

NRC Staff Graded Approach for Power Uprate Reviews

Power Uprate Public Meeting
November 14, 2024

Working Group Preliminary Recommendations

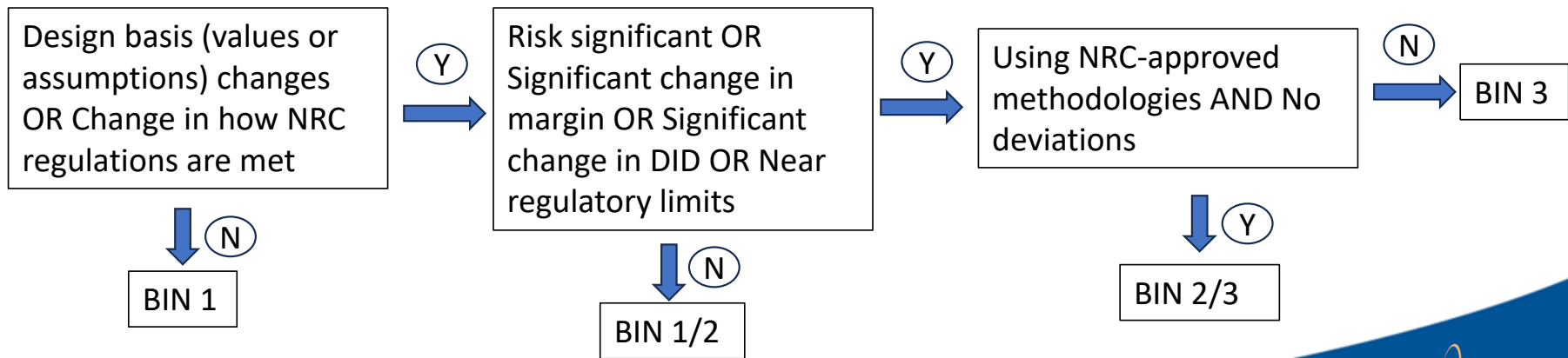
- The working group is looking for ways to focus the uprate reviews on the most safety and risk significant portions of the application.
- This graded approach will enable the staff to evaluate the extent to which the power uprate changes impact important to safety structures, systems, and components (SSCs) functions and requirements.
 - Associated with the applicable sections of NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition,” (or SRP) (ML070810350).
- To do this, three categories of reviews will be used to grade the expected level of effort commensurate with its safety and risk significance and the degree to which the Power Uprate affects them.

“Binning” Technical Review Areas

- Areas of Review from NRC Review Standard (RS)-001, “Review Standard for Extended Power Uprates”
 - Publicly Available - ML023610659.
 - Note RS-001 is used for Stretch Power Uprate reviews.
- Working Group developed three bins.
 - Working to continue to refine the binning strategy.

Binning Considerations

- During the working group review, the PRA staff determined that there is small percentage (approximately 30%) of the Power Uprate-related SRP sections are risk amenable (i.e., those that impact core damage frequency or large early release frequency).
- The working group is evaluating if binning may be further refined by consideration of identified risk insights provided by the PRA staff, principles of defense-in-depth and safety margins, and other relevant factors such as operational experience and knowledge of past reviews.



Bin 1

- Definition – Review areas which are expected to require minimal staff review efforts.
 - This category includes review areas (or systems) that are not subject to impact by a Power Uprate because the Power Uprate will not likely effect system design or operation.

Examples - hazards (flood protection, equipment and floor drainage systems, light and heavy load handling systems, internally generated missiles), compressed air systems, various non-safety-related plant heating, ventilation, air conditioning systems.

Bin 2

- Definition – Review areas that are affected by a Power Uprate, need to be reviewed against NRC regulations, but unlikely to have a significant impact on nuclear safety.
 - This category includes review areas (systems) that may be impacted by a power uprate due to potential changes in system design or operating conditions but would have little to no impact on plant safety since conditions are not expected to exceed the design parameters (pressure, temperature, flow, etc.) for the SSCs.

Examples: Some safety-significant support systems, certain reactor and containment review areas, certain accident analyses.

Bin 3

- Definition – Review areas that are directly impacted by operation at uprated power are expected to require a detailed review by the staff.
 - This category includes review areas (systems) that are impacted by the power uprate:
 - Result in significant changes to the systems' design and analyses or operation
 - Risk significant
 - Significant change in margin
 - Significant change in defense-in-depth (DID)
 - Near regulatory limits
 - Deviation from NRC-approved methodologies

Examples: Some safety-significant support systems, certain reactor and containment review areas, certain accident analyses.

NRC Staff Review

Bin 1

- If the NRC staff determines that there are no impacts on the review area based on information provided by the licensee, the safety evaluation will confirm that the power uprate will have no impact on the review area, and the associated regulatory requirements will continue to be met.
 - The safety evaluation for these sections could be potentially reduced to a single section listing the review areas covered by this category in a table, with a short writeup indicating the staff's finding that the systems included in the table were not impacted by the uprate and compliance with the regulations were not affected.

Bin 2

- If the changes are bounded by the current analysis, the staff will review to verify and no further review would be required; however, if the review is not bounded by current operation or analysis, or if there are major system modifications or upgrades, the staff will review the system and/or analysis results for compliance to the applicable regulations.

Bin 3

- Detailed review of these areas will be planned to be conducted in accordance with the guidance in RS-001.

Key Messages

- No change for staff's review to conclude that:
 - There is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner.
 - There is reasonable assurance that such activities will be conducted in compliance with the NRC's regulations.
 - The issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.
- WG continues to refine the binning strategy.
- Binning is a tool for the staff to provide a more efficient review of Power Uprate applications.
- Licensees are to provide sufficient information for staff to determine which bin and level of effort of review.
- A review area's "bin" may change based on staff review.

WG Efforts to Date/Next Steps

- **WG Efforts to Date**
 - Preliminary Recommendations Memo
 - EPU Signature Delegation Memo
 - Initial stages of Advisory Committee on Reactor Safeguards (ACRS) engagement on future power uprate reviews.
 - Public Website updates
 - Past requests for additional information updated for all available SPUs and EPU.
 - New public page for recent public meetings on power uprates and key WG documents.
- **Future Public Engagements**
 - Data Validation and Reconciliation (DVR) Methodology
 - Other Topical Reports used for future uprate applications.
 - Bundling licensing actions

Questions/Comments