WHITE PAPER

Process Improvements for Power Uprate Reviews – Outcomes from Industry Public Meeting with NRC on December 11-12, 2025

Revision 0

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Executive Summary

This document summarizes the discussion between the nuclear power industry and NRC staff during meetings on December 11-12, 2025, pertaining to (1) the NRC review approach for power uprate license amendment requests (LARs) and (2) tabletop walkthroughs of the submittal strategies for two specific plants. This document highlights key discussion points from the meeting, states follow-up actions, and provides potential strategies for streamlining review of licensing submittals for power uprates.

In the context of the direction of Executive Order 14300 to reduce regulatory review time, and with understanding of the many planned upcoming submittals in support of power uprates, the NRC staff has developed a risk-informed strategy for applying appropriate resources to each submittal. This strategy has been shared as a draft Appendix A to Office Instruction LIC-112. Interactions during the meeting between the NRC staff and industry representatives provided clarification on how this risk-informed strategy is intended to be implemented. Specifically, the NRC proposes to use a graded approach where technical review areas within each submittal are "binned" based on characteristics corresponding to the expected level of NRC staff review.

Additionally, the industry prepared two "Tabletop" presentations to discuss the licensing approach for one PWR and one BWR. The Tabletop presentations described how the respective strategies included linked LARs (that are submitted in a sequence where review times will overlap) and bundled LARs (for which multiple related actions are included in a single LAR). These strategies are expected to significantly accelerate implementation (i.e., by years). The NRC staff affirmed that these strategies were aligned with their expectations.

Specific points of discussion during the meeting of particular importance include the following:

- Licensees do not need to obtain formal exceptions to NRC Office Instructions, including for bundled or linked LARs.

- BWRs with submittals for power uprates less than 122% Original Licensed Thermal Power with MELLLA+ that continue to use existing fuel/clad systems and maintain Peak Road Average Burnup of ≤ 62 GWD/MTU will not need to address Fuel Fragmentation, Relocation, and Dispersal (FFRD). The industry expects this conclusion to apply to other licensees planning to uprate in a similar fashion.

- The NRC staff expects that the Advisory Committee for Reactor Safeguards (ACRS) will not need to review most power uprate submittals. ACRS engagement may be needed for the initial industry submittal(s) as well as for any submittals with unique characteristics. If ACRS review is needed, it will be completed within the proposed NRC review timeline (e.g., 12-months for Extended Power Uprates).

The meeting also resulted in several follow-up actions, including an industry action to identify an appropriate specific licensee submittal for a workshop on how the NRC's binning process will be implemented.

Finally, the meeting identified several potential strategies for licensees to support streamlining the NRC review process, such as developing a Regulatory Engagement Plan that provides an overarching description of the strategy for linked and/or bundled submittals.

Acronym List

ACRS – Advisory Committee for Reactor Safeguards

ALS – Alternative Licensing Strategy

AST – Alternative Source Term

CLTP – Current Licensed Thermal Power

EO – Executive Order

EPU – Extended Power Uprate

FFRD – Fuel Fragmentation, Relocation, and Dispersal

HBU – High Burn-Up (fuel)

HNP – Hatch Nuclear Plant

IE – Increased Enrichment

LAR – License Amendment Request

MELLLA+ – Maximum Extended Load Line Limit Analysis Plus

MNS – McGuire Nuclear Station

MUR – Measurement Uncertainty Recapture Power Uprate

NRC – Nuclear Regulatory Commission

OLTP – Original Licensed Thermal Power

RAI – Request for Additional Information

RCI – Request for Confirmatory Information

SE – Safety Evaluation

SNC – Southern Nuclear Company

SPU – Stretch Power Uprate

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1 INTRODUCTION

1.1 Purpose

This document summarizes the discussion between the nuclear power industry and NRC staff during meetings on December 11-12, 2025, pertaining to (1) the NRC review approach for power uprate license amendment requests (LARs) and (2) tabletop walkthroughs of the submittal strategies for two specific plants. This document highlights key discussion points from the meeting, states follow-up actions, and provides potential strategies for streamlining review of licensing submittals for power uprates.

