

# **ADVANCE Act Section 505 Nuclear Licensing Efficiency**

## **NRR and NMSS Initiatives Update**

March 24, 2025

# Meeting Logistics

- Information public meeting with designated question and answer sessions
  - Meeting notice dated March 12, 2025 ([ML25071A055](#))
  - Meeting materials are available at <https://www.nrc.gov/pmns/mtg?do=details&Code=20250323>
- Teams Webinar Operation
  - Attendees' mics & cameras and meeting chat feature are disabled
  - During the Q&A sessions, use Teams' "raise hand" feature, and NRC staff will enable you to unmute your mic
  - In-person attendees must disable/mute their laptop mics & speakers

If attendees would like their names listed in the publicly available meeting summary attendance record, please email NRC staff listed on the meeting notice.

# Agenda

(times are approximate)

Time	Topic
1:00 PM	Introductions
1:05 PM	Opening remarks
1:10 PM	Overview of Section 505 and NRR Initiatives
1:25 PM	R-LEAP Initiatives with Q&A
2:05 PM	M-LEAP Initiatives with Q&A
2:55 PM	Break
3:00 PM	RIDM Initiatives with Q&A
3:35 PM	Specific Licensing Processes with Q&A
4:20 PM	Question and Answer Session for the Public
4:55 PM	Closing Remarks and Adjourn

# Opening Remarks from Core Team

- NRC ADVANCE Act Core Team
  - Mike King, Special Assistant for ADVANCE Act
  - Luis Betancourt, Executive Technical Assistant
  - Annie Ramirez, Executive Technical Assistant
  - Aaron McCraw, Sr. Communications Specialist
- ADVANCE Act Section 505 – Nuclear Licensing Efficiency
  - One part of NRC’s overall implementation of the ADVANCE Act.
  - NRC’s [public website](#) has additional information about our overall implementation of the Act and plans for other upcoming and past public meetings related to the Act (QR codes on next slide)
  - Use the “Contact Us” form on the website for general questions, comments, and ideas on the ADVANCE Act (QR code on next slide)



# Be Engaged!



NRC's public information site for  
ADVANCE Act updates

- Info on public meetings related to the Act
- Status tracker
- Documents and deliverables related to the Act as they are made publicly available

# **Overview of ADVANCE Act Section 505 and NRR Initiatives**

**Jamie Pelton**

# NRC Mission Statement

The NRC protects public health and safety and advances the nation's common defense and security by enabling the safe and secure use and deployment of civilian nuclear energy technologies and radioactive materials through efficient and reliable licensing, oversight, and regulation for the benefit of society and the environment.

## **ADVANCE Act, Section 505**

- ADVANCE Act, Section 505 Provisions
  - 1) establish techniques and guidance for evaluating applications for licenses for nuclear reactors to support efficient, timely, and predictable reviews of applications for those licenses to enable the safe and secure use of nuclear reactors;
  - 2) maintain the techniques and guidance by periodically assessing and, if necessary, modifying those techniques and guidance; and
  - 3) obtain approval from the Commission if establishment or modification of the techniques and guidance involves policy formulation.

