

Comments on Revised NRC Options for Fukushima Near-Term Task Force
Recommendation 1 – Regulatory Framework

The following are specific comments on the draft document dated February 15, 2013, entitled "NRC Staff Working Group Evaluation of Alternatives for the Disposition of Recommendation 1 of the Fukushima Near-Term Task Force Report." As noted in our letter, industry does not believe that the limited benefits that would result from pursuing all of the alternatives identified in the staff's proposal warrant a separate major regulatory effort. We do, however, generally support the idea of a Commission Policy Statement, an update of the existing NRC Severe Accident Policy Statement, or other NRC guidance outlining considerations for regulatory treatment of beyond-design-basis events. We also support a more substantial effort to integrate ongoing rulemakings addressing beyond design basis and severe accident considerations. Industry appreciates NRC's efforts to clarify and focus regulatory activities associated with these types of events. Our comments below are organized by the "potential improvement activities" identified by the staff.

Potential Improvement Activity 1: Establish new category of beyond-design-basis (BDB) events and associated regulatory requirements

1. Need for creation of new regulatory categories of BDB events, either generically or plant-specifically:
Creation of a new category of regulations beyond the current design basis is not necessary to address new information, as NRC has demonstrated the capability to invoke new requirements on the basis of either adequate protection or cost justified regulatory analysis. The latter is accomplished through the NRC Regulatory Analysis Guidelines, NUREG /BR-0058, Revision 4. This document provides a structured risk-informed approach, derived from the NRC Safety Goal Policy Statement and consistent with other regulatory applications of quantitative and qualitative decisionmaking. The regulatory analysis is performed to support rules, orders, bulletins, generic letters, regulatory guides, standard review plans, and standard technical specifications. It is also used to support plant specific backfitting pursuant to the provisions of 10 CFR 50.109. This analysis does not differentiate between design basis and beyond design basis when considering the safety benefit of proposed regulatory actions, and has been successfully used to implement a number of beyond design basis regulatory requirements, including the anticipated transients without scram (ATWS) rulemaking, 10 CFR 50.62, and the Station Blackout Rule, 10 CFR 50.63. We support consistent and rigorous application of the NRC Regulatory Analysis Guidelines as the solution to any perceived concerns with lack of transparency or objectivity in the framework.

There might be some value if the NRC were to provide additional clarity on its position on the use of qualitative factors to determine the benefits of new regulatory initiatives. The NRC has traditionally used qualitative factors in matters that were not readily amenable to the use of quantitative factors, such as for security and emergency preparedness. If the NRC intends to depart from this practice in the future and use qualitative factors for matters that are quantifiable, it should develop clear criteria and guidance for the circumstances under which those factors can be used in addition to quantifiable factors. We believe the staff may already be evaluating this pursuant to direction given to it by the Commission in the Staff Requirements Memorandum for SECY-12-0157, "Consideration of Additional

Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and II Containments.”

We would note that the existing regulatory analysis guidelines address economic consequences as part of their consideration. The guidelines are under review relative to the appropriate consideration of economic consequences, and that this issue will be dispositioned separately. Here, again, the Commission has recently given direction. On March 20, 2013, the Commission issued a Staff Requirements Memorandum for SECY-12-0110, “Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission Regulatory Framework”

Finally, NRC always reserves the authority under any present or future framework to invoke adequate protection as the basis for regulatory action, without regard to cost benefit analysis. The Atomic Energy Act does not define adequate protection, and the NRC has historically declined to precisely define or quantify it. This approach has been upheld in numerous court decisions. Therefore, a proposed new framework could not reasonably be expected to significantly improve predictability with respect to decisions on how much protection of the public health and safety is adequate.