1.2 Background

In response to the increasing demand for reliable energy in the United States, many currently operating nuclear plants are either considering, or have already begun implementing, a power uprate. Presently, the NRC has received notice from utilities for 30 power uprate submittals (by unit) by 2030, with the majority of those in 2027 and 2028.

To handle this, the NRC continues to pursue faster review times on licensee submittals, which will be important for timely implementation of the planned uprates. This objective is consistent with Executive Order (EO) 14300 (Reference 1). The NRC is targeting review timelines of 12 months or less for Extended Power Uprate (EPU) license amendment requests (LARs), 9 months or less for Stretch Power Uprate (SPU) LARs and 6 months or less for Measurement Uncertainty Recapture Power Uprate (MUR) LARs.

In addition to pursuing power uprate, many licensees are also looking to implement related initiatives that require LARs such as fuel cycle extensions from 18 to 24 months, increased fuel enrichment (IE), higher burnup (HBU) fuel, and use of Maximum Extended Load Line Limit Analysis Plus (MELLLA+) method. NRC staff review resources are also needed for these LARs to support the industry's pace for implementation to help meet the nation's energy goals. Furthermore, there are ongoing associated regulatory activities that are essential to complete on time to enable these related initiatives, such as IE Rulemaking and NRC review of the EPRI Topical Report on an Alternate Licensing Strategy (ALS) for addressing Fuel Fragmentation, Relocation, and Dispersal (FFRD) for HBU fuel.

Recognizing the high demand on review resources and the need to proceed on a timeline that conforms to EO 14300, the NRC is working on a revision to Office Instruction LIC-112, "Power Uprate Process" (Reference 2), to specify a graded approach for its review of power uprate submittals that will determine an appropriate level of review effort for each submittal based upon its complexity. The industry has been providing feedback to the NRC on the proposed changes, including its timeline for regulatory submittals and the need dates for NRC actions. This meeting continued this discussion.

1.3 Meeting Summary

The meeting occurred on December 11-12, 2025, and was open to the public as an Observation Meeting. There were no regulatory decisions, but there was considerable interaction between the NRC staff and the industry of upcoming plans and expectations. The meeting included three primary components:

- NRC staff's presentation on its graded approach for power uprate reviews

- Duke Energy's (Duke) presentation on plans for implementing EPU, 24-month fuel cycle, and IE for McGuire Nuclear Station (MNS)

- Southern Nuclear Company's (SNC) presentation on plans for implementing EPU and MELLLA+ at Hatch Nuclear Plant (HNP), resulting in a total uprate exceeding 120% Original Licensed Thermal Power (OLTP)

The slides for each of these presentations are included in Appendices A through C of this document.

During the NRC presentation, the industry provided feedback and requested clarifications on how the NRC expected the graded approach to be implemented. The NRC provided clarifications and discussed potential tactics for facilitating timely reviews. The subsequent presentations from Duke and SNC provided an opportunity to communicate: (1) industry expectations on plans for submittals associated with power uprate, and (2) schedule milestones that are dependent upon NRC action.

The following sections summarize the key discussion points from the meeting (Section 2 of this document), follow-up actions identified by the NRC and the industry (Section 3), and potential strategies for licensees to streamline the NRC review process (Section 4).

2 KEY DISCUSSION POINTS

2.1 NRC Risk-Informed Binning Concept

In the context of the direction of Executive Order 14300 to reduce regulatory review time and with understanding of the many planned upcoming power uprate LARs, the NRC staff has developed a risk-informed strategy for applying appropriate resources to each submittal. This strategy has been shared as draft Appendix A to Office Instruction LIC-112 (Reference 3). This strategy provides guidance for categorizing each area of review (as defined in RS-001 [Reference 4]) into one of three bins:

- Bin 1 (Minimal Review) – Review areas for which the power uprate will have no significant impact on system performance, operating conditions, or variables. Areas of review in Bin 1 are expected to not require Requests for Confirmatory Information (RCIs), Requests for Additional Information (RAIs), or audits.

