

POLICY ISSUE
(Information)

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SECY-14-0143

FOR: The Commissioners

FROM: Mark A. Satorius
Executive Director for Operations

SUBJECT: REGULATORY GAP ANALYSIS OF THE NUCLEAR REGULATORY
COMMISSION'S COST-BENEFIT REGULATIONS, GUIDANCE AND
PRACTICES

PURPOSE:

This SECY paper is in response to Staff Requirements Memorandum (SRM)-SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework," dated March 20, 2013, which directed the U.S. Nuclear Regulatory Commission (NRC) staff to provide the Commission with a regulatory gap analysis prior to developing new cost-benefit guidance for application across business lines (e.g., materials, fuel cycle facilities, or emergency preparedness). In preparing the gap analysis, the staff reviewed NRC regulations, guidance documents, and practices associated with regulatory, backfit, and National Environmental Policy Act (NEPA) cost-benefit analyses. This paper does not address any new commitments or resource implications as it is part of the staff's ongoing initiative to update cost-benefit guidance.

SUMMARY:

The staff did not identify any NRC regulations that constrained how the staff performs cost-benefit analyses, but it did identify differences in cost-benefit analysis practices across the NRC that may benefit from greater harmonization. Furthermore, in the process of conducting the gap analysis, the staff also identified cost-benefit analysis guidance enhancements for further consideration.

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The staff recognizes the value of improving the efficacy of its estimates in cost-benefit analyses and that improvement in harmonizing practices across business lines and programs can be made. Based on the analysis of cost-benefit practices within the NRC, the staff will continue to update, as appropriate, cost-benefit guidance to incorporate cost-estimating best practices. The staff will also pursue harmonization across business lines and programs. In pursuing this harmonization, the staff will consider differences represented by the diverse characteristics of the regulated entities (e.g., reactor versus materials licensees) and/or the differing purposes of the analysis (e.g., regulatory analysis versus NEPA analysis).

The update of the cost-benefit guidance uses a two-phased approach. The first phase will harmonize regulatory guidance across business lines by restructuring and pursuing non-policy revisions to NRC cost-benefit guidance. The second phase will address enhancements and potential policy issues for Commission consideration. As the current cost-benefit regulatory framework is sound, the schedule for these updates will depend on the availability of resources so that it does not affect the completion of Fukushima-related activities and other higher priority work.

BACKGROUND:

On August 14, 2012, the staff issued SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework," (Agencywide Documents Access and Management System (ADAMS) Accession Number ML12173A478) for Commission consideration. In that paper, the staff recommended enhancing the currency and consistency of the existing framework through updates to cost-benefit analysis guidance documents that would assist in harmonizing cost-benefit guidance across the agency.

In SRM-SECY-12-0110 dated March 20, 2013 (ADAMS Accession No. ML13079A055), the Commission approved the staff's recommendation and further directed the staff to "provide the Commission with a regulatory gap analysis prior to developing new guidance for application across business lines (e.g., materials, fuel cycle facilities, or emergency preparedness)." The staff prepared this Commission paper in response to that direction.

As described in SECY-14-0002, "Plan for Updating NRC's Cost-Benefit Guidance," the staff is implementing a two-phased approach to revise the NRC's cost-benefit guidance. The first phase focuses on editorial changes, incorporation of cost-estimating best practices, and administrative issues. The second phase addresses the enhancements that need further consideration prior to being included in the cost-benefit guidance. The staff used this gap analysis to identify potential enhancements, which will inform Phase II of the plan. Also, the Commission's direction in response to SECY-14-0087, "Qualitative Consideration of Factors in the Development of Regulatory Analyses and Backfit Analyses," will inform Phase II of the SECY-14-0002 plan.

DISCUSSION:

Gap Analysis Methodology

The scope of this gap analysis evaluated cost-benefit regulations, guidance, and practices across NRC business lines and regulated activities as well as across types of analyses.

Specifically, the staff reviewed cost-benefit information for materials licensees, fuel cycle facilities, reactors, emergency preparedness activities, and security actions. Additionally, the staff reviewed cost-benefit analyses conducted for regulatory analyses, backfit analyses, and NEPA analyses. Enclosure 1 provides more information on the scope of this analysis.