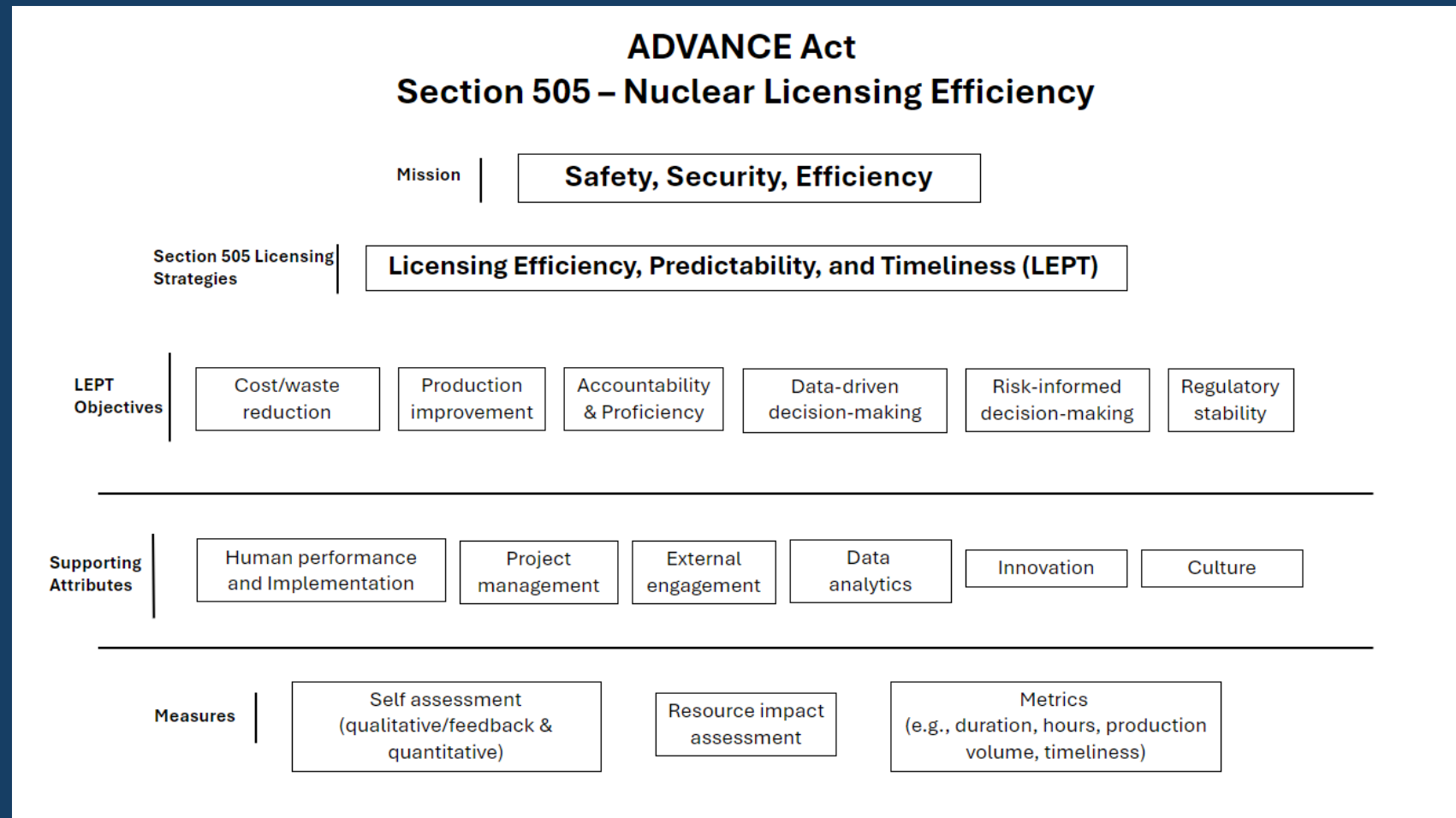


## Approach for Section 505

- Enable the safe and secure use of nuclear reactors
- Establish and implement techniques and guidance that support safety, security, and efficiency in licensing reviews
  - Leveraging and refocusing initiatives and projects that are establishing techniques and guidance that meet Section 505
  - Identifying and implementing changes that optimize resources
  - Developing approaches to identify and address future needs
- Address the periodic assessment requirement of Section 505
  - Quantitative measures (data-driven) – for example, using NRR's workload management and data analysis infrastructure to assess the techniques and guidance
  - Qualitative measures (feedback)
- Consider feedback and recommendations
  - Future Section 505 workshop targeted for May 2025 to gather input

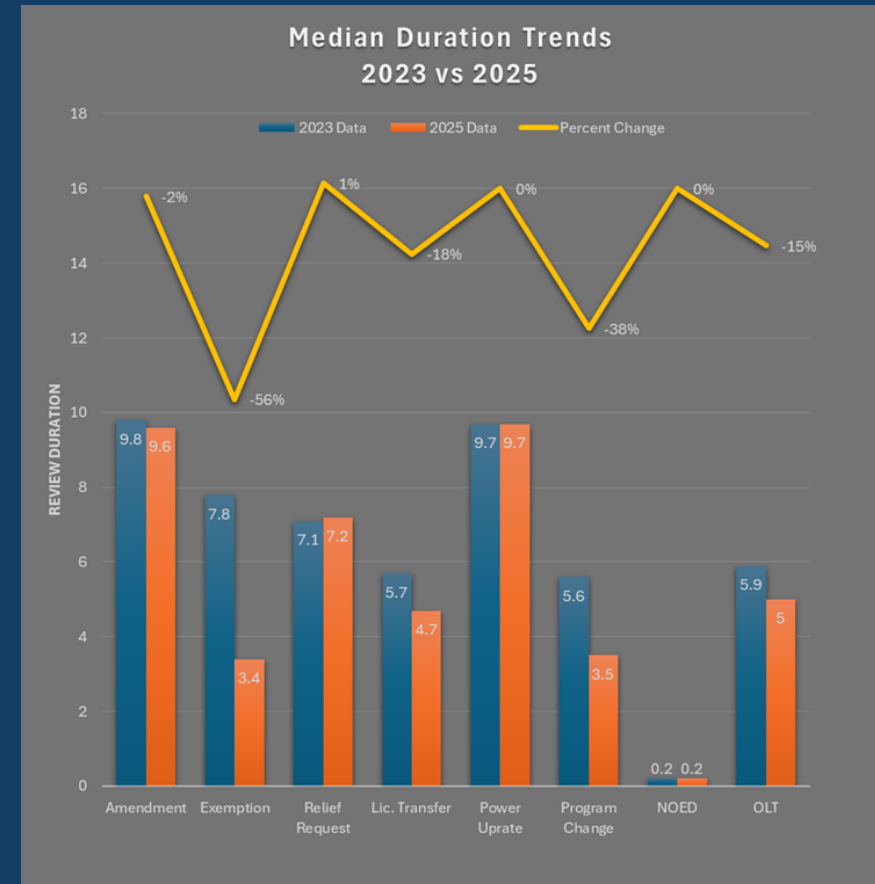


# Licensing Efficiency, Predictability, and Timeliness (LEPT) Framework Concept



## NRR Licensing Data

- Change from 1-year to estimated completion schedule resulted (on average) in a decrease of 18% in duration and 6% in hours
- Lagging indicator: Pre-ADVANCE Act efficiencies are our baseline starting point
- Efficiency expected to increase as ADVANCE Act Section 505 initiatives progress



