SCOPE AND METHODOLOGY OF GAP ANALYSIS OF THE U.S. NUCLEAR REGUALTORY COMMISSION'S COST-BENEFIT PRACTICE

Purpose & Scope

The staff's regulatory gap analysis focused on U.S. Nuclear Regulatory Commission (NRC) regulations, guidance, methodologies, and tools used for cost-benefit determinations to identify any differences across NRC business lines (e.g., material users, fuel cycle facilities, reactors) and across analyses (i.e., regulatory, backfitting, and National Environmental Policy Act (NEPA) analyses). Goals for this analysis included:

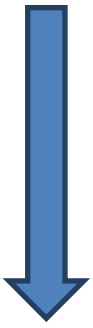
1. Identifying similarities and differences in cost-benefit practices across the agency
   a. differences across NRC business lines and programs
   b. differences in analyses (i.e., regulatory, backfitting, and NEPA environmental)
2. Determining if differences are justified.
3. Identifying where additional guidance may be needed to ensure consistency across the agency.

The scope of this analysis was limited to NRC cost-benefit practices for regulatory actions and is illustrated in the following table[1]:

Figure 1

NRC Business lines and programs[2]	**Regulatory Analyses**	**Backfit Analyses**	**NEPA Analyses**
Operating Reactors	For each cell: • Regulatory Requirements • Guidance • Practice		
New Reactors			
Materials			
Fuel Cycle Facilities			
Emergency Preparedness			
Security			

Differences across business lines and programs



Differences across cost-benefit analyses

[1] Enclosure 2 provides a completed version of this table.
[2] SRM-SECY-12-0110 provided a list of business lines for the gap analysis.

Methodology & Schedule

The NRC cost-benefit working group performed the analysis, and the cost-benefit steering committee, comprised of agency-wide division management, provided overall guidance. The analysis consisted of the following items, each of which is explained more fully in the subsections below:

- **Questionnaires:** Agency subject matter experts responded to questions regarding cost-benefit practices for the individual cells in Figure 1.

- **Workshops:** The staff conducted a series of half-day internal workshops during which participants walked through example cost-benefit analyses and compared practices. The workshops were arranged by analysis-type (e.g., regulatory analyses, backfitting, NEPA analyses).

- **Literature review:** The staff performed a literature review of past NRC cost-benefit analyses, SECY papers and staff requirements memorandums, Fukushima lessons learned, and previous feedback from the Advisory Committee on Reactor Safeguards.

Once the questionnaires, workshops, and literature review were completed, the cost-benefit working group consolidated the information and determined key messages.

Questionnaires

The objectives of the questionnaires were to establish baseline information on NRC cost-benefit practices and facilitate the internal workshop series. Agency subject matter experts provided responses on the following topics:

- Regulatory Analysis for Materials
- Regulatory Analysis for Fuel Cycle Facilities
- Regulatory Analysis for Operating Reactors
- NEPA Analyses for New Reactors
- NEPA Analyses for Operating Reactors
- Security and Emergency Preparedness
- Backfit Analysis for All Business Lines Subject to a Backfit Requirement

Subject matter experts provided information on the following questions:

1. What are the regulatory requirements for performing this analysis? If there are none, provide other pertinent background information (e.g., voluntarily complying with executive orders).
2. What guidance documents are used to perform this analysis?

3. What additional guidance or information would be useful to perform this analysis?

4. Are there any known differences between this analysis and the majority of other NRC cost-benefit determinations? If so, what are these differences and are these differences justified? Identify the documents evaluated to make this determination. Are there any significant similarities?

5. What assumptions are inherent in this analysis?

6. Please provide one or more example analyses representative of this category.

Workshops

The workshops were arranged by analysis type (e.g., regulatory analyses, backfitting, NEPA analyses). Objectives of these workshops included:

- thorough walk-through of examples of cost-benefit analyses;
- identification of differences;
- identification of areas for potential future guidance;
- knowledge management and transfer.

The workshops consisted of roundtable discussions to establish an understanding of practices and identify any differences. The scope included the following topics:

- overall process
- for each attribute:
  - What is the data source?
  - What are the assumptions?
  - What degree of qualitative consideration is typically used to evaluate?

Literature Review

Below is a list of documents considered in this analysis. These documents have formed the basis for regulatory analysis guidance within the NRC.

Document Identifier	Document Title
Policy Issues	
SECY-97-117	Final Policy Statement on Restructuring and Economic Deregulation of the Electric Utility Industry
Industry Initiatives	
SECY-97-303	The Role of Industry (DSI-13) and Use of Industry Initiatives
SECY-99-063	The Use by Industry of Voluntary Initiatives in the Regulatory Process
SECY-99-178	Treatment of Voluntary Initiatives in Regulatory Analyses
SECY-00-0116	Industry Initiatives in the Regulatory Process

Document Identifier	Document Title
SECY-13-0132	U.S. Nuclear Regulatory Commission Staff Recommendation for the Disposition of Recommendation 1 of the Near-Term Task Force Report
Cost Estimating	
SECY-96-089	Comparison of Costs of Generic Requirements Estimated by the NRC with Those Estimated by Industry; Staff Effort Expended on Generic Activities
SECY-97-171	Consideration of Severe Accident Risk in NRC Regulatory Decisions
SECY-99-169	Treatment of Averted Onsite Costs in Regulatory Analyses
SECY-02-0225	Proposed Criteria for the Treatment of Individual Requirements in a Regulatory Analysis
SECY-04-0045	Final Criteria for the Treatment of Individual Requirements in a Regulatory Analysis
SECY-11-0032	Consideration of the Cumulative Effects of Regulation in the Rulemaking Process
SECY-12-0137	Implementation of the Cumulative Effects of Regulation Process Changes
SECY-14-0002	Plan for Updating the U.S. Nuclear Regulatory Commission's Cost-Benefit Guidance
SECY-14-0087	Qualitative Consideration of Factors in the Development of Regulatory Analyses and Backfit Analyses
Safety Goals	
SECY-97-208	Elevation of the Core Damage Frequency Objective to a Fundamental Commission Safety Goal
SECY-98-101	Modifications to the Safety Goal Policy Statement
SECY-99-191	Modifications to the Safety Goal Policy Statement
SECY-13-0029	History of the Use and Consideration of the Large Release Frequency Metric by the U.S. Nuclear Regulatory Commission
Offsite Consequences	
SECY-12-0110	Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission’s Regulatory Framework
Backfitting	
SRM-SECY-93-086	Backfitting Considerations

NUREG Identifier	NUREG Title
Uncertainty	
NUREG-1855, Rev. 1	Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making
Emergency Preparedness	
NUREG/CR-6864	Identification and Analysis of Factors Affecting Emergency Evacuations
Dollar per person-rem conversion factor	
NUREG-1530	Reassessment of NRC’s Dollar Per Person-Rem Conversion Factor Policy

NUREG Identifier	NUREG Title
Cost Estimating	
NUREG/CR-4627, Rev. 2	NRC Labor Rates in the Generic Cost Catalog

Other Documents and Resources

- Fukushima Nuclear Accident Analysis Report, Tokyo Electric Power Company, Inc., June 20, 2012

- Institute of Nuclear Power Operations, INPO 11-005, “Special Report on the Nuclear Accident at the Fukushima Daiichi Nuclear Power Station,” Revision 0, November 2011

- Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants, The National Academies Press, 2014