Goals for this gap analysis included:

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

To accomplish these goals, the staff implemented a project plan consisting of questionnaires sent to NRC subject matter experts, a literature review, and a workshop series. The staff's literature review included past cost-benefit analyses, SECY papers and SRMs, Fukushima lessons learned, and previous Advisory Committee on Reactor Safeguards (ACRS) feedback. Additionally, the staff conducted a series of internal workshops led by subject matter experts. Each workshop focused on a different type of cost-benefit analysis (i.e., regulatory analysis, backfit analyses, and NEPA analyses), and the workshop leaders were experts representing the agency's various business lines and activities. This workshop series served to both identify differences and similarities in cost-benefit practices and also served as a knowledge management tool. Furthermore, the staff conducted a review of the economic models used by various Federal and international agencies. In addition, the staff is gaining information through participation in the Organization for Economic Cooperation and Development Nuclear Energy Agency study on approaches to estimating costs of a potential nuclear accident and considered this information during this gap analysis.

Key Results of Gap Analysis

The staff did not identify any NRC regulations that constrained how the NRC staff performs cost-benefit analyses, and therefore no rulemaking is needed to enhance the NRC's cost-benefit guidance and practices. The NRC's overarching guidance documents are NUREG/BR-0058, Rev. 4, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission" (2004), NUREG/BR-0184, "Regulatory Analysis Technical Evaluation Handbook" (1997), and NUREG-1409, "Backfitting Guidelines" (1990).

The staff identified differences in cost-benefit analysis practice across the NRC. Some of these differences represented logical variations given the diverse characteristics of the regulated entities (e.g., reactor versus materials licensees) or the differing purposes of the analysis (e.g., regulatory analysis versus NEPA analysis). However, there may be a need for additional or updated guidance to harmonize across business lines and programs due to other differences. The intent to harmonize across business lines and programs is not to ensure each analysis is performed in an identical manner. Rather, the intent is to incorporate best practices to produce an accurate and realistic cost-benefit analysis, capturing appropriate costs and benefits to the extent possible and tailoring guidance or practice to the nuances of various analyses and

applications without making the analysis overly onerous or complicated. Furthermore, in the process of conducting the gap analysis, the staff also identified enhancements that may need further consideration prior to developing new guidance. These enhancements do not represent inconsistencies within the agency, but may represent a difference between NRC guidance and the current state of practice.

The staff has made the following findings:

1. Current cost-benefit regulatory framework is sound:

During the staff's review, no current NRC regulation was identified as constraining the staff from performing sufficient cost-benefit analyses or from updating and harmonizing cost-benefit guidance across business lines. The NRC regulations that pertain to cost-benefit analyses are those in 10 CFR Part 51, which concern the consideration of costs and benefits when conducting a NEPA analysis, and the various backfitting regulations. There are no regulations that require or prescribe regulatory analyses; NRC regulatory analyses arose through the Commission's decision to voluntarily comply with Executive Order (E.O.) 12866, "Regulatory Planning and Review," published in 1993 and reaffirmed, with some amendments, by successive administrations. Section 6(a)(3)(c) of E.O. 12866 directs Federal agencies to prepare and submit to the Office of Management and Budget (OMB) an assessment of the anticipated benefits and costs of proposed regulatory actions that are "significant."¹

The cost-benefit analyses conducted in support of regulatory, backfit, and NEPA analyses account for potential human health and economic consequences associated with unintended radionuclide releases. The guidance documents used by staff in various parts of the NRC to perform cost-benefit analyses are similar and refer to the same basis documents, NUREG/BR-0058, NUREG/BR-0184, and NUREG-1409. There is sufficient flexibility in the guidance to address a broad range of issues and analyses; however, there may not be enough structure to produce consistent results.

2. There are differences in cost-benefit practices within the NRC:

Cost-benefit practice includes choice of attributes, alternatives, modeling, and data assumptions. There are areas where cost-benefit practices differ, but these differences may be justified given the application and purpose of the analysis. In some instances, these differences may benefit from increased harmony across business lines and analyses and/or additional guidance. Examples of these differences are provided below. These examples are representative of the staff's findings and were not ranked based on importance and should not be construed as a comprehensive list. Enclosure 2 provides additional information on these differences and others that the staff identified as well as summary tables of the agency's cost-benefit requirements, guidance, and practices.

¹ Significant regulatory actions are those that "[h]ave an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities." E.O. 12866, sec. 3(f)(1).

