



Pre-Submittal Meeting

License Amendment Request to Adopt
10 CFR 50.69, Risk-Informed Categorization
and Treatment of Structures, Systems and
Components for Nuclear Power Reactors

Wolf Creek Generating Station

DATE: November 2024



wolf creek nuclear



AGENDA

- *Scope of License Amendment Request (LAR)*
- *10 CFR 50.69 LAR Overview*
- *Probabilistic Risk Assessment (PRA) Model Technical Adequacy*
- *Other Hazard Assessments*
- *LAR Schedule*
- *Summary, Questions, Comments, & Discussion*





Scope of LAR

- The proposed amendment would add a condition to the WCGS license, which documents the NRC's approval for use of 10 CFR 50.69
- The license condition identifies the processes to be used for categorization of structures, systems and components (SSCs):
 - Internal events, internal flooding, internal fire – PRA model
 - Shutdown risk – Shutdown safety assessment process
 - Passive component risk – Arkansas Nuclear One, U2 (ANO-2) method
 - External hazards – IPEEE screening updated using the screening process in the ASME/ANS PRA Standard, except for seismic and high winds
 - Seismic risks – Alternative EPRI approach as described in the LAR
 - High winds risks – Alternative bounding approach as described in the LAR



10 CFR 50.69 LAR Overview

- Follows NEI 00-04 (except for seismic and high winds):
 - PRA evaluations utilizing internal events, internal flooding, and fire PRA models
 - Non-PRA evaluations such as external events screening and shutdown safety assessment
 - Seven qualitative criteria in Section 9.2 of NEI 00-04
 - Defense-in-depth assessments
 - Passive categorization using ANO-2 methodology (in lieu of ASME Code case N-660)
- External Hazards
 - Initially screened in accordance with General Letter 88-20
 - Subsequently screened per a plant-specific evaluation using the external hazard screening significance process identified in ASME/ANS PRA Standard RA-Sa-2009
 - External hazards screening assessment was independently peer reviewed
 - All external hazards screened from applicability except for seismic and high winds



PRA Model Technical Adequacy

- **Internal Events and Internal Flooding PRA**
 - Full scope peer review against ASME/ANS RA-Sa-2009 performed in June 2019
 - F&O closure reviews performed in accordance with Appendix X to NEI 05-04 and NEI 17-07
 - No open F&Os
- **Internal Fire PRA**
 - The Fire PRA was prepared using the methodology defined in NUREG/CR-6850, “Fire PRA Methodology for Nuclear Power Facilities”
 - Peer reviewed against ASME/ANS RA-Sa-2009 performed in November 2021
 - Independent assessment of F&O closures performed in October 2022
 - No open F&Os
- **High Winds**
 - High winds PRA has been peer-reviewed and all F&Os are closed
 - Model has a pending review for a PRA upgrade (discussed later). Thus, the LAR proposes an alternative approach that is conservative and bounding.



Other Hazard Assessments – Seismic and High Winds

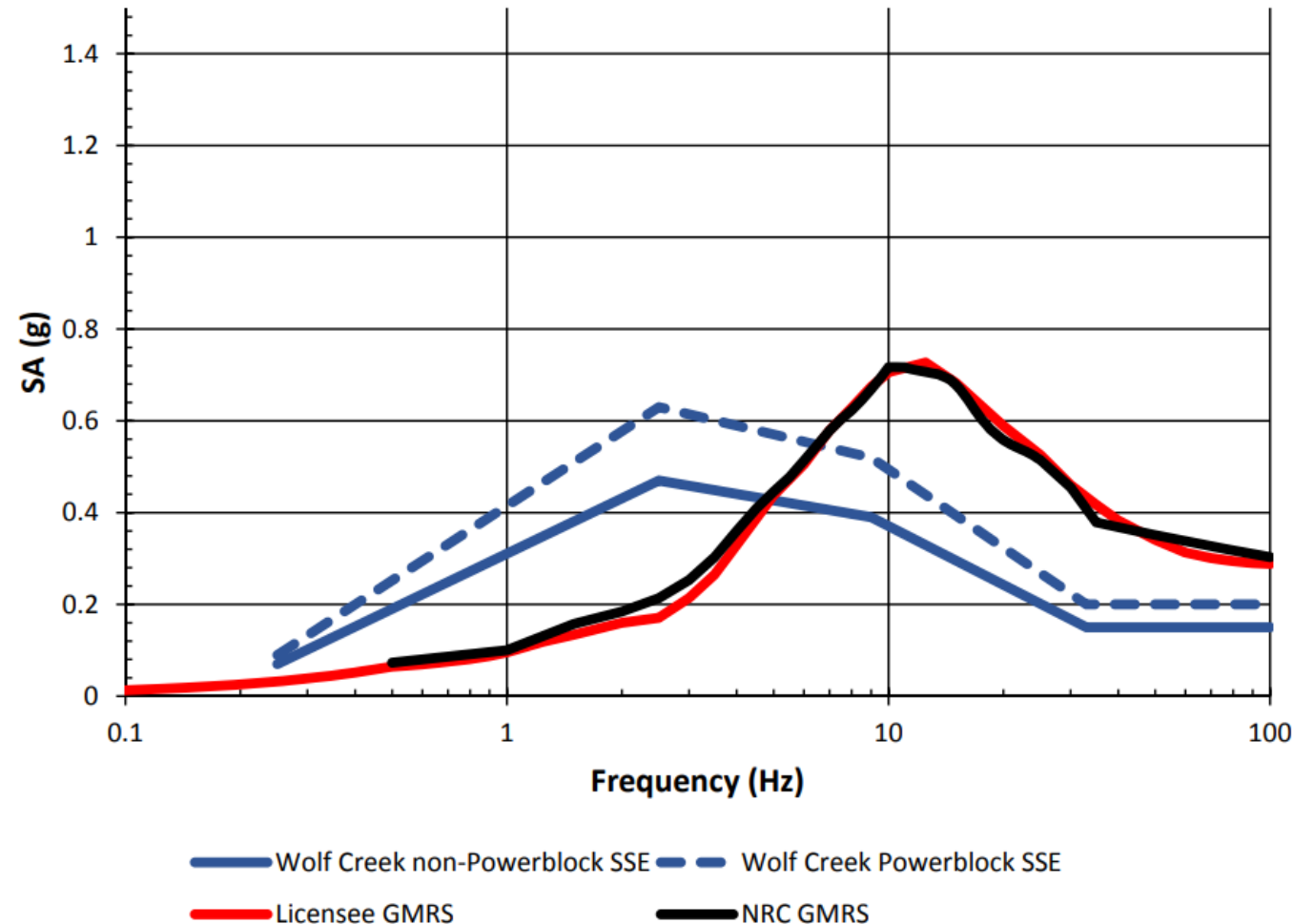
- Proposes use of the alternative approach for seismic risk categorization using the same process licensed for LaSalle, as described in the LAR and EPRI 3002017583
- The LAR provides site-specific information related to the WCGS seismic hazard, which is summarized on the next slide
- Proposes use of an alternative approach that is conservative and bounding; the approach identifies components susceptible to failures due to high winds



