



Advanced Reactor Stakeholder Meeting to Discuss the Generic Environmental Impact Statement (GEIS) for Advanced Reactors



August 25, 2020
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Agenda

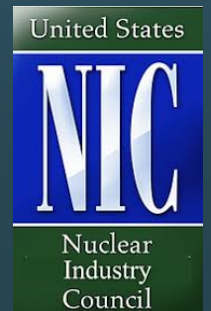
| Time | Topic | Presenter |
|-----------------|---|----------------------------|
| 1:00 to 1:10 pm | Introduction | NRC |
| 1:10 to 2:10 pm | Discussion of Nuclear Energy Institute (NEI), US Nuclear Industry Council (USNIC) and Clear Path Comments on GEIS | NEI, USNIC, and Clear Path |
| 2:10 to 2:30 pm | NRC Discussion of Comments | NRC |
| 2:30 to 2:50 pm | Other Stakeholder Comments on GEIS | All |
| 2:50 to 3:00 pm | Concluding remarks | All |

U.S. Nuclear Industry Council Comments regarding GEIS for Advanced Reactors at NRC Public Meeting

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25 August 2020



USNIC Support GEIS for Advanced Reactors

- Appreciate opportunity for stakeholders to provide input
- USNIC supports NRC staff proceeding with the development of a Generic Environmental Impact Statement (GEIS) for advanced nuclear reactors.
- Reform and new approaches for environmental reviews, safety reviews, and operations reviews (considering reduced workforce required) are needed.
- Development of a GEIS can support appropriate but not excessive environmental reviews.
- GEIS can promote common understanding of the key environmental review factors for different reactor designs and power levels-- and common understanding of those factors that are not important to the environmental review of a specific application.

Comments – Scope & Plant Parameter Envelope

- GEIS should include advanced nuclear reactors regardless of technology. USNIC recommends scope includes Generation III+ and Generation IV designs, including water-based Small Modular Reactors, Compact Fast Reactors, High Temperature Gas Reactors (HTGR), Molten Salt Reactors (MSR), Sodium Fast Reactors (SFR), and Lead-cooled Reactors (LFR). This is especially appropriate if SMRs "fit into" the "buckets" (Plant Parameter Envelope) NRC chooses for Advanced Reactors in the GEIS.
- USNIC encourages the NRC to expand the value for PPE. The NRC staff's March 4, 2020 document states staff's intent to use a PPE to bound any advanced reactor project up to approximately 30 MWth per reactor, which seem to unnecessarily exclude many advanced reactor designs.

Comments – Use of Existing GEISs

- NRC should take credit for significant work already done that can support the development of Advanced Reactors GEIS (e.g. GEIS for license renewal).
- Recent Clinch River Early Site Permit (ESP) Environmental Impact statement (EIS) used a plant parameter envelope based on two (or more) small modular reactors (SMRs). GEIS with bounding plant parameters, similar to the approach used by the Tennessee Valley Authority in developing their ESP using a plant parameter envelope, is a good path forward.
- USNIC supports NRC staff plans to use existing GEISs to develop the proposed advanced nuclear reactor GEIS (including include NUREG-1437 on License Renewal, NUREG-0586 on Plant Decommissioning, and NUREG-2157 on Continued Storage). Using those GEISs and the Clinch River Early Site Permit should limit the need to have multiple revisions in the advanced nuclear reactor GEIS or Supplemental EISs.

Comments – Advanced Reactors Purposes & Sizes

- GEIS should consider multiple purposes and needs for Advanced Reactors (e.g. demonstration, electricity generation, desalination, process heat, and hydrogen production). USNIC recommends that the NRC think broadly about the many reasons why a utility or industrial facility may want to construct a new reactor, such as using nuclear energy to meet decarbonization goals, or mandated Clean Energy Standards.
- NRC staff recommended segmenting advanced nuclear reactor projects into three sizes (< 40 MWth micro, 40-300 MWth, and >300MWth). Segmentation is appropriate, but smaller land areas should be considered than suggested in the NRC charts presented earlier this year, and environmental impact of advanced reactors may be small regardless of size of the reactor.

