will issue these appendices as they are finalized to address public comments. The following are the first in a series of appendices the staff has developed in Phase 1 of the draft NUREG/BR-0058, Revision 5.
 - Appendix A, "Qualitative Factors Assessment Tools", provides guidance and best practices for use in considering intrinsic costs and benefits (i.e., qualitative factors) to improve the clarity, transparency, and consistency of the NRC's regulatory, backfit, and environmental analyses. The identification, characterization, and analysis of both monetized (e.g., measured in dollars) and qualitative (e.g., functional or non-monetized) costs and benefits are essential for the evaluation and selection of the preferred alternative.

¹ "Public Meeting to Discuss the Plan for Updating Cost-Benefit Guidance Phase 1," dated July 16, 2015 (ADAMS Accession No. ML15217A415).

² "Public Workshop on Updating the Cost-Benefit Guidance Phase 1," dated March 3, 2016 (ADAMS Accession No. ML16084A167).

- Appendix B, “Cost Estimating and Best Practices”, provides expanded guidance on incorporating cost-estimating best practices. This guidance describes methods and procedures recommended for use in preparing cost estimates. The appendix also describes practices relative to estimating life cycle costs.
- Appendix C, “The Treatment of Uncertainty”, addresses and expands on the guidance for performing uncertainty and sensitivity analyses for cost-benefit analyses. Assessing and representing uncertainties are important components in conducting the analyses for decisionmakers. Various tools can be used to assess uncertainty and sensitivity and their effects on the outcomes or results.
- Appendix D, “Guidance on Backfitting Related to ASME Codes”, provides guidance on the application of the backfit rule to American Society of Mechanical Engineers (ASME) code endorsements. The NRC periodically reviews and endorses consensus standards, such as new versions of ASME codes. Although the staff must address the regulatory actions that endorse these consensus standards in a regulatory analysis, it is usually not necessary to address the individual provisions of the consensus standards. Some aspects of these regulatory actions endorsing the consensus standards are backfits that must be addressed and justified individually.
- Appendix E, “Special Circumstances”, provides general guidance to assist the analyst in working through cost-benefit problems that are not explicitly addressed in the draft guidance. This appendix also discusses the relationship of regulatory analyses to certain statutory procedural requirements applicable to the NRC.

The staff will issue the remaining appendices in Phase 2 of the cost-benefit guidance update after resolving any related policy issues. Phase 2 will also address backfitting guidance updates that result from the CRGR tasking, including those directed by the Commission in the SRM to COMSECY-16-0020, “Revision of Guidance Concerning Consideration of Cost and Applicability of Compliance Exception to Backfit Rule,” dated November 29, 2016 (ADAMS Accession No. ML16334A462). It is also expected to provide additional guidance for regulatory decision-making—for example, discussion of adequate protection and defense in depth. Phase 2 will also address any needed guidance changes resulting from the MELCOR Accident Consequence Code System revisions outlined in SECY-12-0110, Enclosure 9, “MELCOR Accident Consequence Code System, Version 2 (MACCS2),” and SECY-14-0002.

Appendices F-L provide outlines for the Phase 2 appendices the staff is currently drafting:

- Appendix F, “Data Sources”
- Appendix G, “Historical Data”
- Appendix H, “Severe Accident Consequence Analysis”
- Appendix I, “NEPA Cost-Benefit Analysis”
- Appendix J, “Backfitting Cost-Benefit Analysis Procedures”
- Appendix K, “Morbidity”
- Appendix L, “Replacement Power Costs”

The staff intends to issue these appendices separately for public comment, as they are completed, based on the availability of staff resources. The staff has been using this revised

draft guidance in performing regulatory analyses as this guidance was developed and plans in Phase 2 of the update to explore using a graded approach for performing cost-benefit analyses. This would allow the staff to adjust the effort expended for the cost-benefit analyses to be commensurate to the safety, security, and cost of the proposed regulatory action.

COORDINATION:

The Office of the General Counsel has reviewed this package and has no legal objection to the release of these draft documents to the Advisory Committee on Reactor Safeguards (ACRS) and for public comment. The Chief Financial Officer reviewed this package and determined that there is no financial impact.

The staff discussed the draft NUREG/BR-0058, Revision 5 with the CRGR on January 10, 2017, and with the ACRS Regulatory Policies and Practices Subcommittee on February 7, 2017. The staff plans to brief the ACRS Full Committee on March 9, 2017.

The staff anticipates that the enclosed draft NUREG/BR-0058, Revision 5, will be made publicly available 10 days after the transmittal of this paper to the Commission and will formally request public comment via a *Federal Register* notice thereafter.

/RA/

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Enclosure:

- Draft NUREG/BR-0058,
Revision 5, "U.S. Nuclear Regulatory
Commission Guidance on Performing
Cost-Benefit Analyses"
- Appendix A, "Qualitative Factors Assessment Tools"
 - Appendix B, "Cost Estimating and Best Practices"
 - Appendix C, "The Treatment of Uncertainty"
 - Appendix D, "Guidance on Backfitting Related to ASME Codes"
 - Appendix E, "Special Circumstances"
 - Appendix F, "Data Sources"
 - Appendix G, "Historical Data"
 - Appendix H, "Severe Accident Consequence Analysis"
 - Appendix I, "NEPA Cost-Benefit Analysis"
 - Appendix J, "Backfitting Cost-Benefit Analysis Procedures"
 - Appendix K, "Morbidity"
 - Appendix L, "Replacement Power Costs"

SUBJECT: DRAFT NUREG/BR-0058, REVISION 5, "U.S. NUCLEAR REGULATORY COMMISSION GUIDANCE ON PERFORMING REGULATORY AND COST-BENEFIT ANALYSES," DATED FEBRUARY 28, 2017.

ADAMS Accession Nos.: Package: ML16182A034; Paper: ML16236A242;
 NUREG/BR-0058: ML16182A369; Appendix A: ML16182A371; Appendix B: ML16182A372;
 Appendix C: ML16182A376; Appendix D: ML16182A379; Appendix E: ML16182A365;
 Appendix F: ML16210A205; Appendix G: ML16210A207; Appendix H: ML16210A208;
 Appendix I: ML16210A211; Appendix J: ML16187A310; Appendix K: ML16259A062;
 Appendix L: ML16319A011

*concurrence via e-mail

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