Power Reactor Substantial Safety Enhancement Screen

The staff identified a difference between regulatory analyses conducted for power reactor safety enhancements and all other NRC business lines and programs. Prior to imposing a new safety or security requirement upon a power reactor licensee, the NRC must satisfy the NRC's backfit regulation for operating reactor licensees (10 CFR 50.109).² Specifically, the backfit regulation requires that the NRC demonstrate that any such requirement imposed upon an existing power reactor licensee, except in cases where the requirement is needed to ensure adequate protection or for compliance, results in a substantial increase in the overall protection of the public health and safety or the common defense and security and be cost-justified (10 CFR 50.109(a)(3)). Similar backfitting requirements apply for Parts 70, 72 and 76 licensees. Where the practice differs, however, is in the NRC guidance document for regulatory analyses, NUREG/BR-0058, Section 3, which applies the Commission's Policy Statement on Safety Goals for the Operation of Nuclear Power Plants (Safety Goals)³ to power reactor safety enhancement regulatory analyses. Thus, the staff uses the Safety Goals as a screen to determine if a substantial increase in safety exists. The guidance does not apply these reactor-centric Safety Goals to any other regulated activities subject to backfit analyses.⁴ Therefore, for these other regulated activities, the substantial increase in safety or security is qualitatively determined for the justification of the regulatory action.

Time Horizon

The staff identified a difference among business lines in the approach to the analysis timeframe of regulatory analyses. In 2003, OMB published Circular A-4, "Regulatory Guidance" to assist agencies in preparing regulatory analysis documents that meet the criteria of E.O. 12866. Circular A-4 states, "the time frame for your analysis should cover a period long enough to encompass all the important benefits and costs likely to result from the rule." NUREG/BR-0058 Section 4.3 states that costs and benefits should be estimated by year for the entire period that affected groups will be subject to the proposed regulatory action. The guidance also states that for licensed facilities, estimates should be made for the remainder of the operating license or projected useful life of the facility (i.e., extended into the license renewal period). For nuclear power reactors, the analyst assumes one license renewal and takes the average of the

² Persons holding NRC approvals under 10 CFR Part 52 would be covered by the applicable issue finality provisions of that part (e.g., 10 CFR 52.63 concerns issue finality for holders of standard design certifications).

³ See Volume 51, page 28044, of the Federal Register dated August 4, 1986, as revised, "Safety Goals for the Operation of Nuclear Power Plants, Policy Statement."

⁴ Although reactor safety goals have been established through the August 4, 1986, policy statement, the Commission's approach for safety goals for the materials and waste regulated areas is less formal. The Commission approved in the SRM for SECY-04-0182, "Status of Risk-Informed Regulation in the Office of Nuclear Material Safety and Safeguards," dated October 7, 2004, the staff's plan to continue applying risk-informed methods on materials and waste repository issues. Furthermore, the Commission stated that the staff should consider applying the risk-informed decision-making guidance, which contained the six proposed safety goals for materials and waste activities, to planned and emergent activities. The safety goals are contained in "Risk-Informed Decision Making for Nuclear Material and Waste Applications" (ADAMS Accession No. ML080720238).

remaining life of the class of plants. For materials licensees, the analyst evaluates one license term.

The NRC's licensees are a diverse group with differing license terms and renewals. Determining a common timeframe for covering all relevant benefits and costs for all NRC licensees is difficult and in many cases, may not be appropriate. However, the NRC approach may benefit from additional consistency and consideration, if practical, of representative license duration periods based on historical and projected evaluations for the specific groups of licensees affected by the regulatory action.

Sensitivity Analyses

The staff identified that the use of a sensitivity analysis should be consistently applied across business lines for regulatory analyses. Sensitivity analyses constitute a quantitative risk analysis and modeling technique used to help determine the factors that will have the most potential impact as a result of the regulatory action. Sensitivity analyses can examine the extent to which the uncertainty of each element affects the cost to achieve the regulatory objective being examined, or the risk, when all other uncertain elements are held to their baseline values. The NRC can benefit from a harmonized approach in the use of sensitivity analyses across business lines.