- Bin 2 (Limited Review) – Review areas for which the power uprate may change system design, function, or operating conditions; however, these changes are not expected to exceed the system's licensed design limits. Areas of review in Bin 2 may require RCIs, but RAIs and audits should be limited.

- Bin 3 (Comprehensive Review) – Review areas that involve significant changes in system design, analyses, or operation; large reduction in margin or defense-in-depth or otherwise challenge regulatory limits; risk-significant changes; or deviations from NRC-approved methodologies. Areas of review in Bin 3 may require RCIs, RAIs, audits, confirmatory calculations, and/or contractor support.

The draft Appendix A to LIC-112 includes the results of an initial NRC staff screening for which review areas are expected to be categorized in each bin. The result of this screening was that most review areas (68%) are expected to be Bin 2, some (25%) are expected to be Bin 1, and few (7%) are expected to be

Bin 3, although the NRC staff acknowledged that the specific circumstances of each submittal would dictate the binning for each plant.

The industry noted that the guidance for binning is appropriately flexible. However, this approach leaves room for interpretation. While both the NRC staff and the industry were content with the binning philosophy, stakeholders agreed that another workshop in the context of application of the binning approach to a specific plant would be helpful to promote alignment.

As part of further refinements on guidance implementation, the industry believes that some review areas that were generically screened as Bin 2 should be categorized as Bin 1 on the basis that the impact of these power uprates are associated with asset management (e.g., materials, Comprehensive Vibration Assessment Program) rather than public health and safety. The industry will provide its suggestions for generic binning at a later date, potentially in a subsequent workshop.

Additionally, the NRC staff affirmed its intent that independent confirmatory calculations are a tool that would only be used as part of Bin 3 reviews. The NRC staff expect that confirmatory calculations would only be pursued if the licensee did not provide sufficient details allowing the NRC staff to confirm the veracity of the submitted analyses. Thus, the NRC staff encouraged the industry to provide any such necessary information, which will facilitate timely review by avoiding the need for the NRC to pursue confirmatory calculations.

2.2 Review of Licensee Strategies

The industry prepared two “Tabletop” presentations to discuss the licensing approach for MNS (Duke) and HNP (SNC). These sites were selected because they are pursuing multiple initiatives necessitating LARs, rely on associated NRC actions (e.g., IE rulemaking, Topical Report safety evaluation), and they address both a PWR (MNS) and a BWR (HNP). Both Tabletops described how the respective strategies included linked LARs (that are submitted in a sequence where review times will overlap) and bundled LARs (for which multiple related actions are included in a single LAR).

- For MNS, Duke plans to submit an LAR for 24-month surveillance frequency, an LAR for EPU, and a bundled LAR for Low-Enriched Uranium+ (LEU+) and HBU Fuel Transition. In addition, there are eight other supporting LARs (e.g., Alternative Source Term [AST]) and six Topical Reports that precede this sequence and will also require overlapping review periods. Duke noted that its submittal strategy relies on timely NRC action for IE rulemaking consistent with the current schedule to avoid a need for exemptions that would increase overall effort and potentially impact the uprate implementation timeline. Additional details on Duke’s strategy for MNS are provided in the slide deck in the Appendix.

- For HNP, SNC plans to submit a bundled LAR for EPU and MELLLA+ (that preserves previous approvals for thermal power optimization (TPO)) that will be reviewed in parallel with an LAR for AST. SNC noted how the bundled and linked approach for the LARs is expected to save years in NRC review time compared to a purely sequential strategy. SNC noted that, like Duke, its submittal strategy also relies on timely IE rulemaking. Additional details on SNC’s strategy for HNP are provided in the slide deck in the Appendix.

The NRC staff affirmed that the strategies identified by Duke and Southern for bundled and linked LARs were aligned with their expectations and consistent with an overall goal of a timely and efficient review

process. The staff also stressed the importance of pre-submittal meetings to confirm alignment once additional details of the submittals are available. The NRC staff intends to use the binning process described in the draft Appendix A to LIC-112 to support its review.

