
**Environmental Assessment Supporting the
Mitigation of Beyond-Design-Basis Events Final Rule**

**U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation**

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UNITED STATES NUCLEAR REGULATORY COMMISSION
ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) is amending its regulations to require mitigation strategies for beyond-design-basis events at nuclear power plants (NPPs). The Mitigation of Beyond-Design-Basis Events (MBDBE) rule (1) makes generically applicable the requirements in Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12054A736), and Order EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation" (ADAMS Accession No. ML12056A044), (2) establishes requirements for documentation of changes; and (3) addresses a number of petitions for rulemaking (PRMs) submitted following the March 2011 Fukushima Dai-ichi event.

The MBDBE rulemaking amends Sections IV and VI of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," 10 CFR 50.34; and 10 CFR 52.80. The rule adds new 10 CFR 50.155 to 10 CFR Part 50. Finally, the rulemaking makes conforming changes to sections of 10 CFR Part 50 and 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," to consolidate onsite emergency response procedures and to include new application requirements. The conforming changes would delete 10 CFR 50.54(hh)(2), move the current requirements in 10 CFR 50.54(hh)(2) to 10 CFR 50.155(b)(2), and renumber the remaining

requirements under 10 CFR 50.54(hh). Conforming changes would also update the references in 10 CFR 50.34(i) and 10 CFR 52.80(d) to reflect the new requirements in 10 CFR 50.155.

Historical Background and Overview:

As discussed in Section II of the MBDBE *Federal Register* (FR) notice, the NRC has undertaken numerous regulatory actions following the Fukushima event. These actions included the efforts of the Near-Term Task Force (NTTF) and the development of the associated NTTF recommendations; the NRC's response to the task force report, both to identify actions to be taken in the near term and to prioritize the NTTF recommendations; issuance of regulatory actions, including orders and requests for information under 10 CFR 50.54(f); and, finally, efforts to undertake two rulemakings. The regulatory efforts to address lessons learned from the Fukushima event have evolved over time. Several interactions with the Commission led to a consolidation of the two separate rulemaking efforts into this MBDBE rulemaking. Section I of the MBDBE FR notice discusses the consolidation of the regulatory efforts and the scope of the MBDBE rule as it relates to the original NTTF recommendations.

RULE AMENDMENTS

Amendments to Existing Sections:

The following existing sections in 10 CFR Part 50 would be amended as a result of the MBDBE rule:

- 10 CFR Part 50, Appendix E, Section IV, "Content of Emergency Plans"
- 10 CFR Part 50, Appendix E, Section VI, "Emergency Response Data System"

The amendments also add a new section to 10 CFR Part 50:

- 10 CFR 50.155, “Mitigation of beyond-design-basis events”

Conforming Changes:

The MBDBE rule makes conforming changes to consolidate onsite emergency response procedures for the mitigation of beyond-design-basis events into the following sections:

- 10 CFR 50.54(hh)(1), 10 CFR 50.54(hh)(2), and 10 CFR 50.54(hh)(3) would be revised to relocate 10 CFR 50.54(hh)(2) to 10 CFR 50.155(b)(2), while 10 CFR 50.54(hh)(3) would be renumbered.
- 10 CFR 50.8(b) would be revised to include “50.155” sequentially.
- 10 CFR 50.34(i) would be revised to include the application requirements of 10 CFR 50.155.
- 10 CFR 52.80(d) would be revised to include the application requirements of 10 CFR 50.155.

