## ABSTRACT

This final safety evaluation report (FSER) documents the U.S. Nuclear Regulatory Commission (NRC) staff's technical review of the standard design approval (SDA) application submitted by NuScale Power, LLC (NuScale) (NRC Project number 99902078 and Docket number 05200050).

NuScale submitted a request for an SDA for a pressurized water Small Modular Reactor (SMR) in accordance with Title 10 of the *Code of Federal Regulations* (CFR) Part 52, Subpart E, "Standard Design Approvals." NuScale submitted the SDA application in a number of transmittals between November 23, 2022, and December 31, 2022. Following submission of supplemental information requested by the NRC staff, the SDA application was docketed on July 31, 2023. Revision 1 of the SDA application was submitted on October 31, 2023. Revision 2 of the SDA application, dated April 09, 2025, is the latest revision on the docket.

The applicant's design consists of up to 6 NuScale Power Modules (NPMs). Each NPM is a collection of systems, subsystems, and components that together constitute a modularized, nuclear steam supply system. The NPM is composed of a reactor core, a pressurizer, and two steam generators integrated within a reactor pressure vessel and housed in a compact steel containment vessel. Each NPM is rated at 250 megawatts thermal (MWt) (up to 1,500 MWt total for 6 NPMs), with approximately 77 megawatts electric (MWe) (up to 462 MWe total for 6 NPMs) output.

This FSER presents the results of NRC staff's review of the NuScale SMR design presented in the SDA application against the requirements of 10 CFR Part 52, Subpart E, and delineates the scope of the technical details considered in evaluating the proposed design.

The NRC staff has completed its review of the SDA application, as documented throughout the FSER, and finds it to be acceptable.