2. Underestimation of transition costs for prospective and retrospective revised frameworks: The NRC draft paper provides a preliminary draft regulatory analysis containing estimates of costs to implement a new framework. We believe these costs are significantly underestimated, whether the framework is applied retrospectively or prospectively. Transition costs would far exceed PRA development and maintenance, which themselves are underestimated. Resource impact would be further compounded by challenges involved with not only the development, but with the transition to, licensing and implementation of this framework for currently operating plants. Our current experience with transitioning regulatory frameworks, such as 10 CFR 50.48(c) (NFPA 805 fire protection) suggests the scope of complexities involved. Resources to implement NFPA 805 have already exceeded estimates by a factor of five, and implementation has lagged many years behind expectations, with only two plants yet approved. This represents a microcosm of what could be expected with retrospective application of a new framework.

Though it may seem attractive to retrospectively look at existing requirements through a new BDB process lens, this course could add significant regulatory burden without attendant safety benefits. A retrospective review would have a number of procedural and licensing implications that need to be considered before embarking on this process. For instance, changes to a licensee’s licensing basis based on a retrospective review would likely require a number of extensive license amendment and/or exemption requests along with the associated NRC reviews.

3. Adequate protection and consideration of beyond-design-basis events: The NRC proposal questions whether the new “beyond design basis” category could be considered necessary for adequate protection. We strongly recommend that the NRC not categorically and generically consider BDB events to be “necessary for adequate protection.” At the outset, it is not clear how it would be possible to decide in advance whether all possible events that might fall into BDB are necessary for adequate protection. Even if this were possible, categorically considering these events to be necessary for adequate protection seriously undermines the credibility of the regulatory process because it would

effectively exempt the NRC from ever doing a meaningful assessment of the costs and benefits of any proposed BDB-focused requirements in the future. A meaningful analysis of benefits and costs is an important regulatory tool that can ensure that a new proposed requirement is properly scoped and contains the appropriate set of requirements. Placing the adequate protection label on an entire category of events that are not part of the design basis would unjustifiably deprive the agency of the ability to do a complete, transparent analysis.

4. **Regulatory treatment of BDB and severe accident issues:** Following the accident at Fukushima, a number of significant regulatory actions are now underway that address considerations beyond the current design basis, up to and including severe accidents involving degraded cores. There are currently no regulations that specifically address severe accident mitigation considerations. Severe accidents are low probability events and most of the existing body of Part 50 is aimed at prevention of severe accidents. Mitigation measures for severe accidents should be regulated with the following principles in mind:
 - a) The degree of regulatory treatment should be commensurate with the risk significance. Severe accidents are low probability events.
 - b) Emphasis should continue to be on prevention, and licensee activities in this regard should not be overly diluted with severe accident mitigation expectations
 - c) Severe accident phenomenology and mitigation is by nature less certain than design basis
 - d) Existing Part 50 plants are designed with multiple layers of safety to prevent severe accidents, rather than to mitigate given their occurrence
 - e) Requirements for testing, design, performance criteria, redundancy, configuration control, operator actions, etc. should recognize the distinction between design basis, BDB, and severe accidents
5. **Current BDB, severe accident rulemakings:** NRC is undertaking three new rulemakings addressing aspects of BDB and severe accidents. These activities require careful integration and consistency of regulatory approach. Given this substantial current activity, there exists an immediate need to better define the regulatory treatment expectations for BDB and severe accidents. As such, it is not reasonable to hold up these activities while waiting for a wholesale restructuring of the regulatory framework and redefinition of beyond-design-basis events. This would be realistically achievable only as a very long term proposition, and more timely guidance is needed to be successful in these rulemaking efforts. Given that there is a current need for better definition of important regulatory matters concerning treatment of beyond-design-basis issues, we believe the most effective and timely action would be for the Commission to issue a policy statement or for the agency to issue guidance addressing expectations with respect to the treatment of beyond-design-basis events. The existing NRC Severe Accident Policy Statement, issued on August 8, 1985, is 28 years old and does not reflect considerable advances made since that era, including the development of the Safety Goal and PRA Policy Statements. This policy statement could be amended to address these issues or, alternatively, a new policy statement could be developed.