Comments – Ongoing Dialog

- NRC staff should think through the process for preparing the GEIS-- how long it would take to prepare, and how often it would be updated.
- USNIC looks forward to continue working with the NRC staff
- USNIC encourages NRC to have future outreach activities (especially when a pre-draft version of the GEIS is available), before issuing draft GEIS by May 1, 2021.
- Our goal is to facilitate the development, licensing, and deployment of Advanced Nuclear Reactors to meet the energy needs and low-carbon goals of the United States.

U.S. Nuclear Industry Council Contacts

For questions contact

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Overview of NEI Comments on ANR GEIS Scope

August 25, 2020



Advanced Nuclear Reactor Generic Environmental Impact Statement

- NEI supports the NRC's development of an ANR GEIS as a means of expediting the ANR licensing process while complying with NEPA.
- NRC's proposed scope for the ANR GEIS is too narrow to achieve optimal benefit to the industry and the NRC.
- NEI recommendations expected to provide substantially more benefit – without greatly increasing the time and effort required to develop the ANR GEIS.

NEI recommends: More Broadly-Scoped and Performance-Based

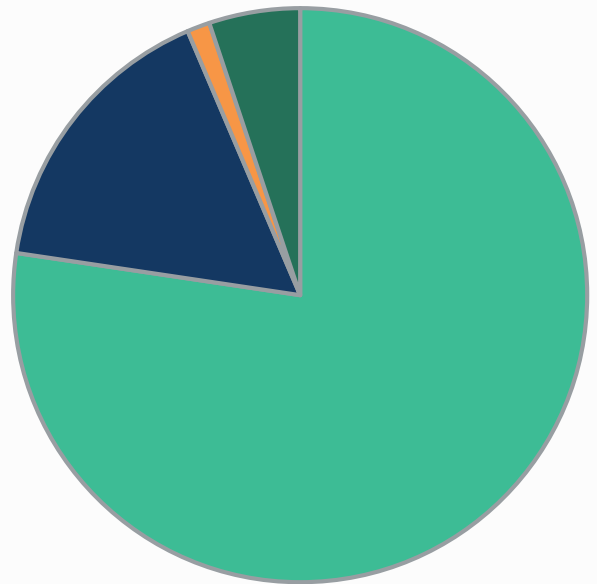
- ANR GEIS
 - Should be scoped to be as technology-inclusive as possible
 - Should not be exclusive to very small power levels
- NEIMA directs the NRC to modify the licensing process for commercial “advanced nuclear reactor” facilities to enhance predictability and efficiency, while still ensuring adequate protection and public health & safety.
- An ANR GEIS that is narrowly focused would still necessitate individual preparation of an EIS for the vast majority of applications.
- Development of a versatile ANR GEIS is a congressional and regulatory imperative.

NEI recommends: Leverage Existing Environmental Analyses

- NRC has prepared extensive environmental impact analyses for the current light-water reactor (LWR) operating fleet and numerous advanced large LWR projects
- These evaluations demonstrate that large light-water reactors (LLWRs) in the range of 1,000 MW(e) result in minimal, and often beneficial, environmental impacts.
- The environmental impacts of ANRs are expected to be similar to, or bounded by, LLWRs.
- Environmental impact evaluations for LLWRs can and should be used as part of the basis for establishing a broad scope of the ANR GEIS.

