

Overview of Nuclear Power Plant License Renewal and Considerations for 40-Year Renewals

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Public Meeting on License Renewal for 40 Years

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OUTLINE

- Meeting Purpose and Questions
- License Renewal Rule and Process
- Potential Topics for 40-Year License Renewal

For more information see:

[January 21, 2021 Presentation](#)

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21015A336>

Today's Meeting

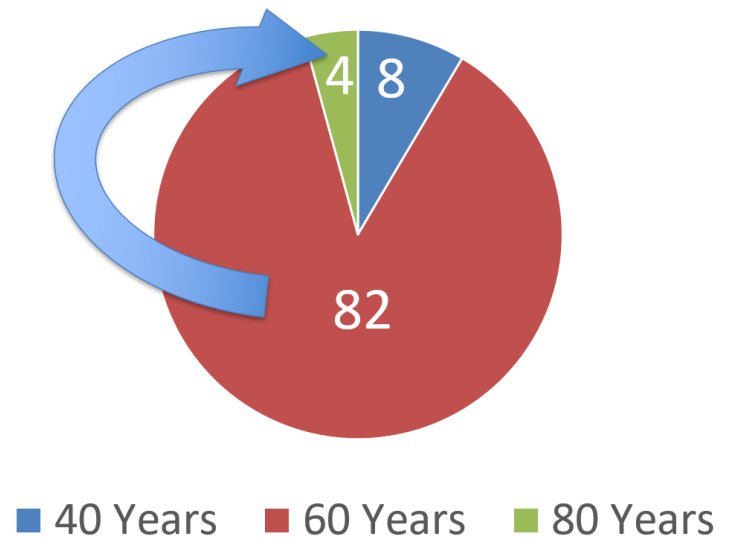
- Purpose: public dialogue related to license renewal for nuclear power reactors, specifically the possibility of extending the time period for renewed licenses from 20 years to 40 years
 - For plant owners/operators: is there an interest in license renewal for 40 years, and how likely would you utilize this approach?
 - What should the NRC take into account when considering whether to change the limit of license renewal to 40 years from 20 years?
 - If a decision is made to pursue regulatory and process changes to enable license renewal for 40 years, what collateral changes should the NRC make to the license renewal program to ensure that all plants will continue to “provide reasonable assurance of adequate protection of the public health and safety” during the period of extended operation?
 - Extending the “Generic Environmental Impact Statement for License Renewal of Nuclear Plants” (LR GEIS) to a 40-year interval from the current 20-year interval
 - Application contents and review process
 - Safety guidance documents for license renewal (e.g., Generic Aging Lessons Learned (GALL) report and Standard Review Plan (SRP))
 - Inspection and oversight program

What Limits License Renewal to 20 Years?

- Section 103.c of the Atomic Energy Act limits licenses to 40 years
- 10 CFR 54.31(b) caps the additional period covered by renewed licenses at 20 years
 - The renewed license may not exceed 40 years (remaining time on current license plus license renewal period)
 - Statement of Considerations in 1991
 - “the Commission may revisit this issue in the future as experience with licensee performance in managing age-related degradation during the renewal term is gained.”
 - “If the Commission has sufficient confidence in the adequacy of licensee programs to detect and resolve in a timely manner any unforeseen age-related degradation, the 20-year limit may be removed.”

Current License Renewal Status of Operating Fleet

- 94 operating reactor units in the U.S.
- Renewed licenses issued for 94 units (8 have ceased operations)
 - 8 units with 40-year licenses (Diablo Canyon will shutdown 2024/2025)
 - 82 units with 60-year licenses
 - 4 units with 80-year licenses (Turkey Point and Peach Bottom)
- 55 units (48 operating) have entered their 41st year of operation; first was in April 2009
 - more than 350 reactor-years of operation beyond the initial 40-year licenses
- SLR application status
 - 3 applications under review
 - o Surry Power Station, Units 1 and 2
 - o North Anna Power Station, Units 1 and 2
 - o Point Beach, Units 1 and 2
 - 1 expected application
 - o Oconee Nuclear Station, Units 1, 2, and 3 – March 2021



Why License Renewal for 40 Years?

- Increase Efficiency and Effectiveness:
 - Applicants prepare one application for 40 years
 - Promotes continuity in plant implementation of aging management programs (AMPs) for 40 years
 - NRC staff review of one application for 40 years
 - Can focus on oversight of AMP implementation