ENVIRONMENTAL ASSESSMENT

Identification of the Action:

The regulatory objectives of the MBDBE rule are as follows:

1. Make the requirements in Order EA-12-049 and Order EA-12-051 generically applicable.

The rule incorporates the requirements in Order EA-12-049 and Order EA-12-051 into the NRC’s regulations so that they apply to all future NPP license applicants and provide greater regulatory clarity and stability for operating reactors. Future licensees would not need to be subject to facility-specific orders on these topics. In the absence of a rule, these requirements

would need to be implemented for new reactor sites through orders or license conditions (as has been done for all combined licenses issued to date). As part of the rulemaking process, the NRC considered external stakeholder comments on the proposed MBDBE rule (80 FR 70609) and lessons learned from the implementation of the orders, including feedback that enables an evaluation of unintended consequences or challenges associated with the implementation of the mitigation strategies, as directed by the Commission in “Staff Requirements—Briefing on the Status of Lessons Learned from the Fukushima Dai-ichi Accident,” issued August 2012 (ADAMS Accession No. ML122400033). The MBDBE rule enables the NRC to make the order requirements generically applicable while making adjustments to account for lessons learned from implementing the orders. These adjustments result in more effective regulation and supporting regulatory guidance. The MBDBE rule contains provisions in 10 CFR 50.155(h) that withdraw Order EA-12-049 and Order EA-12-051 and facilitate removal of license conditions for which the MBDBE rule will now provide the governing requirements.

2. Establish requirements for documentation of changes.

An objective of the MBDBE rule is to establish requirements for the documentation of changes. These requirements are in 10 CFR 50.155(f).

3. Address PRMs submitted following the March 2011 Fukushima Dai-ichi event.

An objective of the MBDBE rule is to address the five PRMs filed by the Natural Resources Defense Council that raise issues that pertain to the technical objectives of this rulemaking. The petitions rely solely on the NTTF Report, which was an enclosure to SECY-11-0093, “Near-Term Report and Recommendations for Agency Actions Following the Events in Japan” (ADAMS Accession No. ML11186A950), and request that the NRC undertake rulemaking in a number of areas that are addressed by this rule. This MBDBE rule also

addresses, in part, PRM 50-96 (ADAMS Accession No. ML110750145) submitted by Mr. Thomas Popik, which requested that the NRC amend its regulations to require facilities licensed by the NRC to assure long-term cooling and unattended water makeup of spent fuel pools in the event of geomagnetic storms caused by solar storms resulting in long-term losses of power.

To achieve these objectives, the MBDBE rule amends 10 CFR Part 50 and 10 CFR Part 52 to require other strategies and guidelines that provide additional capabilities for responding to beyond-design-basis events.

The Need for the Action:

The regulatory action stems from several NNTF recommendations, which emphasized the need to establish mitigation strategies for beyond-design-basis events and enhance and streamline onsite emergency response capabilities, such as extensive damage mitigation guidelines and EOPs, while building upon lessons learned from the events at the Fukushima Dai-ichi NPP. The MBDBE rule contains a number of requirements that the NRC has determined are necessary for adequate protection of public health and safety and that, in turn, protect the environment. In addition, the NRC is taking this action to accomplish the objectives stated in the previous section.

Environmental Impacts of the Action:

This environmental assessment focuses on the following provisions of the MBDBE rule that the NRC concludes could have potential environmental impacts:

Regulations in 10 CFR 50.155(b)(1) including the supporting provision in 10 CFR 50.155(c)(2) require strategies and guidelines to mitigate beyond-design-basis external events. This includes requirements for the reasonable protection of the equipment used for the

mitigation strategies. Implementation of the requirements of these sections results in the establishment of additional onsite and offsite facilities, which have the potential to affect the environment, both during and after construction. Sites need to build new structures to house onsite equipment so that it is reasonably protected from the effects of severe natural phenomena. In addition, two new offsite facilities—one in Phoenix, AZ, and another in Memphis, TN—have been established to house equipment and replacement parts that can be deployed to any plant in the United States in case of an emergency. Any new construction might affect public health as well as ecosystem health (e.g., changes in land use, air pollution, and water quality). Buildings that are already constructed also may have an environmental impact because of the resources required to maintain them.