## Examples of Licensing Initiatives & Suggestions



# **NRR Licensing Efficiencies Expectations Memorandum**

**January 21, 2025 (ML24278A002)**

- NRR management's expectations for implementing near-term actions that align with NRC's commitment to fulfill the ADVANCE Act
- Transparency of organizational structure
- Preapplication engagements
- Disciplined, safety-focused, risk-informed reviews
  - Obtaining supplemental licensee information
  - Development of safety evaluations (draft "SEs with holes")
  - Use risk-informed thinking

## Public Engagements

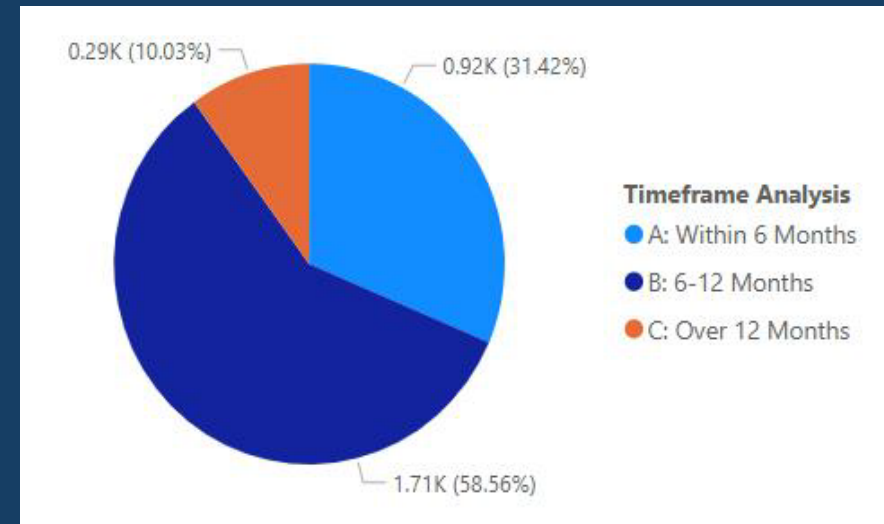
- ADVANCE Act Section 505 public meeting – January 23, 2025
- Power uprate public meetings – June 26, September 4 and 30, October 17, and November 14, 2024
- License renewal public meetings – December 3, 2024, and March 26, 2025
- Digital upgrades ADVANCE Act Sections 507 & 505 public meeting February 19, 2025, and DI&C Lessons Learned workshop on March 13-14, 2025
- 10 CFR 50.69 public workshop – March 5, 2025
- March ADVANCE Act Section 505 meeting – Today!
- More to come!



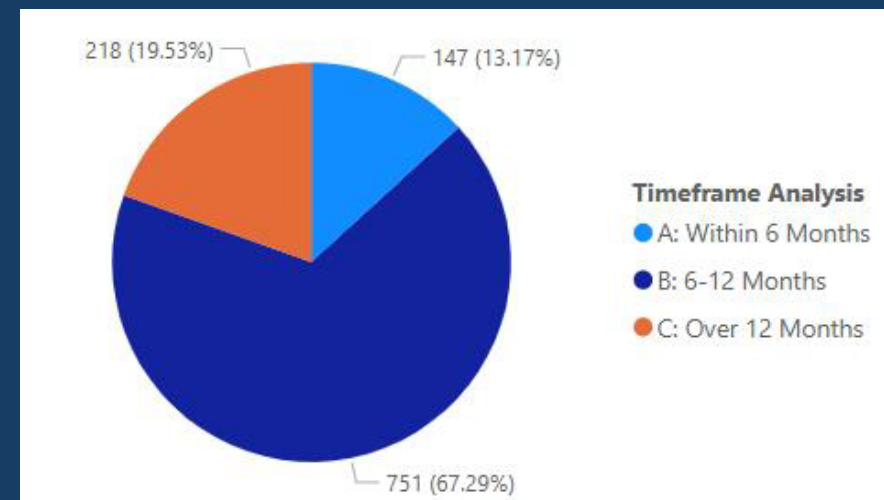
## Data-driven decision-making

- We are getting 90% done in 1 year with no RAIs, and 30% of those done within 6 months with no RAIs
- Focus on effective preapplication and RAI engagement will drive efficiency
- NEI suggests 90% reviews to be done in 6 months and remaining in 1 year