Basis for License Renewal Rule

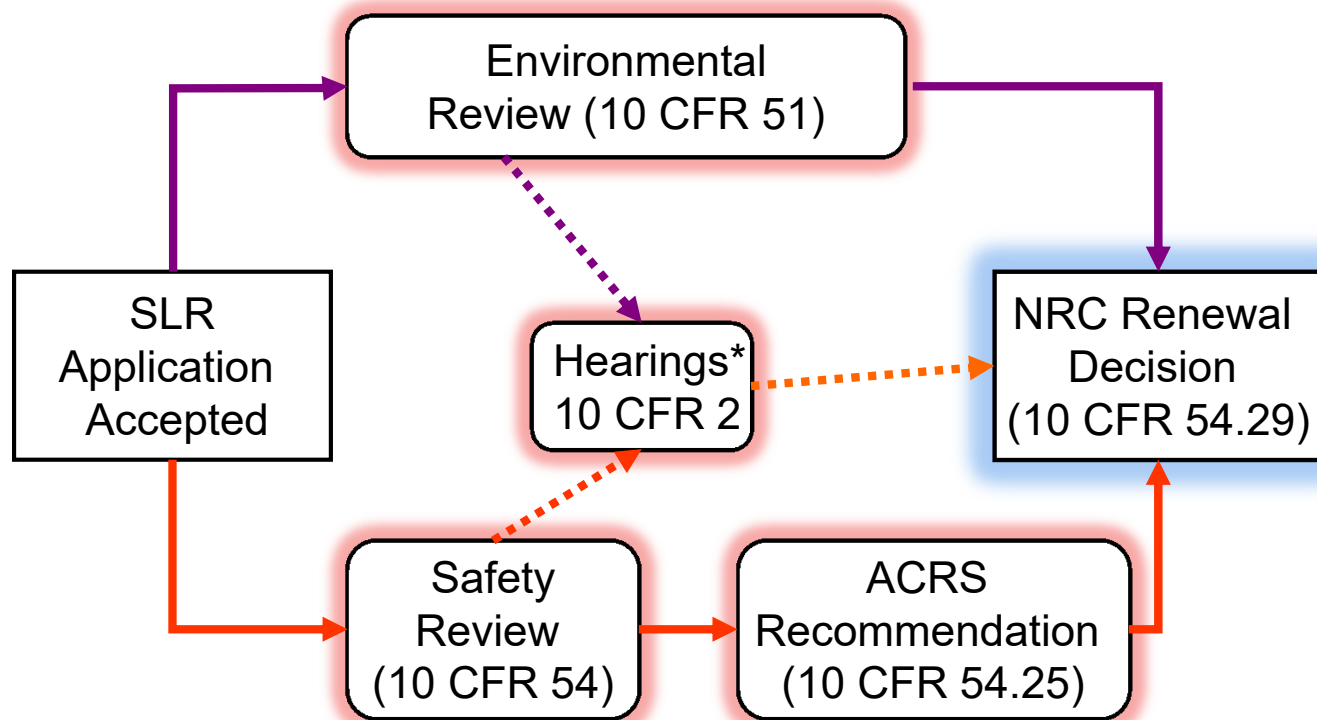
- Statement of Considerations – 1991 Rule
 - 56 Federal Register 64943; December 13, 1991
 - Statements regarding reconsidering the 20-year limit
- NUREG-1412
 - “Foundation for the Adequacy of the Licensing Bases – A Supplement to the Statement of Considerations for the Rule on Nuclear Power Plant License Renewal (10 CFR Part 54)”
 - ADAMS Accession No. ML080310668
- Statement of Considerations – 1995 Rule
 - 60 Federal Register 22461; May 8, 1995

License Renewal Review

- A limited-scope review - managing the effects of aging (10 CFR 54.4)
 - Long-lived, passive structures and components
 - Important to plant safety
- Ongoing regulatory oversight issues (outside the scope of license renewal)
 - Emergency planning (10 CFR 50.47)
 - Security (10 CFR Part 73)
 - Current safety performance

<http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html>

License Renewal Review Process



* If a Request for Hearing is Granted

Application Review

- Submittal of Application
 - Integrated Plant Assessment – aging management information
 - Environmental information
- Safety Review
 - Technical review
 - Regional inspections (for SLR: Inspection Procedure (IP) 71003 Phase IV)
 - Review by Advisory Committee on Reactor Safeguards
- Environmental Review (10 CFR 51) – Environmental Impact Statement
- Agency Decision

Safety Review Guidance Documents

- Generic Aging Lessons Learned
 - Generic Aging Lessons Learned (GALL) report (NUREG-1801, Rev. 2) and GALL-SLR report (NUREG-2191)
 - Provides assessments for aging management review (AMR), including identification of materials, environments and aging effects that require management
 - Identifies acceptable Aging Management Programs (AMPs)
- Standard Review Plan
 - Standard Review Plan (SRP) for License Renewal (SRP-LR) (NUREG-1800, Rev. 2) and SRP-SLR (NUREG-2192)
 - Guidance for staff review of: Scoping and Screening, Aging Management Review, Time-limited Aging Analyses (TLAAs)
- Amended through Interim Staff Guidance process (LR-ISG and SLR-ISG), based on operating experience or lessons learned from LRA and SLRA reviews
- Regulatory Guide 1.188, Rev. 2, application format, endorses Nuclear Energy Institute (NEI) guidance NEI 95-10 (LR) and NEI 17-01 (SLR).