The NRC staff acknowledged that timely completion of its ongoing actions – e.g., reviews of Topical Reports and IE rulemaking – is essential for the submittal strategies outlined by Duke and Southern. The NRC staff affirmed that they are on track with completion times that support the identified power uprate implementation schedules. Specifically, the IE rule will be completed by November 2026 in accordance with EO 14300 and the draft Safety Evaluation for the ALS Topical Report will be issued by mid-March 2026 followed by an ACRS meeting in April 2026.

2.3 Selected Topics

Discussion at the meeting included several key details that are of high importance for the industry to mitigate schedule risk for power uprate implementation. These key details are summarized below for industry awareness.

2.3.1 No Exceptions are Needed for Office Instructions

The industry refers to NRC Office Instructions such as LIC-109 (Reference 5) and LIC-112 (Reference 2) for guidance to shape submittals and its overall strategies for interacting with the NRC staff on licensing issues. The industry noted that bundled and linked submittals for power uprate could be viewed as a departure to LIC-109, although there are precedents for such action. The NRC agreed that there are such precedents and specifically stated that licensees do not need to submit exceptions to Office Instructions. However, the NRC did request that licensees inform the NRC in advance of any circumstances for which the licensee believes there may be a departure from an Office Instruction. This advance warning will support appropriate alignment of NRC staff resources and timely review.

2.3.2 BWRs with Traditional EPU and MELLLA+ Do Not Need to Address FFRD

As part of the tabletop exercise for HNP, SNC reviewed its interpretation that a bundled LAR for EPU and MELLLA+ did not need to address FFRD because HNP will continue to use existing fuel/clad systems, the uprated power level is less than 122% OLTP (within BWR power levels considered at the time SECY-15-0148 was issued), and the peak rod average burnup is ≤ 62 Gigawatt-days per Metric Ton of Uranium (GWD/MTU). This position is consistent with SECY-15-0148 (Reference 6) and the draft Appendix A to LIC-112 (Reference 3), which identifies the review area for Emergency Core Cooling System and Loss-of-Coolant Accidents as Bin 2 if: (1) NRC-approved safety-analysis methods are used within the range of applicability, without significant deviations, and within applicable limitations and conditions; and (2) for BWRs, the maximum rod-average burnup limit of 62 GWD/MTU is maintained and the plant is operated in a manner consistent with current BWR core design and operational strategies. Furthermore, SNC noted that the proposed approach for HNP followed the precedent for Peach Bottom Units 2 and 3.

The NRC agreed that the approach identified by SNC was consistent with guidance and precedent and that further evaluation of FFRD for HNP should not be necessary. The same conclusion would apply to other licensees that maintain maximum rod-average burnup of 62 GWD/MTU and operate in a manner consistent with current core design and operational strategies. However, the NRC noted that EPU LARs for power levels greater than 122% OLTP may require further evaluation.

2.3.3 ACRS Engagement

The schedules included in the tabletop discussions from Duke and SNC did not include any specific interactions with the ACRS. Duke and Southern identified that if ACRS engagement is necessary, they would like to know as soon as possible so that they can adjust their schedules to accommodate ACRS review.

The NRC staff advised that their understanding is that ACRS engagement will not be needed for most power uprate LARs. ACRS may want to review the initial industry EPU submittal(s), or if there is something unique about a submittal. The NRC staff noted that regular EPUs and MELLLA+ submittals are not expected to go to ACRS. The NRC staff will seek clarification from ACRS on how it intends to approach power uprate submittals and provide this feedback to the industry as soon as practical.

Additionally, the NRC staff clarified that any interaction with the ACRS is expected to occur within the proposed review timeline (e.g., within the total 12-month review period for EPU LARs).

2.3.4 Pre-submittal Engagements and Alignment of Supporting Personnel

The industry acknowledged that the 12-month timeline for regulatory review of EPU-related submittals and ability to pursue a strategy with linked submittals that have overlapping review periods will provide a tremendous benefit for implementation schedule. To help realize this benefit, the NRC staff encouraged the industry to use pre-submittal engagements to inform the NRC of the scope and schedule for power uprate implementation submittals. This step will enable appropriate alignment of NRC resources and prompt activity at the beginning of the review period.