### Time for operating reactor licensing actions with no RAIs

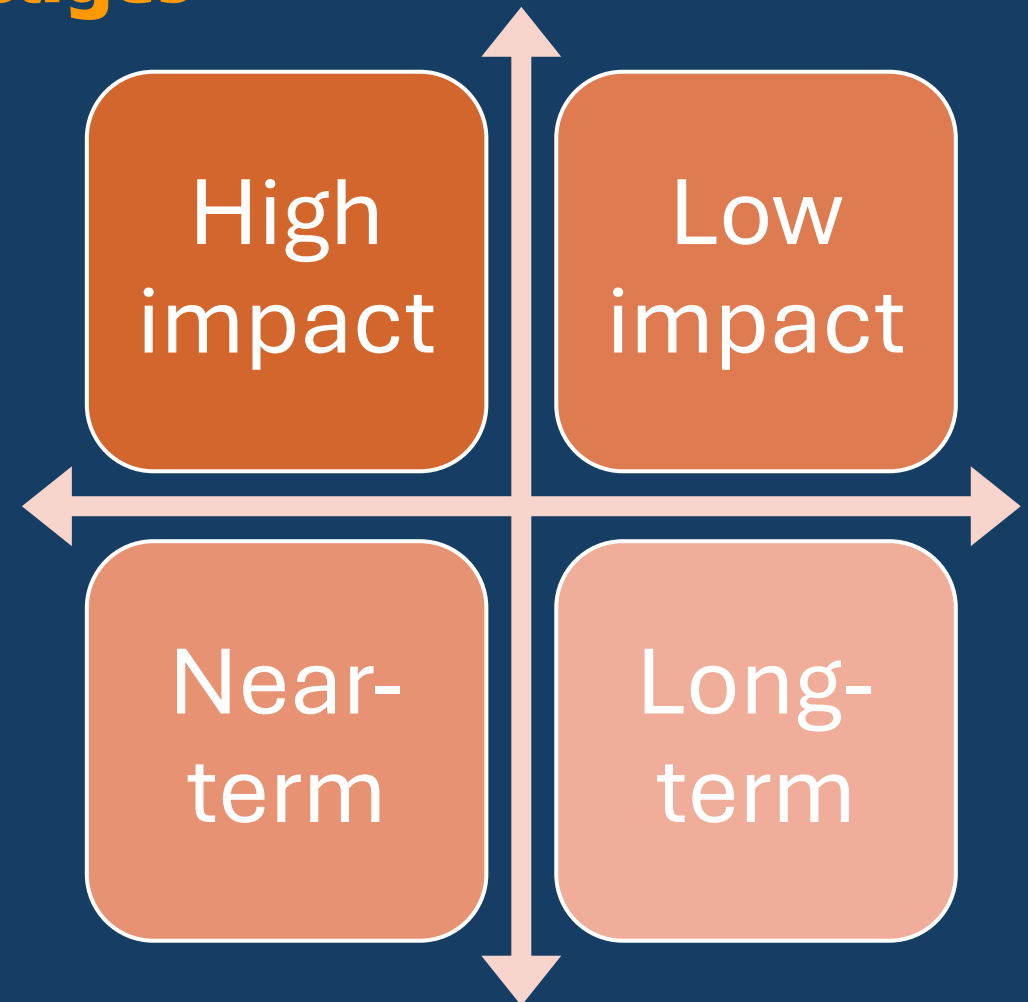


### Time for operating reactor licensing actions with RAIs



## Key Messages

- Focus now is on short-term successes and what we can accomplish
- Long-term focus is establishing infrastructure, processes, and culture to ensure that efficiency, predictability, and timeliness become business as usual
- Continued focus on prioritization and ensuring new ideas get return on investment



# **R-LEAP Initiatives Update**

**Carla Roque-Cruz**  
**Stephen Philpott**  
**Bob Pascarelli**  
**Undine Shoop**

## RLEAP Overview

- Current Initiatives
  - Metrics & RPS (Reactor Program System (NRC's project management application)) best practices & accountability
  - Preapplication Interactions
  - Draft SE with holes and supplemental licensee information (RCIs/RAIs/audits)
- Future Initiatives
  - Streamlining SEs
  - Communications
  - Leveraging technology & artificial intelligence (AI)

## Metrics and RPS Best Practices

**Data-driven decision-making**  
**Accountability & Proficiency**



- **Why:** To identify: the data and tools within RPS that can be used to implement best practices; key parameters for tracking; successes; and areas for improvement to make our licensing processes more efficient, predictable, and timely.
- **How:**



**Promote**



**Train**



**Communicate**



## Preapplication Interactions

**Regulatory stability**  
**Production improvement**

- Purpose – to improve the effectiveness and consistency of presubmittal/preapplication interactions
- Differences in needs for licensees and applicants
- Internal and external guidance
- Update operating reactor best practices for increased preapplication interactions
- Prospective applicant landing page  
<https://www.nrc.gov/reactors/new-reactors/advanced/new-app.html>

## Draft SEs and Supplemental Licensee Information

**Regulatory stability**  
**Accountability and proficiency**  
**Production improvement**

- Several NRR Office Instructions provide for developing a “draft safety evaluation (SE) with holes” before requesting additional information
- Licensing efficiencies memorandum reinforced this expectation
- To carry out this expectation, the RLEAP team plans to:
  - Define “Draft SE with holes” and its purpose
  - Provide examples in guidance
  - Develop guidance for when to use RAIs versus RCIs
  - Identify best practices for use of audits in the review process

## Draft SEs and Supplemental Licensee Information

**Regulatory stability**  
**Accountability and proficiency**  
**Production improvement**

- Goals of “Draft SEs with holes” initiative:
  - To begin early development of the safety evaluation and identify gaps/missing information in the application needed to make a required safety finding,
  - To maximize schedule certainty while also potentially decreasing the length of the review schedule and amount of resources needed to complete the review,
  - To avoid issuing RCIs/RAIs that are not needed to make a regulatory finding,
  - To minimize the chance that information needs are missed while drafting initial RAIs, RCIs, or audit questions (i.e., ensure no requirements are missed),

## Draft SEs and Supplemental Licensee Information

**Regulatory stability**  
**Accountability and proficiency**  
**Production improvement**

- Goals of “Draft SEs with holes” initiative (continued):
  - To minimize the chance that additional information needs (i.e., late RAIs, and RCIs) are identified after the due date for RAI, RCIs, has passed that may extend the duration of the review,
  - To avoid duplicative effort and minimize rework,
  - To identify if an audit is needed/what information is needed during an audit, and
  - To confirm that all technical areas in the submittal are evaluated.