Environmental Review Documents

- License Renewal GEIS (NUREG-1437, Rev. 1) – *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*
 - Identifies NEPA issues that could result in generic or nuclear plant-specific environmental impacts
 - Provides the technical basis for the summary of findings on NEPA issues codified in Table B-1 of the regulations
- Regulatory Guide 4.2, Supp. 1, Rev. 1 – *Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications*
 - Guidance to ensure the completeness of information in applicant's Environmental Reports
- Standard Review Plan (NUREG-1555, Supp. 1, Rev. 1) – *Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal*
 - Guidance for staff in preparing nuclear plant-specific supplemental environmental impact statements to the License Renewal GEIS
- Continued Storage GEIS (NUREG–2157) – *Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel*
 - The environmental impacts of continued storage of spent nuclear fuel beyond the licensed life for operation of a reactor are those impacts identified in NUREG–2157

Environmental Review

- Nuclear power reactor license renewal
 - Requires preparation of an environmental impact statement per 10 CFR 51.20(b)(2) and 10 CFR 51.95(c)
- Generic Environmental Impact Statement (GEIS)
 - Provides the technical basis for determining which license renewal issues are common to all plants and can be addressed generically
- Supplemental Environmental Impact Statement (SEIS)
 - Prepared for each license renewal application to focus on plant-specific issues and information that challenges generic conclusions reached in the GEIS
- GEIS and SEIS address 20-year license renewal terms

Status of the License Renewal GEIS 10-Year Review

- Specified in Appendix B to Subpart A of Part 51
- Previous revision completed in June 2013 ([78 FR 37282](#))
- Scoping of potential update initiated on August 4, 2020 ([85 FR 47252](#))
 - Detailed the results of NRC’s review and invited public comments and proposals for other areas that should be updated
 - Solicited input as to whether the GEIS update should consider environmental impacts of license renewal beyond the 20-year license renewal term up to a maximum of 40-years
 - Following staff’s review of comments, expect to publish the results of the environmental scoping process in Spring 2021

Inspection Activities

- Resident (On-site) Inspectors
 - At least two resident inspectors assigned to each site
 - Perform core of NRC inspection program for nuclear power plants
- Regional Inspectors – Specialists from the Regional Offices
 - May conduct 10 to 25 routine inspections at each nuclear power plant during the course of the year
- Team Inspections
 - May consist of Resident or Regional Inspectors and can be augmented to include staff from headquarters
- Inspection Procedures (IPs) Related to License Renewal
 - IP 71002, License Renewal Inspection
 - IP 71003, Post-Approval Site Inspection for License Renewal
 - Subsequent License Renewal: Phase IV – Implementation Inspection
 - Conducted 5 – 10 years into PEO [period of extended operation]
 - Reviews implementation of AMPs

Standards for Approval

Per 10 CFR 54.29 – A renewed license may be issued if the Commission finds that:

- Actions have been identified and have been or will be taken such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB. The actions are with respect to
 - managing the effects of aging during the period of extended operation on the functionality of structures and components
 - time-limited aging analyses
- Requirements for Environmental review have been satisfied
- Any consideration of Commission rules and regulations in adjudicatory proceedings has been resolved

Issuance of Renewed License

- 10 CFR 54.31(c) – “A renewed license will become effective immediately upon its issuance, thereby superseding the operating license...previously in effect”

What is Needed for 40-Year License Renewal?

- Possible revisions to regulatory framework (i.e., 20-year license renewal limit vs. 40-year license limit)
- Modifications to environmental review (GEIS covers 40 years instead of 20 years)
- Modifications to safety review:
 - Application contents and review process
 - Identification of aging effects and management programs currently for 80 years only (e.g., GALL-SLR)
- Inspections/oversight: need for additional oversight with elimination of 20-year application review?

Related Links

- Reactor License Renewal
<https://www.nrc.gov/reactors/operating/licensing/renewal.html>
- Reactor License Renewal Guidance Documents
<https://www.nrc.gov/reactors/operating/licensing/renewal/guidance.html>
- Guidance for License Renewal and Subsequent License Renewal
<https://www.nrc.gov/reactors/operating/licensing/renewal/slr/guidance.html>
- LR and SLR Interim Staff Guidance (ISG)
<https://www.nrc.gov/reading-rm/doc-collections/isg/license-renewal.html>
- Status of Initial License Renewal Applications
<https://www.nrc.gov/reactors/operating/licensing/renewal/applications.html>
- Status of Subsequent License Renewal Applications
<https://www.nrc.gov/reactors/operating/licensing/renewal/subsequent-license-renewal.html>

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Acronyms and Initialisms

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|------|----------------------------------------|------|--------------------------------------------------------------|
| AMP | Aging management program | ISG | Interim Staff Guidance |
| AMR | Aging management review | LR | License renewal |
| CFR | Code of Federal Regulations | NEI | Nuclear Energy Institute |
| CLB | Current licensing basis | NRC | Nuclear Regulatory Commission |
| EIS | Environmental Impact Statement | SEIS | Supplemental Environmental Impact Statement [plant specific] |
| GALL | Generic Aging Lessons Learned | . | |
| GEIS | Generic Environmental Impact Statement | SLR | Subsequent license renewal |
| . | | SRP | Standard Review Plan |
| IP | Inspection Procedure | TCAA | Time-limited aging analysis |