The NRC staff also noted that on-time completion of the review process will require prompt initiation of the audit process and ongoing responsiveness by the licensee following acceptance of the submittal. Thus, the NRC suggested that the licensee should ensure that its personnel are available and ready to support pre-submittal meetings, on-site audits, and prompt response to questions, RCIs, and RAIs.

2.3.5 Classification of Power Uprates and Perspective on EPU to > 120% OLTP

The industry noted that current NRC guidance (e.g., LIC-112) acknowledges the differences in magnitude of uprates for MURs (<2% increase above Current Licensed Thermal Power [CLTP]), SPUs (<7% increase from OLTP), and EPUs (increases as high as 20% from OLTP) and that this magnitude influences the safety significance of the uprate. However, the significance of a “small” uprate to a plant that has previously been uprated (and thus received regulatory approval for that prior uprate) is likely to be much smaller than of a single “large” uprate to a plant that has not previously uprated to achieve the same change in thermal power level. Presently, nearly all operating units have implemented an uprate of some kind, so the power uprate classification convention may warrant some adjustment. This topic may influence the binning process and can be explored during a future workshop.

Regardless, the NRC advised the industry that it does not consider 120% OLTP to be a firm guideline, and that each power uprate LAR will be evaluated based on its own circumstances to the requested power level. This posture was of particular importance for SNC’s HNP, which is pursuing power uprate to 121.5% OLTP. The industry advised the NRC that other plants, primarily BWRs, are also planning to pursue uprates greater than 120% OLTP.

3 FOLLOW-UP ACTIONS

3.1 Schedule Additional Workshop on Binning

The binning concept from the draft Appendix A to LIC-112 was positively received by the industry and the NRC staff is optimistic that it will help facilitate meeting the review time targets for power uprate submittals. However, all stakeholders acknowledged that implementation of the binning system will rely on some judgment. Industry representatives and the NRC staff agreed that an additional workshop in the context of a specific licensee submittal would be a useful forum to refine alignment among the stakeholders of how the binning system will be implemented.

The industry (through NEI) has an action to identify to the NRC staff an appropriate pilot submittal on which to conduct this additional workshop. Scheduling with the NRC and industry representatives will occur thereafter.

3.2 Provide Details on Expectations for ACRS Engagement

During the tabletop discussions, industry stakeholders commented that ACRS review has had a significant impact on the licensing strategy and implementation schedule. As discussed above, the NRC staff agreed to request clarification from ACRS on their intent to review power uprate submittals and provide this feedback to the industry to support planning.

3.3 Consider Revising EPRI Topical Report for More Generic Applicability

During its discussion on the strategy for MNS, Duke discussed how it plans to utilize WCAP-18850 (Reference 7) and the EPRI Report 3002028675 (Reference 8 – note this is a non-proprietary version of EPRI Report 3002028674) to address FFRD concerns during a postulated LOCA. While the technical basis will include calculations that follow the WCAP-18850 methodology and the application described in the EPRI Topical Report, Duke will have to use a McGuire-specific model and operating conditions.

As a general principle, Topical Reports are more beneficial to the review process if they can generically bound implementation at specific plants. The NRC staff suggested that the industry consider whether the EPRI Topical Report could be revised for more generic applicability. Industry stakeholders acknowledged that revising the analyses to be more generic is under consideration. The industry agreed to continue its consideration of updating the generic analyses, but there will not be immediate-term changes to the EPRI Topical Report or WCAP-18850 to avoid disruption to the ongoing NRC review process.

3.4 Provide Industry Suggestions for NRC Consideration

Throughout the meeting, industry representatives provided feedback to the NRC staff on the planned approach for risk-informed review of power uprate submittals. Selected suggestions from these discussions are summarized below.