The NRC has concluded that there will be no significant radiological environmental impacts associated with implementing the MBDBE rule for the following two reasons:

- (1) The strategies to mitigate beyond-design-basis events do not result in changes to the design-basis requirements for the structures, systems, and components (SSCs) in affected licensees' facilities that function to limit the release of radiological effluents during and following postulated accidents. Therefore, all SSCs associated with limiting the releases of offsite radiological effluents continue to be able to perform their functions, and as a result, there is no significant radiological effluent impact.
- (2) The implementation of the MBDBE rulemaking does not affect the standards and requirements applicable to radiological releases and effluents. The principal effect of this action would be to make requirements that have already been imposed by order (i.e., EA-12-049 and EA-12-051) generically applicable to strengthen capabilities for mitigating beyond-design-basis events. This increased capability to mitigate such events should contribute to reducing the potential radiological impacts of such events.

As none of the revisions affect current occupational exposure requirements, the NRC concludes that this action has no significant impact on occupational exposure.

The action would neither significantly increase the probability or consequences of design-basis accidents nor result in changes in the types of effluents that may be released offsite. Instead, as noted above, these requirements should reduce the consequences of events that exceed the design basis. As a result, there would be no significant increase in occupational or public radiation exposure.

With regard to potential nonradiological impacts, implementation of the rule would not have a significant impact on the environment. The MBDBE rule requirements drawn from Order EA-12-049, specifically 10 CFR 50.155(b) and (c), have resulted in some sites building additional storage facilities or staging additional equipment on site and off site. Any impacts or disturbances to land caused by the construction or modification of facilities are minimal. The NRC has previously determined that the requirements in Order EA-12-049 provide a mitigation capability, consistent with the overall defense-in-depth philosophy, and thereby provide assurance that the challenges posed by beyond-design-basis external events to power reactors do not pose an undue risk to public health and safety. These requirements are needed to provide reasonable assurance of adequate protection of public health and safety. In addition, the environmental impacts resulting from 10 CFR 50.155(b) and (c) have been incurred regardless of the MBDBE rule, because the construction of onsite storage facilities and the two Regional Response Centers have been completed to meet the requirements of Order EA-12-049. The environmental impacts resulting from 10 CFR 50.155(b)(2) were previously incurred as a result of Order EA-02-026. The MBDBE rule may lead to future environmental impacts should the NRC license any new reactors that are not currently subject to Order EA-12-049. While there may be additional environmental impacts that occur under the MBDBE rule, beyond those that have already occurred due to the implementation of

Order EA-12-049, they are uncertain, and attempts to estimate such impacts are speculative at this time. Any potential environmental impacts from licensing a new reactor will be addressed in the NRC's environmental review of that license application.

Accordingly, the NRC concludes that there would be no significant environmental impact associated with the proposed action.

Alternatives to the Action:

The NRC considered a number of nonrulemaking approaches to achieve its objectives, including issuance of a generic communication, revision of regulatory guidance documents, clarification of inspection modules, revision of enforcement guidance, and issuance of orders. However, these regulatory alternatives are generally less effective, because nonrulemaking approaches cannot generically impose new regulatory requirements upon all current and future licensees. As a result, these alternatives cannot achieve the NRC's objectives.

Alternative Use of Resources:

The MBDBE rule does not involve the use of resources not previously considered by the NRC in past environmental statements for issuance of operating licenses for the facilities that are affected by this action. With regard to the onsite storage of equipment that results from licensees' compliance with 10 CFR 50.155(b) and (c), the NRC has already considered the impacts to onsite resources affected by this rule, as land has already been disturbed by the development of NPPs. The NRC has determined that there are no irreversible commitments of resources associated with the offsite storage of equipment.

Agencies and Persons Consulted:

The NRC staff developed the rule and this environmental assessment. In accordance with its stated policy, the NRC staff provided a copy of the proposed rule to designated liaison officials for each State. No other agencies were consulted.

FINDING OF NO SIGNIFICANT IMPACT

Based on the environmental assessment, the NRC concludes that the action would not have a significant effect on the quality of the human environment, and an environmental impact statement is not required. Thus, the NRC has determined not to prepare an environmental impact statement for this action.

Documents may be examined and copied, for a fee, at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD 20852. Publicly available records will be accessible electronically from the ADAMS Public Library component on the NRC Web site <http://www.nrc.gov> (Electronic Reading Room).