# Q&A



# **NMSS/M-LEAP Initiatives Update**

**Shana Helton**  
**Robert Sun**

## **M-LEAP Scope**

Decommissioning & Low-Level Waste Business Line

Fuel Facilities Business Line

Nuclear Material Users Business Line

Spent Fuel Storage and Transportation Business Line

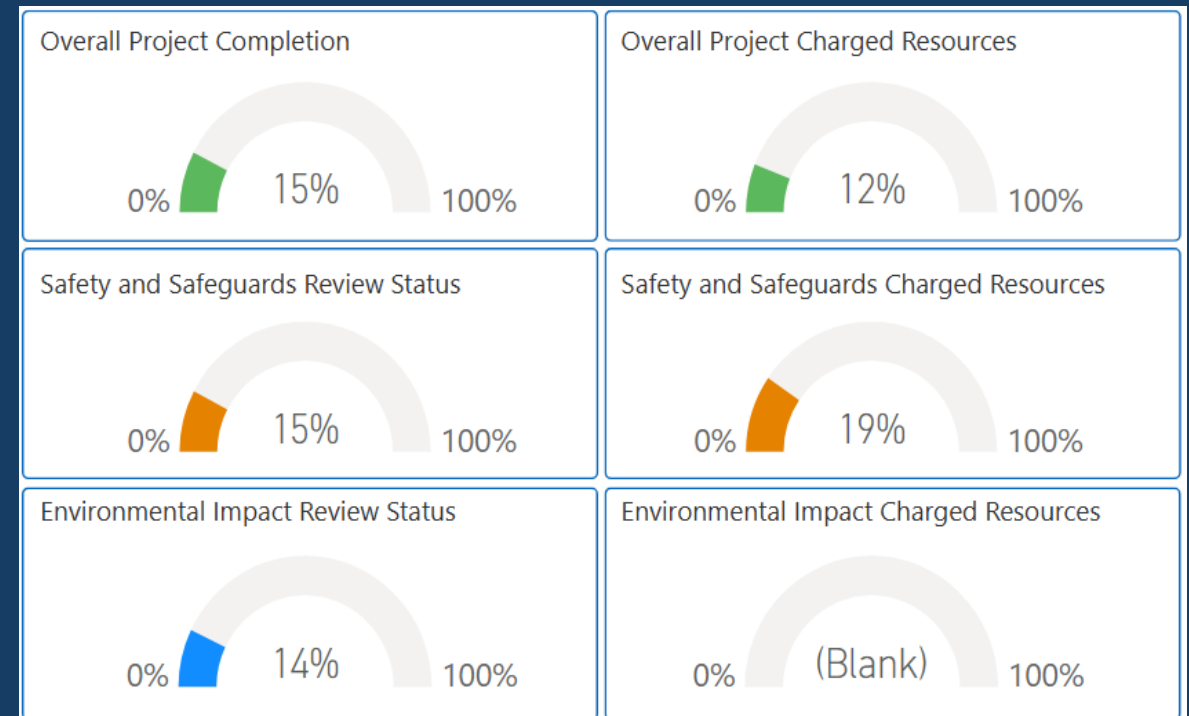
## M-LEAP Approach

- Identification of Common Process Efficiencies:
  - Pre-application Engagement Process
    - Open and transparent
  - License Renewal Process Improvement
    - Scope and level of effort of review
    - License term limits
- Identification of Business Line Specific Efficiencies
- Consideration of stakeholder comments (i.e. NEI, Industry, public, other State and Federal agencies, etc.)
- Implementation of ideas with favorable return on investment

## Fuel Facility Licensing Efficiency Ideas

- Recommendations:
  - Require the review of precedent
  - Establish licensing project health metrics
  - Increase transparency
- Anticipated Benefits:
  - Reduce staff level of effort
  - Strengthens licensing process
  - Enhances transparency, tracking and monitoring, and stakeholder confidence