There are three current or planned rulemaking activities that will involve regulatory requirements in the context of severe accidents: Station Blackout Mitigation Strategies (FLEX) (NTTF Recommendations 4 and 7); Onsite Emergency Response Capabilities (SAMG) (NTTF Recommendation 8); and Filtering Strategies Rulemaking (Response to SRM-SECY-12-0157, "Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark 1 and Mark II Containments."). All of these rulemaking activities to some extent involve questions about the treatment of beyond-design-basis events from a regulatory perspective, and as such, would greatly benefit from near-term guidance on the appropriate set of treatment requirements. Those questions about treatment are pervasive, and include questions about design, scope and depth of analysis, engineering basis, change control management, maintenance, testing, quality assurance, human performance, training, multi-unit impacts, automatic versus manual actuation, and oversight and inspection. A clear NRC policy on regulatory treatment of beyond design basis-related requirements would avoid the possibility of treating these matters as if they were design-basis, safety-related requirements that were required for adequate protection.

Potential Improvement Activity 2: Establish a decision-making process and criteria for considering defense-in-depth, risk and safety margins

The NRC draft paper proposes a potential improvement activity involving revising regulatory analysis and backfit guidelines to include defense-in-depth and safety margins as "fundamental decision criteria." The existing regulatory analysis and backfitting guidance use reduction in core damage frequency (CDF) and the conditional probability of early containment failure or bypass (CPCFB) as metrics to guide decisions on whether a proposed safety enhancement will result in a substantial increase in safety and, thus, whether further analysis of the proposed enhancement is warranted. Although not useful for enhancements that are completely focused on mitigation of accidents resulting in core damage (i.e., reduction in CDF = 0), use of CDF and CPCFB achieves "a measure of balance" between enhancements aimed at accident prevention (i.e., CDF) and enhancements aimed at accident mitigation (i.e., CPCFB). Incorporating CPCFB furthers the traditional defense-in-depth philosophy by incorporating accident mitigation into the safety goal evaluation process, which is mainly focused on accident prevention. More fundamentally, application of the "Safety Goal Screening Criteria" described in NUREG-0058 helps to define how much defense-in-depth is enough by providing an objective, quantitative criteria for determining whether a proposed enhancement warrants further examination. Thus, it seems that the defense-in-depth philosophy is already incorporated into the NRC's regulatory analysis and backfit guidance. While it may be possible to revise existing processes to provide quantitative methods for evaluating proposed enhancements that are focused solely on accident mitigation or to facilitate consistent consideration of qualitative factors, revisions to make defense-in-depth a "fundamental decision criteria" seems to ignore how the current guidance already incorporates – and helps to meaningfully bound – the defense-in-depth philosophy.

Potential Improvement Activity 3: Clarify the Role of Voluntary Initiatives in the NRC Regulatory Process

Industry does not believe a regulatory footprint on industry initiatives is appropriate or necessary. Regulatory initiatives become voluntary because the NRC has determined that they do not rise to the level that warrants regulatory oversight. There are varying reasons for this, but they include a determination that the identified problem poses no threat to the public health and safety, or that the NRC's legal authority to regulate the issue is questionable. If the issue addressed by a voluntary initiative constituted a legitimate risk to the public health and safety, the NRC can and would establish mandatory, legally-binding requirements to ensure that the public was adequately protected. Establishing a formal oversight process to inspect licensee implementation of voluntary initiatives runs the very real risk that these voluntary safety improvements will be converted into mandatory requirements. Additionally, the incentive for licensees to voluntarily pursue and implement safety enhancements would be significantly reduced or eliminated if the NRC were to impose a regulatory footprint on these activities. Finally, the NRC has not identified any systematic, industry-wide problem in the draft paper that suggests that the industry is as a whole not following through on its commitments to implement these voluntary safety enhancements. Of course, even without a formalized program, the NRC always reserves the ability, if it identifies a genuine safety issue with implementation of a voluntary initiative, to promulgate requirements as appropriate in accordance with their existing regulatory processes.