Approach for Addressing Seismic Risks

- The approach for assessing seismic risk follows the same approach licensed for LaSalle
- Approach based on EPRI 3002017583, information provided in the LAR, and information that the LAR incorporates by reference (e.g., RAI responses)
- The WCGS GMRS exceeds the SSE in a portion of the response spectrum between 1.0 and 10 Hz (> Tier 1)
- WCGS was not required to develop an SPRA in response to the Fukushima accident (< Tier 3)
- WCGS meets the criteria for Tier 2 per EPRI 3002017583 (moderate hazard)

Comparison of the WCGS GMRS to the SSE





Approach for Addressing High Winds Risks

- The High Winds (HW) PRA model is still pending review for an upgrade following completion of a newly developed industry method; however, the HW PRA is a highly developed model that meets the PRA Standard requirements, has been independently peer reviewed, and all F&Os are closed.
- In lieu of using the existing HW PRA, WCGS proposes an alternative bounding approach for assessing HW risk during 10 CFR 50.69 categorization
- A HW fragility analysis has been performed, which evaluated plant equipment and provided a component level screening for identifying components susceptible to HW hazards
- The HW PRA is sufficiently developed to identify components that will be included in its scope (e.g., components in the HW PRA scope will be considered HSS)
- The approach is summarized on the next slide



Approach for Addressing High Winds Risks

- Per the HW Fragility Analysis, if a component is “high wind impact screened” with justification that the component is within a Seismic Category 1 structure, then it is not susceptible to a HW failure, and thus, is assigned HW LSS
 - Components within Seismic Category 1 structures generally do not have failures due to HW exposure
- If a component is not screened “high wind impact screened” with justification that the component is within a Seismic Category 1 structure per the HW Fragility Analysis and is not included in the HW Plant Response Model and Quantification, then the component is assigned HW LSS
 - This accounts for components that are mostly balance of plant equipment or are items not generally modeled in the PRA.
- If a component is not screened “high wind impact screened” with justification that the component is within a Seismic Category 1 structure per the HW Fragility Analysis and is included in the HW Plant Response Model and Quantification, then the component is assigned HW HSS



Shutdown Risks and Integral Assessment

- Shutdown risk follows the process described in NEI 00-04, Section 5.5
- Will use the shutdown safety management plan described in NUMARC 91-06
- Integrated assessment performed using NEI 00-04, Section 5.6



LAR Schedule

- Projected submittal in December 2024 with requested approval within one year following acceptance
- A 60-day implementation period is proposed



Summary

- The 10 CFR 50.69 LAR is scheduled to be submitted in December 2024 with approval requested within one year after acceptance
- The PRA models are technically acceptable for 50.69 categorization
- The categorization approaches follow NRC-endorsed NEI 00-04, with the exception of:
 - Seismic – uses the same alternative approach approved for LaSalle (EPRI Tier 2 methodology)
 - High Winds – uses an alternative approach that is conservative and bounding
- Questions, Comments, and Discussion