Example of Project Progress Dashboard

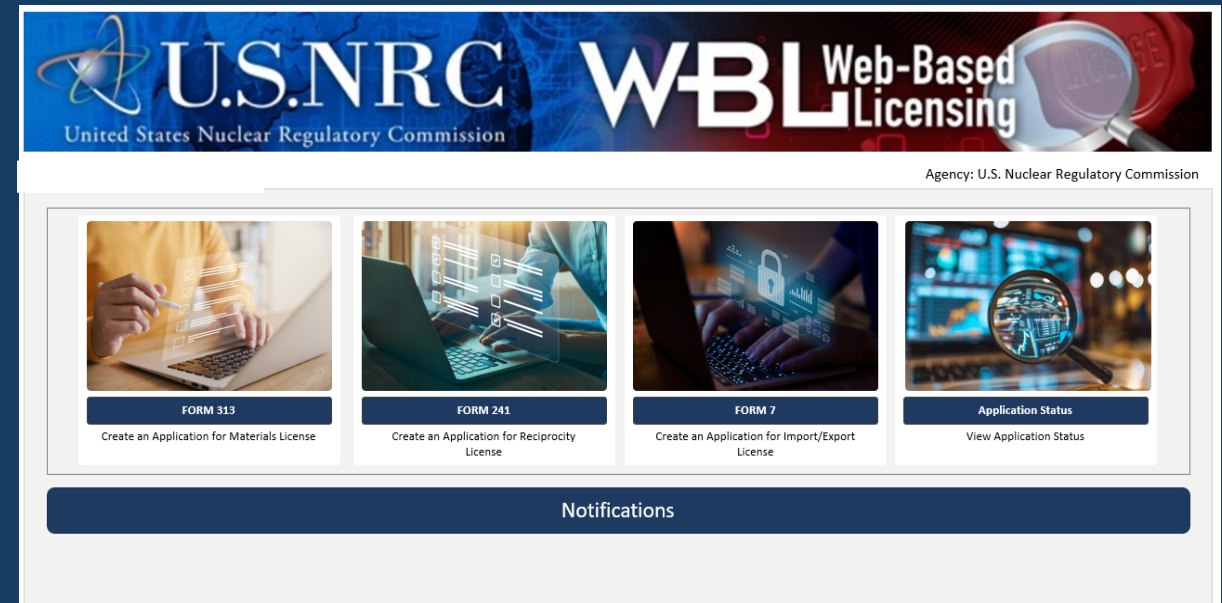


Dashboard last refreshed on: 2/10/2025

Data last modified on: 1/25/2025

# Modernizing the Materials License Submittal Process

- Develop and pilot external-facing application portal in Web Based Licensing (WBL) to streamline the submittal of NRC Form 313, “Application for Materials License.”
- Anticipated Benefits:
  - Modernizes and streamlines the licensing submission process for NRC staff and applicants/licensees
  - Enhances transparency, tracking, security, and stakeholder confidence
  - Strengthens licensing framework for NRC materials applicants and licensees
  - Enhances use of WBL in the National Materials Program for NRC, Agreement States, and applicants/licensees





## Streamlining the 10 CFR Part 72 Rulemakings for Storage Cask Certificates of Compliance

- Current process – 26 weeks (sequential process steps)
- Improvements to the rulemaking process and timeline, e.g.
  - Parallel actions/concurrence on rulemaking package and proposed CoC and Technical Specifications documents.
- Efficiencies already implemented include:
  - Rulemaking process timeline reduction by 15% to the current 26 weeks
  - Electronic submission of comments
- Engaging with industry on potential improvements to the cask certification process
- Anticipated Benefit:
  - Reduce CoC licensing timeline

# Agile Licensing Strategies for Decommissioning and Uranium Recovery Complex Reviews

Provide guidance to staff and industry on strategies to streamline complex regulatory reviews

- Using techniques:
  - Regulatory Audits, Topical Reports, Readiness Assessments, Pre-Application engagement, etc.
- Anticipated Benefits:
  - Reduce the time for the licensee to research, develop analysis, and evaluate.
  - Reduce length of time for the NRC staff to review complex projects
  - Identify technical shortfalls in a more timely and predictable manner



*La Crosse NPP  
Before and After*

## **Materials Licensing Public Engagement Opportunities**

- Advisory Committee on the Medical Uses of Isotopes – April 7, 2025
- Fuel Facilities public meeting – April 10, 2025
- Storage and Transportation public meeting – TBD
- National Mining Association UR workshop – TBD

# Q&A

# Break



# **Update on Initiatives to Enhance the Use of Risk-Informed Decision-making**

**Meena Khanna  
John Hughey  
Michelle Kichline**

## **Update on Initiatives to Enhance the Use of Risk-Informed Decision-making**

- DRA, in coordination with DORL, and other divisions in NRR, are leading several initiatives to enhance the use of risk-informed decision-making, referred to as RIDM 2.0, to support Section 505 of the ADVANCE Act
  - Internal RIDM 2.0 workshops and seminars
  - Joint NRR/industry public workshops
  - NRR Tiger team to enhance LIC-206 and identify approaches to grade operating reactor licensing reviews
  - Expand the use of RIPE

## Internal RIDM 2.0 Workshops/Seminars

**Risk-informed decision-making**  
**Accountability and proficiency**

- NRR offers KM/KT opportunities to all staff with the goal of awareness and encouraging the expanded use of RIDM and the application of risk concepts and tools in our work.
- In the fall of 2024, NRR conducted four internal risk forums/workshops to (1) provide a background on PRA, (2) discuss accomplishments in using risk insights in reviews across the operating and new reactor business lines, and (3) demonstrate the tools available to support efficient reviews.
- NRR is committed to continuing to offer focused RIDM 2.0 seminars on topics of interest, including how risk insights and various tools are being used for operating and new reactor licensing reviews, and on specific topics such as NFPA-805 and performance-based regulation.

## Joint NRR/Industry Public Workshops

**Risk-informed decision-making**  
**Accountability and proficiency**  
**Production improvement**

- These venues provide for invaluable opportunities to provide KM/KT opportunities to share lessons learned and best practices on topics of mutual interest between the NRC and Industry staff, as well as with the Public.
- On March 5, a joint NRR/industry workshop was held on lessons learned and best practices associated with the 10 CFR 50.69 license amendment reviews. This proved to be a success in providing KM/KT to staff and industry personnel on both the 50.69 licensing and oversight processes.
- Staff look forward to coordinating with NEI on future opportunities for these workshops and are considering the next workshop to be focused on RIPE.



