

# **REGULATORY ANALYSIS**

## **REGULATORY GUIDE (RG) 4.26 VOLCANIC HAZARDS ASSESSMENT FOR PROPOSED NUCLEAR POWER REACTOR SITES**

(Proposed Revision 1 of RG 4.26 issued June 2021)

### **1. Introduction**

This document presents the results of a regulatory analysis of the U.S. Nuclear Regulatory Commission's (NRC's) determination of whether to revise RG 4.26 "Volcanic Hazards Assessment for Proposed Nuclear Power Reactor Sites."

#### **Statement of the Problem**

The NRC issued Revision 0 of Regulatory Guide (RG) 4.26 in June 2021 to provide guidance for complying with the General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena," 10 CFR 52.17(a)(1)(vi) and 10 CFR 52.79(a)(1)(iii) and 10 CFR Part 100, Reactor site criteria as it related to considering the most severe natural phenomena and geologic features, such as volcanic hazards, that may affect a proposed site. The guide describes methods acceptable for performing a volcanic hazards assessment for new nuclear reactor sites.

Recently it was noted that there was an administrative error in the text and subheadings of the guidance in Section C "Staff Regulatory Guidance." In the discussion of Step 4: Evaluate Eruption Potential and/or Hazard Potential, two paragraphs and two bullet points discussing model support are missing, despite their inclusion in the draft guide for public comment and subsequent draft presented to the ACRS in spring 2021. The subheading for the following section, Step 5: Develop Risk Insights, is also omitted. The omitted text was initially included in the draft guide issued for public comment, and in subsequent drafts addressing public comments that were circulated internally and to the Advisory Committee on Reactor Safeguards. This error needs to be corrected. This change would clarify Section C, especially as it relates to developing model support as part of Step 4.

#### **Objective**

The objective of this regulatory action is to assess the need to update NRC guidance on the consideration of volcanic hazards in the siting of new nuclear power reactors to include clarifying text that was included in the draft guide but through a clerical error was removed before the publication of Revision 0 of the RG.

#### **Identification and Analysis of Alternative Approaches**

The NRC staff considered the following alternative approaches for providing NRC guidance on acceptable methods and procedures for assessing volcanic features that may affect new nuclear power reactors:

1. Do not revise Regulatory Guide 4.26.
2. Withdraw Regulatory Guide 4.26.

### 3. Revise Regulatory Guide 4.26.

#### Alternative 1: Do Not Revise Regulatory Guide 4.26

Under this alternative, the NRC would not revise this guidance, and applicants would continue to use the present version of this regulatory guide. This is considered the “No Action” alternative. If NRC takes no action, there would be no cost to NRC in revising the guide. However, the “no-action” alternative would not address the issue of missing text explaining model support in Step 4 and restoring the heading in Step 5 within Section C, “Staff Regulatory Guidance.” This has resulted in one inquiry from a stakeholder.

#### Alternative 2: Withdraw Regulatory Guide 4.26

Withdrawing this regulatory guide would eliminate the guidance regarding volcanic hazards assessments for new nuclear reactor sites. Applicants would be impacted by a withdrawal by having to propose and justify methods and procedures for the determination of volcanic hazards at proposed new nuclear reactor sites. NRC staff would be impacted by being required to review the alternate methods and procedures and the review may result in an increase in the number of Requests for Additional Information (RAIs) which could extend the length of an application review. Applicants would be burdened by the effort required to respond to the RAIs. Additionally, the guidance in RG 4.26 is currently in use for three different projects which could be impacted by the withdrawal of the guidance.

#### Alternative 3: Revise Regulatory Guide 4.26

Under this alternative, the NRC would revise Regulatory Guide 4.26 to restore the model support text in Step 4 of Section C, “Staff Regulatory Guidance” and the subheading for Step 5. The value to NRC staff and applicants in revising the guide would be the benefits associated with correcting what is a modest error to preclude further inquiries from stakeholders. The impact on the NRC would be the costs associated with preparing and issuing the regulatory guide which will be modest in this case. In addition, Alternative 3 supports NRC’s strategic goal of inspiring stakeholder confidence.

### **Comparison of Alternatives**

The three alternatives were compared against each other with respect to safety, as well as NRC and applicant resources.

Alternative 1, the “no action option,” would not result in unsafe conditions as the restoration of the omitted text would not change the regulatory positions. The only cost is in responding to future inquiries, since the restored text provides additional clarification on model support from the draft guide that is not currently included in the final guidance. The withdrawal of formal NRC guidance (Alternative 2) does not necessarily represent unsafe results since applicants/licenseses would either continue to use existing methods with which they are familiar and have not proven unsafe, or they may even adopt methods more recent than those found in the previous revisions of the RG. Alternative 3 would be superior to Alternative 1 and possibly 2 in that it would update the RG to restore the omitted text and correct the numbering in Section C, “Staff Regulatory Guidance.” It has an additional key benefit in that it supports one of NRC’s 3 strategic goals whereas both Alternatives 1 and 2 run counter to it.

With regard to NRC resources, Alternative 3 represents the greatest initial cost to the NRC, which is attributable to the modest cost associated with preparing and issuing a revised regulatory guide. When considered over the lifetime of the RG and the potential for expenditures the overall cost to NRC as well as applicants/licensees of Alternative 3 is anticipated to be closer to or less than the overall cost of Alternatives 1 or 2.

### **Decision Rationale**

Based on this regulatory analysis, the NRC staff concludes that revision of Regulatory Guide 4.26 is warranted. The proposed action will enhance an applicant's ability to prepare submittals to NRC. An updated guide will reduce staff review time and the need for requests for additional information thus reducing costs to applicants and the NRC. The cost to NRC in revising the RG and any cost to applicants in adapting to a corrected RG are deemed to be less than the benefits accrued by reducing the need for RAIs or clarification calls.