Quantification of Benefits

The staff identified a difference among business lines regarding the extent to which benefits are quantified in regulatory analyses. For example, security regulatory actions do not quantify the benefits because of the very large uncertainty in the frequency and consequences of security events. However, for power reactors, with the use of computer codes such as MELCOR/MACCS and the application of probabilistic risk assessment (PRA) techniques, the NRC can provide, in some cases, quantification of benefits in terms of averted consequences. Similar modeling tools and techniques for quantifying benefits are largely not available to other business lines. The staff is currently in the process of seeking Commission approval for plans to update guidance on qualitatively considering factors in regulatory analyses as stated in SECY-14-0087, "Qualitative Consideration of Factors in the Development of Regulatory Analyses and Backfit Analyses." Per SECY-14-0087, the staff proposes updating cost-benefit guidance to enhance the transparency and consistency of qualitatively considering factors in analyses as well as emphasizing the importance of a robust quantitative analysis.

Enhancements to be Considered in Future Guidance Updates

In the process of conducting the gap analysis, the staff also identified enhancements that may need further consideration prior to developing new guidance. In general, the staff recognizes the need to improve the accuracy of the agency's quantitative estimates. The importance of a robust quantitative analysis was emphasized in correspondence with the ACRS⁵ and members

⁵ <http://pbadupws.nrc.gov/docs/ML1425/ML14255A101.pdf>

of Congress. Improving guidance and practice related to quantifying the costs and benefits of a proposed regulatory action is an overarching priority for the staff and is the subject of a current staff plan as described in SECY-14-0002. The enhancements identified below may represent specific examples that the staff could address in order to improve the overall currency and accuracy of cost-benefit analyses. In this respect, the following enhancements do not represent inconsistencies within the agency, but rather general areas that may benefit from improvement. The following topics will be assessed in more detail by the staff as part of Phase II of the SECY-14-0002 plan to update NRC's cost-benefit analysis guidance. More information on these enhancements, as well as other regulatory analysis considerations that the staff identified during the gap analysis, is presented in Enclosure 3.

Treatment of Uncertainty

Some NRC regulatory analyses do not contain an analysis of uncertainties. NRC regulatory analyses may benefit from additional discussion of the uncertainty inherent in some benefit and cost estimates. For example, estimating benefits for regulatory actions concerning severe reactor accidents requires a complex chain of analyses and evaluations of cost drivers on estimates. This process includes establishing baselines for the demographics and health status of the exposed population, the release frequency and the source term for different regulatory alternatives. These are used to estimate the changes in population exposure with different protective action guidelines.

Quantifying uncertainty is an estimating best practice, which is addressed in many guides and references. The explicit identifying and quantifying of sources of uncertainty in regulatory analyses lead to better decisionmaking by providing a means to understand this uncertainty (e.g., the impact of data, assumptions, accident frequency and consequence), impact of variations within different regulatory analysis groupings (e.g., categories of licensees), and the potential range of incremental costs and benefits that result.

Use of Probabilistic Risk Assessment and Other Studies in Regulatory Analyses

PRA and other related severe accident studies can improve the fidelity of regulatory analyses and provide useful insights. In some cases efficiency can be enhanced by using PRA studies that have been previously completed. In order to do so, the analyst must be cognizant of underlying assumptions and modeling performed. For example, the historical PRA studies referenced in NRC regulatory analysis guidance documents for operating nuclear power plants are typically partial-scope PRAs for a single reference plant or a limited number of reference plants; embody modeling choices that could affect the results; and may not always reflect the current state-of-practice in PRA analysis. Severe accident and PRA research activities conducted over the last several decades have resulted in improvements to the NRC's PRA tools and could alleviate some of these limitations if incorporated into regulatory analyses. Furthermore, more recent studies such as the State of the Art Reactor Consequence Analysis (SOARCA) study, the spent fuel pool consequence study, and the Level 3 PRA project can provide insights for updating Regulatory Analysis guidance documents. Therefore, cost-benefit guidance should encourage the use of application specific analyses to the degree possible. If legacy analyses are used,

then the underlying assumptions and the effect of these assumptions should be clearly documented and understood.

Two examples of analysis choices – time truncation and distance truncation – are discussed further below.

