



BACKGROUND

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Subsequent License Renewal

Almost every U.S. commercial nuclear power plant operates under a renewed license, valid for up to 60 years of total operation. The Nuclear Regulatory Commission now reviews applications for “[subsequent license renewal](#)” – or operation for an additional 20 years for potential operation of up to 80 years. The agency’s guidance for its staff and for industry now covers managing the effects of extended operation and maintain the plants in a safe operating condition for the entire life of the reactor.

The Atomic Energy Act authorizes the NRC to issue licenses for commercial power reactors to operate for up to 40 years. These licenses can be renewed for an additional 20 years at a time. The time beyond 40 years is known as the period of extended operation. For nuclear power plants that have received a renewed license, the regulations in 10 CFR 54.31(d) state that “a renewed license may be subsequently renewed in accordance with all applicable requirements.” Economic and antitrust considerations, not limitations of nuclear technology, determined the original 40-year term for reactor licenses. This selected time period, however, means some systems, structures, and components may have been engineered on the basis of an expected 40-year service life. So the renewed license requires analyses and “aging management programs,” or AMPs, to monitor and manage the effects of continued operation on these items.

The decision to seek license renewal rests entirely with nuclear power plant owners. This choice is typically based on the plant’s economic situation and whether it can meet NRC requirements. Each power reactor is licensed based on a specific set of requirements, depending primarily on its design. This set of requirements is called the plant’s “licensing basis.” The [license renewal review process](#) provides continued assurance that the current licensing basis will maintain an acceptable level of safety for the period of extended operation.

Updated Guidance

For subsequent license renewals, the NRC determined its existing license renewal regulations were adequate to cover the period of 60-80 years. Additional guidance was needed for both agency staff and licensees about how to manage the effects of aging during this period. The agency developed two guidance documents, with the participation of industry and the public. These documents were published in final form in July 2017, and are available on the [NRC website](#).

The “Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report,” (NUREG-2191), provides guidance to nuclear power plant licensees for developing their applications for subsequent license renewal. The report describes AMPs necessary for all nuclear plants during the 60-80 year operating period, as well as enhancements to existing AMPs implemented during the 40-60

year period. These AMPs focus on the effects of extended operation and high radiation exposure on reactor parts, concrete containment structures, piping and electrical cables, among other things.

The second guidance document is the “Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants,” or SRP-SLR (NUREG-2192). The SRP-SLR is for NRC staff experts conducting the safety reviews of SLR applications. It ensures the quality and uniformity of the staff reviews and clearly defines the basis for evaluating an applicant’s programs and activities for the 60-80 year period.

The two guidance documents provide a transparent view for industry and the public to improve communication and understanding of the NRC’s review process. The agency updates the guidance documents every 5 years. The update process includes public meetings and draft revisions being issued for comment.

The Review Process

The NRC staff follows essentially the same process for reviewing subsequent license renewal applications as it does for initial license renewals. The process starts with an initial acceptance review of about 45 days, to determine whether the application is sufficiently complete. If it is, the staff will docket the application and begin its safety and environmental reviews. As with initial license renewal, there will be an opportunity for interested parties to petition for an adjudicatory hearing, and the public will be able to participate at various stages of the environmental review.

Using lessons learned from more than 90 initial license renewals, the staff’s goal is to complete license renewal reviews within 18 months of docketing, improving on an earlier goal of 22 months. This target timeline will be possible if there is no adjudicatory hearing and if the licensee submits a high-quality application and provides timely and complete responses to the NRC’s requests for additional information. To help meet the 18-month target, the NRC conducts pre-application meetings with potential applicants to discuss technical or plant-specific issues in the application and to engage federal and state entities earlier in the environmental review process. In addition, if there are no open items on the safety evaluation, the staff presents the Advisory Committee for Reactor Safeguards a completed safety evaluation of the application, improving on the earlier process of giving the committee both an initial safety evaluation and later the final report.

December 2023

License Renewal Process