3.4.1 Review Bin 2 Items for Recategorization to Bin 1

Industry representatives reviewed the draft Appendix A to LIC-112 in advance of the meeting and brought specific questions on selected review areas. Additionally, the NRC staff provided examples

during the meeting for binning rationale for selected review areas and how various factors could cause the binning decision to be different than the nominal binning outlined in the tables that are part of the draft Appendix A to LIC-112.

The industry believes that some review areas that were generically screened as Bin 2 should be categorized as Bin 1. Such changes would benefit the review process by ensuring that review resources are directed towards the review areas of greatest importance to public health and safety. In particular, the industry considers that, in the context of power uprate, the typical considerations for some review areas currently in Bin 2 are of low significance to public health and safety and are more for asset management (e.g., Materials, Comprehensive Vibration Assessment Program). The industry will provide its specific suggestions for generic binning separately, with follow-up expected in a subsequent workshop.

3.4.2 Timeline Goals for Topical Reports

The NRC reiterated its timeline goals for review of power uprate submittals (i.e., 6 months for MURs, 9 months for SPUs, 12 months for EPUs) and the industry appreciated understanding these timeline expectations to support implementation planning.

Additionally, the industry noted that the power uprate submittals were dependent on numerous Topical Reports that are either currently under NRC review or will be submitted soon. Improved schedule certainty for completion of the reviews of the Topical Reports would also be beneficial to licensees. Thus, the industry suggested that the NRC determine and communicate timeline goals for review of Topical Reports, similar to what has been done for power uprate submittals.

3.4.3 Bin 2 Criteria for MUR and SPU

The industry recognizes that the tables in the draft Appendix A to LIC-112 were created using the review areas from RS-001, which is for EPUs. However, there are many plants for which the submittals will be for MURs or SPUs. The industry expects that review of these submittals will be simpler than for EPUs and will therefore consist of review activities that are primarily aligned with Bin 1 and few review activities like Bin 2 or Bin 3.

However, if the NRC has any particular concerns about MUR or SPU submittals that would cause review areas to be Bin 2 or Bin 3, it would be helpful to the industry to understand those concerns. Accordingly, the industry suggested that the NRC define Bin 2 and 3 criteria for MURs and SPUs.

4 POTENTIAL LICENSEE STRATEGIES FOR STREAMLINING NRC REVIEW PROCESS

4.1 Prepare Regulatory Engagement Plan

The tabletop discussions with Duke and SNC illustrated how the licensing strategies for upcoming power uprates across the industry may be complex and varied. The NRC staff appreciated the insight into the actions each utility planned to take and how each individual action was connected to the overall strategy. NRC understanding of the total picture also helps facilitate alignment of appropriate review resources and coordination among those resources, which ultimately accelerates the review process.

Accordingly, the NRC staff and industry stakeholders agreed that it would be beneficial for each licensee to prepare a Regulatory Engagement Plan describing its integrated licensing strategy for power uprate,

the various submittals and how they are interdependent, and the overall planned timeline. This document would be provided to the NRC for information as part of pre-submittal interactions and updated as needed during the review process at appropriate milestones.

4.2 Include Justification for Binning Decisions

Licensees plan to use guidance in Appendix A of LIC-112 to prepare submittals in a manner that addresses risk considerations to the extent practical (e.g., providing sufficient information to justify a lower bin). Such action is expected to accelerate the review process and reduce schedule risk for review actions at higher bin levels.

The NRC staff agreed that reviewers should consider this information when binning. Industry representatives suggested that licensees could prepare their own table of suggested binning for a specific submittal, highlighting any specific content that was incorporated into the submittal to address risk in particular review areas. The NRC staff agreed that such a table would be helpful to its reviewers.

