Modern Regulatory Processes Enabling Improved Efficiencies for Power Uprate Licensing

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Mission: Provide Strategic Guidance to the Industry Power Uprate Activities

Power Uprates: Background

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- NRC approved over 170 power uprates
- Nearly all U.S. plants have uprated
- Swedish units uprated to beyond 125% of the Original Licensed Thermal Power





- NEI examined public records for NRC review duration and costs for uprates
- Data showed NRC review durations, review hours, and costs increased significantly over time
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Power Uprates: Current Aspirations

- Federal tax credits incentivize new clean energy production (uprates and restarts)
- 2024 NEI Future of Nuclear Power Survey:
 - >70% of sites have a level of interest/planning for one or more power uprates with a combined capacity increase of 3 GWe
 - Nearly 50% of sites have varying interest/plans for one or more of the enabling changes (ATF/ LEU+, Extended Fuel Cycles, and/or RI LOCA)
- ADVANCE Act is an opportunity to enable improved power uprate review efficiencies

The Future of Nuclear Power

2024 Update Survey

NEP NUCLEAR ENERGY INSTITUTE

https://www.nei.org/resources/reportsbriefs/the-future-of-nuclear-power-2024-survey



Power Uprate Regulatory Improvements

- NEI letters to NRC providing the industry's recommendations for modern efficient reviews
- Updated NRC uprate review timeliness targets:
 - MUR: 9⇒6 m, SPU: 12⇒9 m, and EPU: 18⇒12 m
- NRC/NEI Uprate Review Efficiency Workshops:
 - Flexibility for sequential, combined concurrent reviews
 - NRC graded approach using past review precedents
 - Improved efficiencies by optimizing bundled reviews
 - PWR: Uprates combined with advanced fuel transition
 - BWR: MUR and/or EPU combined with MELLLA+



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Uprates and Advanced Fuels Transition



- Combined license applications for plant specific aims:
 - ATF/LEU+/HBU to achieve uprates and/or 24-month fuel cycles (PWR)
- Analytical synergy for combined review efficiencies: **Power Uprates**

Similar

- Chapter 15 Analysis:
 - AOOs/LOCA/ATWS/SBO/Dose
 - Stability (BWR)
 - SG tube rupture (PWR)
 - Locked rotor (PWR), etc...
- Chapter 4 / 6
- Fuel Pool Storage

Advanced Fuel Transition

- Chapter 15 Analysis:
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Improved licensing efficiencies with reduced iterative & duplicative reviews

Uprates and Advanced Fuels Transition





* Phase out: latter of 2032 or emissions <75% of 2022 levels

Power Uprates: Summary

- Plans for over 3GWe new capacity
- Bridge to new and advanced reactors
- Increased market confidence:
 - Meeting costs and schedules
 - Meeting NRC review timeliness goals
- Promotes the nuclear workforce
- Cultivates the supply chain
- Responding to NRC uprate RIS
- NRC/NEI workshops making progress on uprate review improvements



