

POLICY ISSUE
NOTATION VOTE

RESPONSE SHEET

TO: Brooke P. Clark, Secretary
FROM: Chairman Hanson
SUBJECT: SECY-20-0045: Population Related Siting
Considerations for Advanced Reactors

Approved Disapproved Abstain Not Participating

COMMENTS: Below Attached None

Entered in STARS

Yes
No

SIGNATURE
Christopher T. Hanson

DATE 06/24/2022

Chairman Hanson's Comments on SECY-20-0045, "Population Related Siting Considerations for Advanced Reactors"

The complexity and politics of siting new nuclear facilities naturally involves multiple federal, state, local, and tribal entities. While the NRC sets nuclear and radiological safety requirements, state and local governments set requirements on what types of facilities can be built in their jurisdictions and under what conditions. States such as California and Connecticut continue to have laws restricting new nuclear builds while others, including West Virginia and Indiana, have recently moved to end their restrictions on new construction. Regardless, all types of energy facilities must go through siting reviews at the state and local level. States differ in having siting decisions made by siting boards, public utility commissions, and state legislatures. Thoughtful evaluation of safety, environmental, economic, social, and other factors by both developers and governments is crucial, as is ensuring meaningful community engagement.

Wherever an applicant proposes to build a reactor, the NRC assesses whether and to what extent the site and design provides reasonable assurance of adequate protection of public health and safety, rooted in technical reasoning; it does not decide where to build reactors.

In this paper, the staff provides the Commission with options to address population-related siting considerations for advanced reactors. The existing guidance on population-related siting pertains to traditional, large light water reactors. It does not account for potential, smaller reactor designs that employ enhanced safety attributes such as those specified in the Commission policy on advanced reactors. For reactors demonstrating these attributes, it is reasonable in my view to have a regulatory pathway that gives applicants the flexibility to justify sites closer to population centers compared to historical siting of large light water reactors. Regulatory clarity on this issue is essential as we work to ensure effective and predictable licensing of advanced reactors.

The current NRC guidance deterministically limits population density to not exceed 500 persons per square mile within 20 miles of a reactor site. The staff's recommended Option 3 proposes a technology-inclusive, risk-informed, and performance-based approach consistent with our ongoing efforts to modernize our licensing framework for advanced reactors. The recommendation would allow the use of modern methods to estimate design-specific source terms and off-site consequences from licensing basis events. Instead of a one-size-fits-all standard of 20 miles, the recommendation specifies a dose-based performance criterion for determining the area within which population density is assessed. The staff suggests that this area around a reactor site may be determined using the risk-informed methodology described in DG-1353¹ (subsequently issued as Regulatory Guide 1.233), or using traditional, deterministic practices with a hypothetical major accident and guidance such as Regulatory Guide 1.183². These methods will necessitate a thorough, upfront analysis of design and site characteristics. The NRC cannot make a safety determination without a sufficient technical basis.

After careful consideration, I approve the staff's recommended Option 3. It is important to note that the risk-informed methodology described in Regulatory Guide 1.233 provides guidance on assessing uncertainties and adequacy of defense-in-depth, which is particularly important for evaluating new and novel technologies. With respect to the traditional dose assessment approach, the staff should provide appropriate guidance on assessing defense-in-depth adequacy and establishing hypothetical major accidents to evaluate.

¹ DG 1353 "Guidance for a Technology Inclusive, Risk-Informed, and Performance-Based Methodology To Inform the Licensing Basis and Content of Applications for Licenses, Certifications, and Approvals for Non Light Water Reactors," issued April 2019 (ADAMS Accession No. ML18312A242)

² Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." issued July 2000 (ADAMS Accession No. ML003716792).