4.3 Hold Pre-Submittal Meetings

As noted above, interaction between the licensee and the NRC staff in pre-submittal meetings is essential for timely completion of the review process. Specific topics to be addressed in such meetings include the following (not an exhaustive list):

- The overall strategy for power uprate submittals and how the various submittals fit together (i.e., the content of the Regulatory Engagement Plan discussed above and how the subject submittal fits)
- Licensee perspective on binning of review areas in accordance with LIC-112
- Any unusual technical features of the submittal that might require Bin 3 categorization, confirmatory calculations, ACRS review, or other more intensive review action that presents a risk to timely completion
- Any actions taken by the licensee to reduce the risk of the submittal that should inform the NRC's approach and binning

4.4 Conduct On-site Regulatory Audits

The NRC staff and industry stakeholders discussed the mechanics for conducting reviews for power uprate submittals and agreed that on-site regulatory audits with face-to-face interaction were preferable to remote interactions with formal written question-and-answer via RAIs. At the site, NRC staff reviewers can be focused on the submittal in question and the face-to-face interaction helps drive issues to closure much more rapidly than formal written submittals. Accordingly, licensees should strive to support on-site regulatory audits early in the review period. Additionally, licensees should ensure that knowledgeable staff are available to support these regulatory audits and promptly respond to questions.

4.5 Consider NRC-Suggested Strategies for Shaping LAR Content

In support of timely reviews, the NRC staff provided several suggestions for preparing submittals that will influence the effort required by reviewers. Specific suggestions are outlined below.

4.5.1 Consider Applicability of Topical Reports Cited in LARs

As discussed in both tabletop licensing strategies, the industry is planning to leverage prior NRC approval of Topical Reports (some of which are in ongoing review) to streamline the review process for site-specific LARs. This approach is reasonable and preferred, but the licensee must ensure that the Topical Report is applicable to the specific site. The NRC staff highlighted any limitations and conditions on the Topical Report as an area to apply particular focus.

4.5.2 Provide All Necessary Calculations to the NRC for Review

As discussed above, the NRC staff intends to prepare confirmatory calculations only if the review area is categorized as Bin 3. The review process would be accelerated if the licensee provides all necessary calculations for NRC staff review, which would reduce the need for independent confirmatory calculations.

4.5.3 Consider Bounding Analyses to Avoid Duplicative Work

The series of submittals for the overall licensing strategy may prompt incremental changes to associated technical analyses for the specific topic of the most recent submittal. If practical, performing one bounding analysis for the entire strategy may be beneficial for the licensee (who then prepares fewer analyses) and for the NRC reviewers (who can leverage past review of the bounding analysis rather than having to independently review each incremental analysis).

4.5.4 Review Safety Evaluations and RAIs on Previous Similar Power Uprate Submittals

Given the large number of licensees that are concurrently pursuing power uprate, the NRC staff expects to be reviewing similar content from different plants. Licensees should be informed of issues that have arisen on preceding similar submittals (e.g., via RAIs, RAI responses, and safety evaluations [SEs]) and consider incorporating these resolutions into their submittals, if applicable.

The NRC staff suggested that the industry consider a mechanism (e.g., via NEI) among the cohort of licensees pursuing uprate to share experiences and lessons learned on licensing submittals for power uprate.

4.5.5 Use Precedents from Historical Submittals

The NRC staff has completed over 170 reviews of power uprate LARs historically. The NRC staff noted that citation of relevant precedents from these prior approvals and discussion of how other plants have currently implemented the change being proposed can help reduce the staff's assessment of the safety significance of the LAR.

4.5.6 Use Regulatory Guidance

As part of its tabletop discussion, SNC cited the advances in dose consequence analysis guidance planned for RG-1.183, Rev. 2 (Reference 9), which has not yet been finalized, and its intent to utilize this guidance. The NRC supported this approach, even if the draft guidance has not been finalized, as conformance to the draft guidance and supplying the necessary technical information would still be considered for risk-informing the review process. As a general principle, conformance to regulatory

guidance is beneficial for reducing the safety significance of the LAR and placing the review area in a lower bin.

4.5.7 Focus on De-risking Bin 3 Areas Instead of Bin 2 Areas

The NRC staff's perspective is that there is a much larger difference in review effort and potential schedule risk between Bin 3 and Bin 2 as compared to the difference between Bin 2 and Bin 1. Thus, as licensees are strategizing how to streamline the review process for their submittals, risk reduction efforts on review areas that could be Bin 3 are likely to be the most beneficial. De-risking potential Bin 2 areas would also be helpful, but the effort and schedule benefit of recategorization of such areas as Bin 1 is likely to be comparatively smaller. NRC also acknowledged that using draft guidance in the interim would most likely be a Bin 3 element.