Time Truncation

NRC cost-benefit analysis guidance documents do not currently specify or recommend a truncation time for severe reactor accident analyses because the intent is to evaluate the accident until uncontrolled radiological releases have ceased, potentially through mitigation, and an extension of the analyzed accident period would not change the results. Various accident duration periods have been used in studies performed over the years. For example, 24 hours was used for the analysis in NUREG-1150, “Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants,” circa 1990. More recently in NUREG-1935, “State-of-the-Art Reactor Consequence Analyses (SOARCA) Report,” 2012, 48 hours was used for the majority of sequences analyzed. In the Containment Protection and Release Reduction rulemaking technical bases currently under development, 72 hours is being applied. The NRC’s ongoing Site Level 3 PRA project is likely to set different truncation times dependent on the accident under consideration. The source term, and hence consequences, may be affected by the selected truncation time. Some severe accidents are projected to continue releasing radionuclides beyond 48-72 hours, unless the accident can be successfully terminated by effective mitigative actions. In practice, the description and analysis of required mitigative actions are likely to vary across cost-benefit analyses. With regard to specifying a truncation time, there is also the question of the correct reference time “zero” (i.e., the onset of core damage), or the start of the accident (e.g., station blackout).

Distance Truncation

Regulatory analyses performed by the NRC have historically considered the health and economic consequences that apply to the population and land within 50 miles of the facility. Current regulatory analysis guidance found in NUREG/BR-0058 Rev. 4 states in Section 4.3.3:

In the case of nuclear power plants, changes in public health and safety from radiation exposure and offsite property impacts should be examined over a 50-mile distance from the plant site. The appropriate distance for other types of licensed facilities should be determined on a case-by-case basis.

The staff notes, however, that the Federal guidance on cost-benefit analysis found in OMB Circular A-4, which the NRC voluntarily complies with, states that the regulatory analysis “should focus on benefits and costs that accrue to citizens and residents of the United States.” Thus, there is a question about the choice of an appropriate distance to use in regulatory analyses. Given the potential effect of distance truncation on

regulatory analysis results, the staff is considering whether the 50 mile radius should be reaffirmed or modified.

Time and distance truncation are only two modeling assumptions that may potentially change the outcome of estimates that could be applied in a subsequent cost-benefit analysis. The assumptions and inputs used in PRA studies and severe accident consequence analyses should be understood in order to determine whether they support the needs of the specific regulatory, backfitting, or environmental analysis being conducted.

As explained in NRC regulatory analysis guidance, the set of attributes listed in NUREG/BR-0184, *Regulatory Analysis Technical Evaluation Handbook*, is believed to be reasonably comprehensive for most cost-benefit analyses for NRC regulatory decisionmaking. Attribute 18, "Other Considerations," however, provides that any particular regulatory analysis "may also identify attributes unique to itself," and that any such attributes "should be appropriately described and factored into the analysis." These could include attributes that are unique to a specific nuclear power plant site or attributes of particular concern to a subset of the population. Examples of these considerations are described below.

The Consideration of Distributive Impacts and Equity in NRC Cost-Benefit Analyses

Executive Order 12866, paragraph 1(b)(5) states,

*When an agency determines that a regulation is the best available method of achieving the regulatory objective, it shall design its regulations in the most cost-effective manner to achieve the regulatory objective. In doing so, each agency shall consider incentives for innovation, consistency, predictability, the costs of enforcement and compliance (to the government, regulated entities, and the public), flexibility, **distributive impacts, and equity** [emphasis added].⁶*

Thus, issues concerning the distributive impacts of a proposed regulatory action, or the equity of a proposed regulatory action could be considered in a regulatory analysis as part of "other considerations" under Attribute 18 (see NUREG/BR-0184).

Although the NRC, as an independent agency, is not required to comply with E.O. 12866, the NRC has determined, as a matter of policy, to comply with the spirit of E.O. 12866. As such, the process of addressing other considerations, including distributive impacts and equity, needs to be better understood, explained, and/or defined in any revision of NRC's regulatory analysis cost-benefit guidance.

⁶ The terms "distributive impacts" and "equity" are not defined in E.O. 12866. While not defining either term, OMB Circular A-4 defines the term "distributional effects," which is "how both benefits and costs are distributed among sub-populations of particular concern." OMB Circular A-4, 14 (2003).