NRC Staff Environmental Impact Determinations for 15 COL & ESP EISs

Resource Impact Summary



■ Small ■ Moderate ■ Large ■ Beneficial

NEI recommends: Performance-Based, Consequence-Oriented Parameters

- Relate more directly to the potential environmental impacts of the construction and operation of an ANR
- Encompass the broadest possible range of advanced reactor technologies (LWR and non-LWR)
- Consistent with the recommendations in the June 25, 2019 letter from Congress, which states that such a GEIS should:
 - Acknowledge areas where common environmental impacts have already been effectively addressed in other elements of the NRC review;
 - Acknowledge areas where issuance of other federal or state environmental permits can mitigate environmental impacts;
 - Credit designs that minimize environmental impact due to the production, design, and safety features of advanced reactors;

Principles Forming Underlying Basis for Each Parameter's Performance Criterion

- a) Performance is demonstrated by meeting other elements of the NRC requirements/review, e.g., environmental impact effectively addressed in the NRC safety review.
- b) Performance is demonstrated by meeting requirements of local, State, and other Federal regulations and permits, i.e., for a permit to be issued, the subject of that permit must meet applicable regulations (Clean Water Act, Clean Air Act, etc.) and is therefore considered to have small environmental impact.
- c) Performance is demonstrated through advanced reactor features that maintain environmental impacts similar to, or bounded by, large light water reactors, e.g., design minimizes environmental impact due to the production, design, and/or safety features; NUREG-1437 basis applies or can be scaled.

Ex. 1 Alternative Approach to the NRC's Draft Plant and Site Parameter Envelopes

| Parameter | Criteria for Category 1 Finding | Basis |
|------------------------------------|--|--|
| Permanent Footprint of Disturbance | <ol style="list-style-type: none"> 1. Not located on prime farmland 2. Not located on wetlands, floodplains, surface water features, riparian habitat, climax or old-growth vegetation, or dedicated conservation land | <p>(a) Same as NRC assumptions, except for removal of constraint on siting adjacent to actively used farmland. A nuclear facility could be located adjacent to certain sensitive lands if the facility has acceptable offsite radiological impacts. This will be bounded by/consistent with the safety analysis.</p> |

Ex. 2 Alternative Approach to the NRC's Draft Plant and Site Parameter Envelopes

| Parameter | Criteria for Category 1 Finding | Basis |
|--|--|--|
| Emissions from construction equipment and standby power equipment during operation | 1. Criteria pollutants are less than Clean Air Act <i>de minimis</i> levels. | <p>(b) No change from NRC assumptions.</p> <p>Advanced reactors will operate within local, State, and other Federal regulations and permits.</p> |

Ex. 3 Alternative Approach to the NRC's Draft Plant and Site Parameter Envelopes

| Parameter | Criteria for Category 1 Finding | Basis |
|-----------------------|---|--|
| Consumptive water use | No analysis needed. NUREG-1437 has already concluded consumptive water use would have a small environmental impact and advanced reactors are expected to use less water than existing LWRs. | (c) Consumptive water sources include surface water, groundwater, and domestic water. NUREG-1437 found that consumptive use of water is dominated by cooling systems (for LWRs) with all other consumptive uses negligible by comparison. Extending that logic, advanced reactors that are not water cooled would be bounded with substantial margin by LWRs. NUREG-1437 also found that consumptive water use due to cooling systems was a small environmental impact. By extension, water cooled advanced reactors designed to use water efficiently and in proportion to their cooling water usage would also be bounded by LWRs. |

Conclusion: Consistent with NEPA Requirements & Related Legal Principles

- The NRC's established use of GEISs and associated Part 51 rulemakings, particularly in the LWR license renewal and spent fuel continued storage contexts, underscores the viability and efficacy of the generic analysis method under NEPA.
- Developing performance-based, consequence-oriented parameters and applying bounding assumptions based on previous agency NEPA analyses also are consistent with established NEPA principles.
- By fully leveraging prior NRC environmental analyses and using performance-based criteria, an ANR GEIS could generically address many common environmental impacts for a much broader range of technologies.

Next Steps

| Description | Date | Status |
|--|----------------|----------|
| Federal Register notice of intent to prepare Generic Environmental Impact Statement (GEIS) and conduct scoping (85 FR 24040) | April 30, 2020 | Complete |
| Scoping comment period ends | June 30, 2020 | Complete |
| NRC publishes compilation of scoping comments | September 2020 | Active |
| Draft GEIS issued for comment | May 1, 2021 | Active |
| Final GEIS issued | May 1, 2022 | Active |