4.6 Implementation Blueprint for Future Topical Reports

NRC staff experience is that applicability of Topical Reports to the specific circumstances of a submittal and consideration of any limitations and conditions are common areas for reviewer questions as discussed in Section 4.5.1. An approach for addressing this observation would be to include in future Topical Reports specific instructions – i.e., a blueprint – for how licensees should utilize the Topical Report for their submittals. Including this blueprint as part of the Topical Report submittal would provide the NRC an opportunity to review and comment on the approach. This step would provide better assurance to licensees that their submittals correctly leverage the content of the Topical Report.

5 CONCLUSIONS

The NRC staff and industry stakeholders conducted a meeting on December 11-12, 2025, to discuss plans for NRC review of submittals pertaining to implementation of power uprates, including tabletop walkthroughs of the submittal strategies for two specific plants. The NRC staff and the industry share a goal of timely reviews of these submittals, and the binning process described in the NRC's draft Appendix A to LIC-112 discussed in the meeting is a positive step. Additionally, the industry's proposed approach of linked and/or bundled submittals with overlapping review periods will accelerate the schedule. The NRC did not object to the submittal strategies described in the walkthroughs.

The meeting resulted in several follow-up actions and considerations for licensees when they are preparing submittals pertaining to power uprate. Of particular note is the idea of another workshop between the NRC and the industry to work through the binning process in the context of a specific submittal. The industry will identify an appropriate submittal and coordinate with the NRC to arrange for a workshop with appropriate stakeholders.

REFERENCES

1. Executive Order 14300, “Ordering the Reform of the Nuclear Regulatory Commission,” May 23, 2025.

2. U.S. NRC Office Instruction LIC-112, “Power Uprate Process,” Revision 2 (ML19254A627).

3. Draft Appendix A to NRC Office Instruction LIC-112, “Graded Approach for Determining Power Uprate Level of Review” (ML25273A236).

4. U.S. NRC Office of Nuclear Reactor Regulation, RS-001, “Review Standard for Extended Power Uprates,” Revision 0.

5. NRC Office Instruction LIC-109, “Acceptance Review Procedures for Licensing Basis Changes,” Revision 3 (ML20036C829).

6. SECY-15-0148, “Evaluation of Fuel Fragmentation, Relocation, and Dispersal under Loss-of-Coolant Accident (LOCA) Conditions Relative to the Draft Final Rule on Emergency Core Cooling System Performance during a LOCA (50.46c),” dated November 30, 2015.

7. WCAP-18850-NP, “Adaptation of the FULL SPECTRUM LOCA (FSLOCA) Evaluation Methodology to Perform Analysis of Cladding Rupture for High Burnup Fuel” (ML24060A163).

8. EPRI Report 3002028675, “LOCA Analysis of Fuel Fragmentation, Relocation, and Dispersal for Westinghouse 2-Loop, 3-Loop, and 4-Loop Plants – Non-Proprietary: Evaluation of Cladding Rupture in High Burnup Fuel Rods Susceptible to Fine Fragmentation,” (ML24121A208).

9. U.S. NRC Draft Regulatory Guide DG-1425, Proposed Revision 2 to Regulatory Guide 1.183, “Alternative Radiological Source Terms for Evaluating Design-Basis Accidents at Nuclear Power Reactors” (ML24304A864).

APPENDICES

A. NRC Staff Presentation, “NRC Staff’s Graded Approach for Power Uprate Reviews,” December 11, 2025 (ML25344A410).

B. Duke Energy Presentation, “Duke Energy EPU/24 MFC/LEU+ Licensing Tabletop,” December 11, 2025.

C. Southern Nuclear Company Presentation, “Plant Hatch Potential EPU Pilot Approach (2nd Tabletop)*,” December 12, 2025.