## LIC-206 Enhancements

**Risk-informed decision-making**  
**Accountability and proficiency**  
**Production improvement**

- Revision to Appendix C of LIC-206 to enhance technical reviewer efficiency, predictability, and timeliness, while still ensuring safety
  - Efficiency Enhancements:
    - Decision tool to grade reviews
    - Define review categories with criteria consistent for those categories
    - Assign resource allocation commensurate with review criteria/risk significance
  - Predictability and Timeliness Enhancements:
    - Identify technical reviewer and project manager expectations
    - Establish "Checkpoints" to confirm resource/schedule conformance



## LIC-206 Enhancements

**Risk-informed decision-making**  
**Accountability and proficiency**  
**Production improvement**

### Next Steps:

- Tiger Team to identify criteria to grade operating reactor licensing reviews, commensurate with risk and regulatory significance and technical complexity, with consideration of other factors, and obtain management endorsement of draft criteria as proposed for the update to LIC-206. (April 2025)
- Conduct public workshop with industry to obtain and consider feedback on proposed updates to LIC-206. (May 2025)
- Finalize criteria and conduct internal briefings and issue updated LIC-206. (July 2025)

# Risk-Informed Process for Evaluations (RIPE) Updates

## Risk-informed decision-making Production improvement

- RIPE established a streamlined NRC review process for licensing actions that have a very low safety significance.
- The current criteria for using RIPE include that the licensing action can be demonstrated as having a minimal risk significance using a PRA model.
- The NRC plans to update RIPE to include additional criteria for when a licensing action not modeled in a PRA may qualify for RIPE.
  - These updates will be communicated to the public in a workshop being planned for this summer, with anticipated completion of guidance revisions by the end of 2025.
- The NRC also plans to explore the use of deterministic criteria to define whether a licensing action has a minimal risk significance and determine how these criteria should be incorporated into the licensing process.
  - This work is planned to complete in 2026.

# Q&A

# **Specific Licensing Processes Initiatives Update**

**Samir Darbali  
Mike Mahoney  
Angela Wu  
Jon Greives**

# Digital Instrumentation and Controls Reviews

**Production improvement  
Accountability & proficiency**

- Interim Staff Guidance DI&C-ISG-06 is used to perform licensing reviews of license amendment requests associated with digital instrumentation and controls (I&C) upgrades
- The staff held a Digital I&C Lessons Learned Workshop on March 13-14, 2025, to share lessons learned and insights from the use of DI&C-ISG-06, request feedback from stakeholders, and identify areas for improvement
- This is part of the staff's efforts to improve:
  - the quality of applications
  - the efficiency and clarity of the review process
  - knowledge sharing
- The goal is to make licensing reviews of digital I&C upgrades more efficient, predictable and timely



## Digital Instrumentation and Controls Reviews

- After completion of the current licensing reviews, the staff plans to update the guidance in DI&C-ISG-06:
  - Move the “interim” guidance to the Standard Review Plan
  - Improve the guidance and add clarity for applications that fall between the Traditional and Alternate review processes
  - Include clearer guidance on interfacing with other technical areas (e.g., human factors engineering, technical specifications, equipment qualification)

## Digital Instrumentation and Controls Reviews

- To address near-term industry needs based on stakeholder feedback, the staff is working on rulemaking to incorporate by reference IEEE Standard 603-2018, “IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations,” in 10 CFR 50.55a(h), and is developing accompanying guidance
- The staff will continue to engage with stakeholders to improve the digital I&C regulatory infrastructure. This includes:
  - Endorsement of industry standards
  - Review of methods for addressing common-cause failure that use a systems engineering approach