Furthermore, issues involving distributive impacts and equity could also overlap with environmental justice concerns.⁷ Office of Nuclear Reactor Regulation (NRR) Office Instruction, LIC-203, Revision 3, defines staff responsibilities for addressing environmental justice in rulemakings (see Appendix D, page D-9, Procedures for Rulemaking Activities) as follows:

Staff responsible for rulemaking should address environmental justice in the preamble to any proposed and final rules that require an Environmental Impact Statement (EIS), a supplement to an EIS, or generic EIS...If it is known in advance that a particular rulemaking might disproportionately affect a minority and/or low-income population or community, NRC staff should ensure that the population and/or community knows about the rulemaking and are given the opportunity to participate...Public comments on the environmental justice review should be addressed in the statements of consideration to the final rule when published in the Federal Register. Comments on the environmental justice review should be addressed at the same level of detail and in the same location as comments received on other parts of the rule.

In addition to the NRC's voluntary compliance with E.O. 12866, the staff notes that there is no statutory requirement to consider "distributive impacts" or "equity" in NRC regulatory analyses. In this respect, the Commission stated, in SRM-SECY-12-0110, that it "finds that economic consequences should not be treated as equivalent in regulatory character to matters of adequate protection of public health and safety." Thus, if distributive impacts or equity considerations are to be formalized as part of any update or revision to NRC cost-benefit guidance, then such update or revision will make clear that these considerations are secondary to the NRC's obligations under the Atomic Energy Act, including matters of adequate protection of public health and safety and matters of common defense and security.

The Impact of Regulatory Decisionmaking on Offsite Properties with Iconic Value

There is currently no NRC guidance on the consideration of offsite properties with iconic value (e.g., historic properties, viewsheds, and traditional cultural properties) in cost-benefit analyses for regulatory decisionmaking. The staff is not aware of any other Federal agency that considers such impacts in the regulatory analysis. The impacts of NRC licensing actions on such properties are considered in the NEPA process (which typically includes compliance with the section 106 consultation procedures of the National Historic Preservation Act), but are not factored into the cost-benefit estimates of

⁷ The term "environmental justice" is not defined in the underlying government-wide environmental justice executive order, E.O. 12898, issued on February 11, 1994 and published in the *Federal Register* on February 16, 1994 (59 FR 7629). Similarly, the NRC's environmental justice policy statement (69 FR 52040; August 24, 2004), does not define the term "environmental justice." Whether an environmental justice issue exists in relation to any proposed NRC action is a case- or site- specific determination that must consider a variety of factors (e.g., the presence of a minority and/or low-income population in the project area, whether the proposed action will have a disproportionately high and adverse health or environmental effect on such population, etc.). The NRC addresses any potential environmental justice issues through its NEPA compliance process.

the regulatory analysis.⁸ The consideration of the impact of regulatory decisionmaking on offsite properties with iconic value, including the valuation of such properties, is an issue that has been raised in public comments by at least one American Indian tribe.

Expanding regulatory analyses to include information on offsite properties with iconic value could provide information for NRC decisionmakers, members of the public, and other stakeholders to assess the potential impacts of the proposed regulatory action. Documenting these impacts in regulatory analyses (although likely qualitative or highly subjective in nature) may also provide information the NRC could use in addressing environmental justice concerns, if appropriate. Environmental impact considerations and cost-benefit can mutually interact to improve regulatory decisionmaking.

Valuing such impacts, however, would not be a trivial task. Impacts are measured by the value (importance) individuals place on the attribute (e.g., traditional cultural property) potentially affected by the proposed regulatory action. This value could be measured in terms of the individual's willingness to accept changes between the current state of the world (baseline), and the consequences of the regulatory action. As the attribute potentially affected by the regulatory action — preservation of historic or cultural properties — is not traded in markets, the monetary value of the attribute cannot be assessed.

Current NRC regulatory analyses do not require the duplicate consideration of the environmental impacts addressed in NEPA documents because, "Such an evaluation is usually handled separately from the value-impact analysis" (see NRC's *Regulatory Analysis Technical Evaluation Handbook*, NUREG/BR-0184, Section 5.5.17, Environmental Considerations, page 5.13). Given the potential impact of regulatory decisionmaking on offsite historic and cultural properties, the NRC staff is considering whether current regulatory analysis guidance should be strengthened to account for these attributes. Any consideration of such attributes, if ultimately approved, would be made in accordance with the Commission's direction in SRM-SECY-12-0110, which states that "economic consequences should not be treated as equivalent in regulatory character to matters of adequate protection of public health and safety." Thus, if the potential impacts of regulatory decisionmaking on offsite historic and cultural properties are formalized as part of any update or revision to NRC cost-benefit guidance, then such an update or revision will make clear that these considerations are secondary to the NRC's obligations under the Atomic Energy Act, including matters of adequate protection of public health and safety and matters of common defense and security.

