

November 3, 2023

Mr. Eric Benner  
Director, Division of Engineering and External Hazards  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject:** NEI Recommendations for IEEE 603-2018, IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations, Path Forward

**Project Number: 689**

Dear Mr. Benner:

The Nuclear Energy Institute (NEI)<sup>1</sup>, on behalf of its members, offers the following comments on the issues discussed during the September 12, 2023, public meeting on potential pathways for incorporating IEEE 603-2018, “IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations,” into the regulatory framework. The NRC staff discussed two primary objectives for this action:

1. Provide industry with the regulatory confidence to use the 2018 version of the standard in the development of safety-related I&C systems.
2. Establish a path to endorse new and improved standards that are developed to address digital technology advancements without a need to change regulatory requirements through the rulemaking process (i.e., standards that are incorporated by reference into the regulations).

Operating reactor licensees and advanced reactor applicants are aligned with these goals for a regulatory framework that reflects modern approaches to digital I&C safety criteria with the exception of the staff’s stated position of avoiding the rulemaking process. The rulemaking process provides stability and assurance to licensees and applicants.

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<sup>1</sup> The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI’s members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

IEEE 603-2018 offers some improvements in technical requirements but adds others that may conflict with the new Commission policy related to Common Cause Failure (CCF). In addition, the standard presents requirements that are inconsistent with design fundamentals for advanced reactors (e.g., Regulatory Guide 1.233 and Digital I&C Design Review Guide approach to Single Failure Criterion). NEI recognizes that short-term actions are necessary to establish a pathway for licensees and applicants to use IEEE 603-2018; however, the long-term solution to resolving these issues will require engagement with IEEE Nuclear Power Engineering Committee (NPEC) Working Group 6.3 to ensure the next revision of IEEE 603, tentatively planned for 2028, meets the NRC's and the industry's needs.

NEI recommends that the NRC incorporate by reference IEEE 603-2018 with exception to Section 5.16 into 10 CFR 50.55a(h). This approach provides regulatory certainty for licensees and applicants planning to use IEEE 603-2018 while enabling licensees and applicants to utilize new methods for addressing CCF that are consistent with the new Commission policy. NEI believes that incorporating IEEE 603-2018 by reference via the EDO Delegation of Authority is an incremental step to meeting the needs of both operating reactor licensees and advanced reactor applicants and establishes a precedent for incorporating future versions of IEEE 603 into the regulatory framework.

NRC staff's potential pathway revising Regulatory Guide 1.153 to demonstrate equivalency and endorse new/revised IEEE 603-2018 sections may offer a sufficient short-term solution; however, this option does not provide licensees and applicants the same level of regulatory assurance as incorporation by reference into 10 CFR 50.55a(h). NRC staff's potential pathway of issuing a generic communication to describe the licensing pathway for applicants to use newer versions of IEEE 603 would not provide regulatory certainty. Licensees and applicants are aware of licensing pathways to use alternate codes and standards via 10 CFR 50.55a(z). We do not believe this option achieves either of the stated goals from the NRC staff presentation.

We appreciate the NRC's effort in endorsing the latest editions of the IEEE standards and encourage your consideration of NEI's feedback. We trust that you will find these comments useful and informative. Please contact Alan Campbell ([adc@nei.org](mailto:adc@nei.org)), with any questions or feedback.

Sincerely,



Alan Campbell, Technical Advisor

c: Richard Stattel (NRR/DEX/EICB)  
Jason Paige (NRR/DEX/ELTB)  
NRC Document Control Desk