# Power Uprates Review Readiness

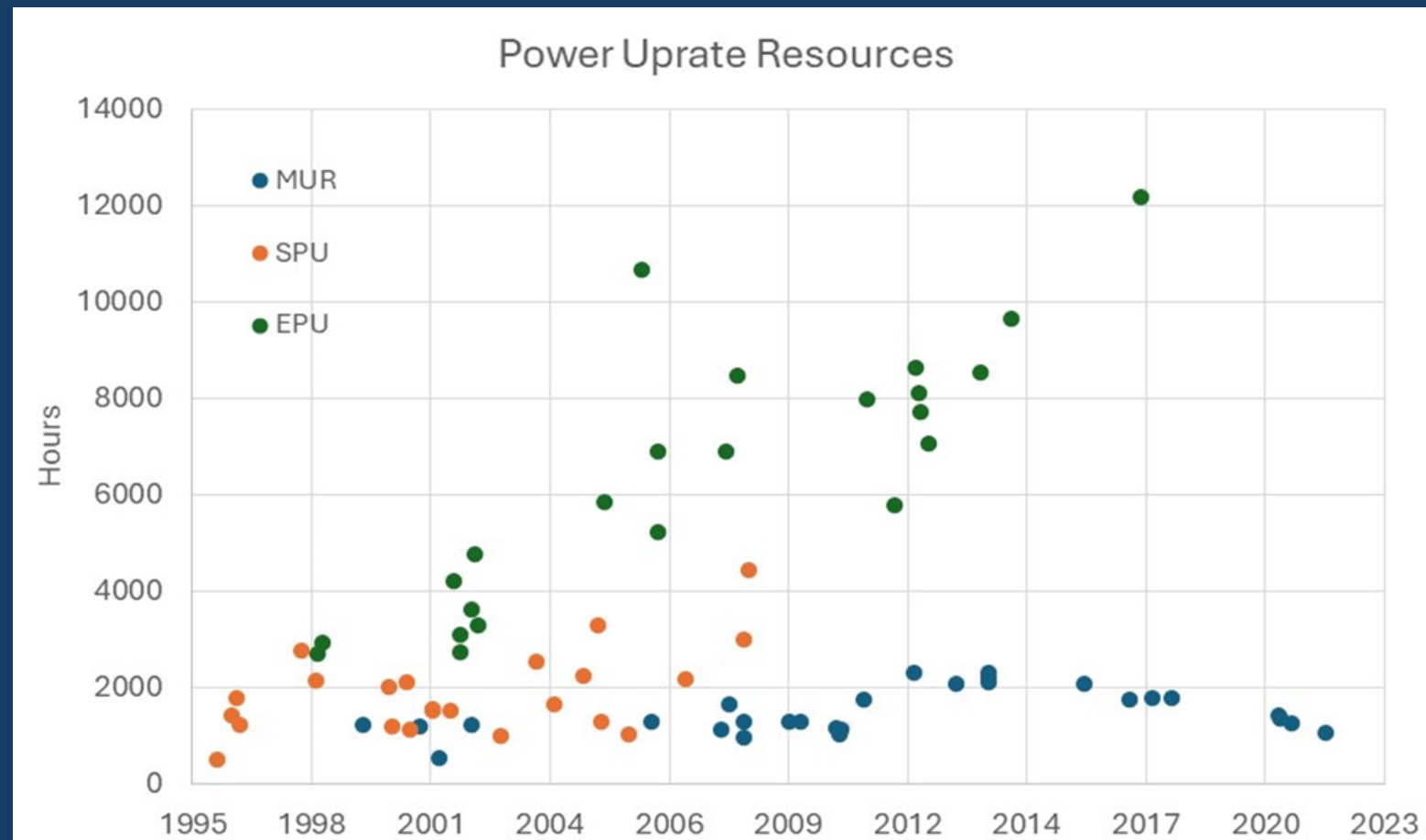
**Production improvement**  
**Risk-informed decision-making**  
**Data-driven decision-making**

- Improving the power uprate application and review process such that the review effort reflects the best use of resources, commensurate with the safety and risk significance. Staff's review of future power uprate applications will support licensee schedules, while still providing reasonable assurance of public health and safety.
- Goals for improving licensing efficiency:
  - Regulatory stability
  - Risk-informed decision-making
  - Data-driven decision-making
- Evaluate updating guidance:
  - LIC-112, "Power Uprate Process"
  - RS-001, "Review Standard for Extended Power Upgrades"
  - Refine safety evaluation templates
  - General staff practice (e.g., streamline environmental assessments)
- Potential measures for efficiency:
  - Review time and hours spent
  - Safety evaluation page length

# Power Uprates Review Readiness

## Power Uprate Forecast

- 70% of sites looking at one or more power uprates
- Combined capacity increase of 3 gigawatts electric



## **Power Uprate Working Group's Preliminary Recommendations**

**Continued  
Engagement  
with  
Stakeholders**

**Continued  
Process  
Improvements  
in Targeted  
Areas**

**Adopt a  
Graded  
Approach to  
Reviews**



## License Renewal Reviews

### Production improvement

- With the implementation of the License Renewal Roadmap, the NRC has made significant progress in making initial and subsequent license renewal reviews more predictably and timely.
- Starting with applications received after August 2024, the goal is to complete reviews with no more than 14,000 hours and no more than 18-months.
- For reviews that are underway, the NRC is implementing process improvements initiatives to the greatest extent possible to adjust schedules and reduce hours.
- NRC engages stakeholders through bi-monthly public meetings on the continual improvement in the efficiency of license renewal reviews and timing of applications.

# Advanced and New Reactor Reviews

Production improvement  
Regulatory stability



Advance Reactors



Prospective Applicants



Microreactors

# Advanced and New Reactor Reviews

**Production improvement**  
**Regulatory stability**

Coming soon...

- Safety Evaluation Database
- Improved Dashboards and Advanced Reactor Landscape

# Q&A







# Be Engaged!

- Info on public meetings related to the Act
- Status tracker
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NRC's public information site for  
ADVANCE Act updates

# Closing Remarks

## Abbreviations

- 10 CFR 50.69 – Title 10 of the *Code of Federal Regulations*, Section 50.69
- AI – artificial intelligence
- DI&C – digital instrumentation and controls
- FTE – full-time equivalent
- GALL – generic ageing lessons learned
- IEEE – institute of electrical and electronics and engineers
- ISG – interim staff guidance
- KM/KT – knowledge management/knowledge transfer
- LEPT – licensing efficiency, predictability, and timeliness
- M-LEAP – Materials Licensing Efficiencies and Processes
- NEI – Nuclear Energy Institute
- NFPA – National Fire Protection Association
- NMSS – Office of Nuclear Material Safety and Safeguards
- NRR – Office of Nuclear Reactor Regulation
- PRA – probabilistic risk assessment
- RAI – request for additional information
- RCI – request for confirmation of information
- RIDM – risk-informed decision-making
- RIPE – risk-informed process for evaluations
- R-LEAP – Reactor Licensing Efficiencies and Processes
- RPS – Reactor Program System
- SE – safety evaluation
- (S)LR – (subsequent) license renewal
- SRP – standard review plan
- WBL – Web-Based licensing