⁸ It is important to note the different intents of NEPA analyses and regulatory analyses. The NEPA review is conducted to determine the environmental consequences (and benefits) of a proposed Federal action. Council on Environmental Quality regulations, which the NRC takes voluntary account of, state that a cost-benefit analysis "relevant to the choice among environmentally different alternatives" may be incorporated by reference or appended to the environmental review as an "aid in evaluating the environmental consequences" (40 CFR 1502.23, "Cost-Benefit Analysis"). The NRC regulation 10 CFR 51.71(d), "Draft Environmental Impact Statement – Contents," requires the consideration of the economic, technical, and other benefits and costs of the proposed action and alternatives in NRC NEPA reviews. Conversely, regulatory analyses are intended to be an integral part of the NRC's decisionmaking that systematically provides complete disclosure of the relevant information supporting a proposed regulatory action. The scope of the NEPA review and the regulatory analysis support separate and distinct decisionmaking processes and do not reveal a gap.

Impact on Critical Infrastructure

Critical infrastructure is defined by the U.S. Department of Homeland Security as “the assets, systems, and networks, whether physical or virtual, so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health and safety, or any combination thereof.”⁹ Within cost-benefit analyses for all business lines and programs, the NRC does not consider effects on critical infrastructure. A significant impact on critical infrastructure could affect the outcome of a cost-benefit analysis and more heavily weigh the benefits of preventing an unintended radiological release, and thus may be an important consideration.

Given the potential effect of these enhancements regarding uncertainty, PRA, time and distance truncation, distributive impacts and equity, iconic value, and critical infrastructure on cost-benefit analysis results, the staff plans to investigate whether these enhancements should be incorporated into the NRC’s current cost-benefit guidance, and if so, the extent to which these enhancements should be incorporated.

Path forward

Based on the analysis of cost-benefit practices within the NRC, the staff will update cost-benefit guidance, as appropriate, to harmonize across business lines and programs as discussed above. The staff recognizes that cost-benefit practices may in some cases differ among business lines and programs considering differences in risk presented by different facilities and materials. Therefore, the staff will document its rationale for dispositioning any cost-benefit practice differences in the guidance development process.

As described in SECY-14-0002, the staff is updating the cost-benefit guidance using a two-phased approach. The first phase will harmonize regulatory guidance across business lines by restructuring and pursuing non-policy revisions to NRC cost-benefit guidance. The second phase will address enhancements and potential policy issues for Commission consideration. As the current cost-benefit regulatory framework is sound, the schedule for these updates will depend on the availability of resources so that it will not affect the completion of Fukushima-related activities and other higher priority work. The staff will seek Commission guidance regarding any potential policy issues that may arise in updating the NRC’s cost-benefit guidance. As previously noted, such potential policy issues will be developed during the implementation of Phase II of the cost-benefit guidance updates. This phase will be a multi-year effort and its duration will depend on the availability of resources and priorities of other ongoing work. Further, the staff will continue to engage the ACRS during guidance development and will seek Commission approval of guidance prior to final publication.

⁹ <http://www.dhs.gov/what-critical-infrastructure>

COORDINATION:

The Office of the General Counsel has reviewed this Commission paper and has no legal objection.

Interactions with the Advisory Committee on Reactor Safeguards

The NRC staff has discussed the regulatory gap analysis of the NRC's cost-benefit practices with the ACRS in December 2014.

/RA/

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Enclosures:

1. Scope and Methodology of Gap Analysis of NRC Cost-Benefit Practice
2. Differences in Cost-Benefit Practice Within the NRC
3. Enhancements to be Considered in Future Cost-Benefit Updates

COORDINATION:

The Office of the General Counsel has reviewed this Commission paper and has no legal objection.

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Original signed by:

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Enclosures:

4. Scope and Methodology of Gap Analysis of NRC Cost-Benefit Practice
5. Differences in Cost-Benefit Practice Within the NRC
6. Enhancements to be Considered in Future Cost-Benefit Updates

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