

ADVANCED REACTOR LANDSCAPE COMMISSION MEETING

JULY 21, 2026

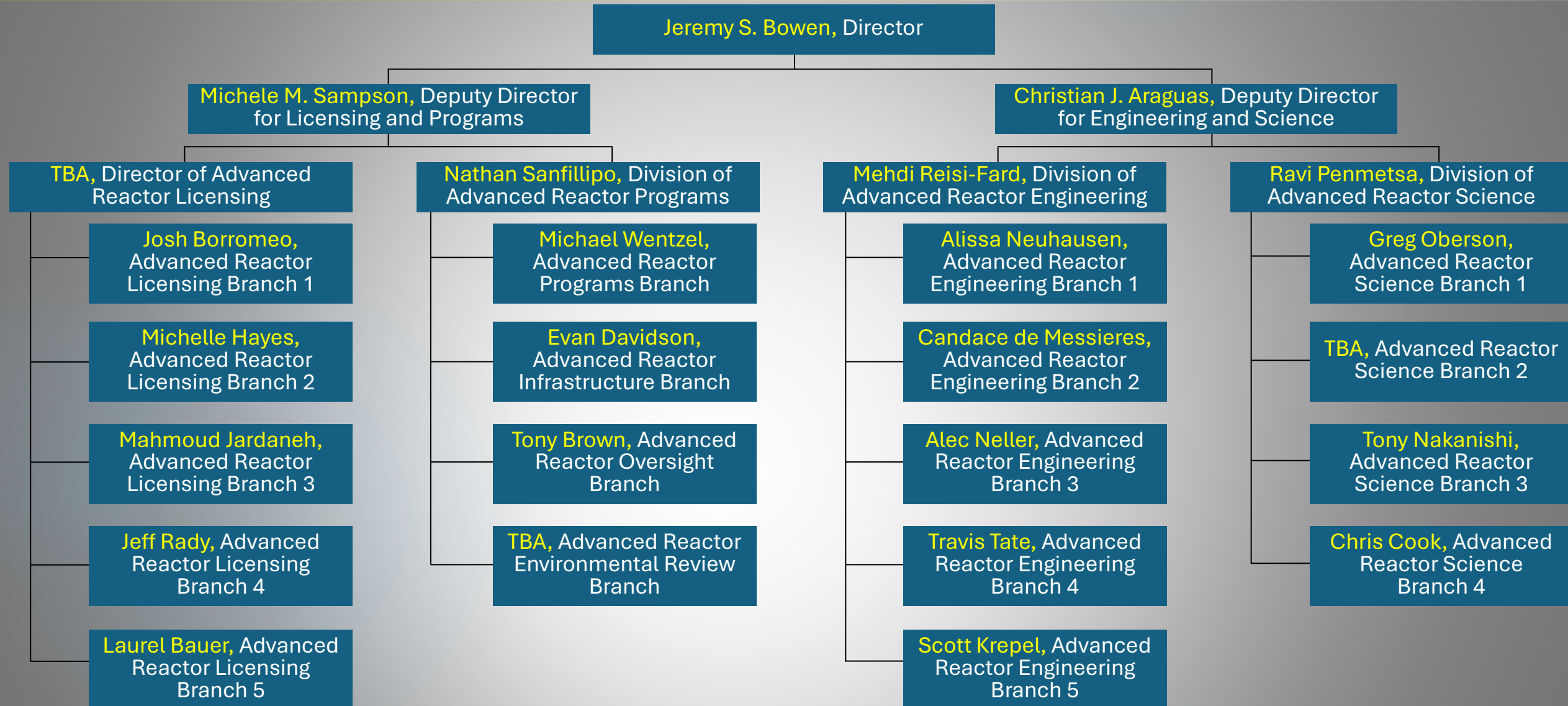


Mike King

EXECUTIVE DIRECTOR FOR OPERATIONS

OPENING REMARKS

Establishing Office of Advanced Reactors



Jeremy Bowen

DIRECTOR, OFFICE OF ADVANCED REACTORS



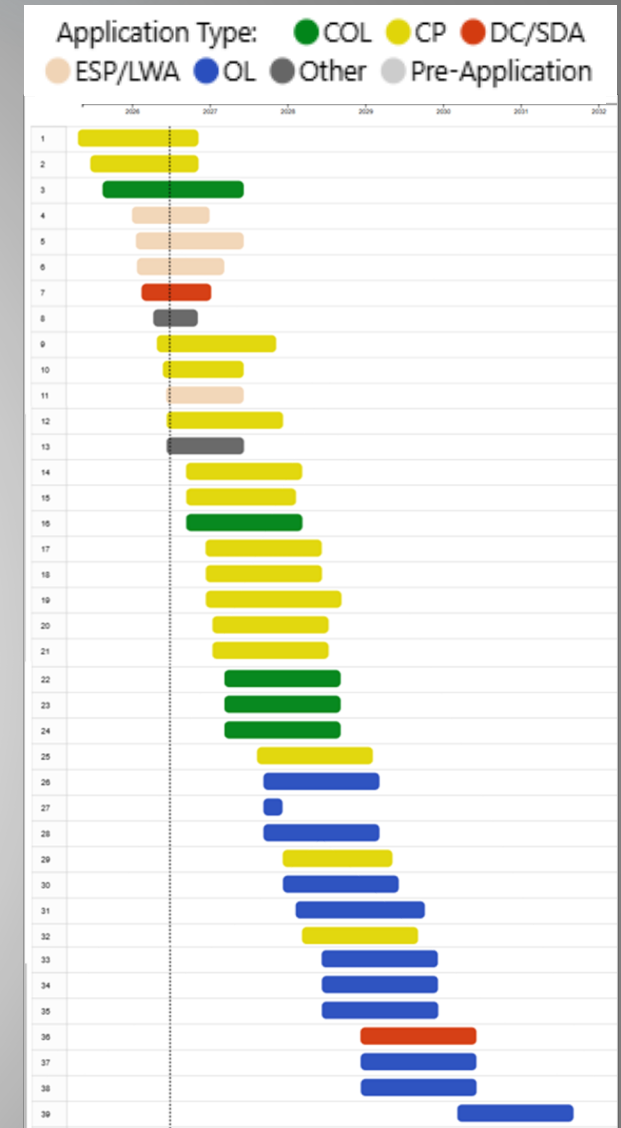
Embracing Regulatory Modernization



Meeting Demand - SAFE & TIMELY Licensing

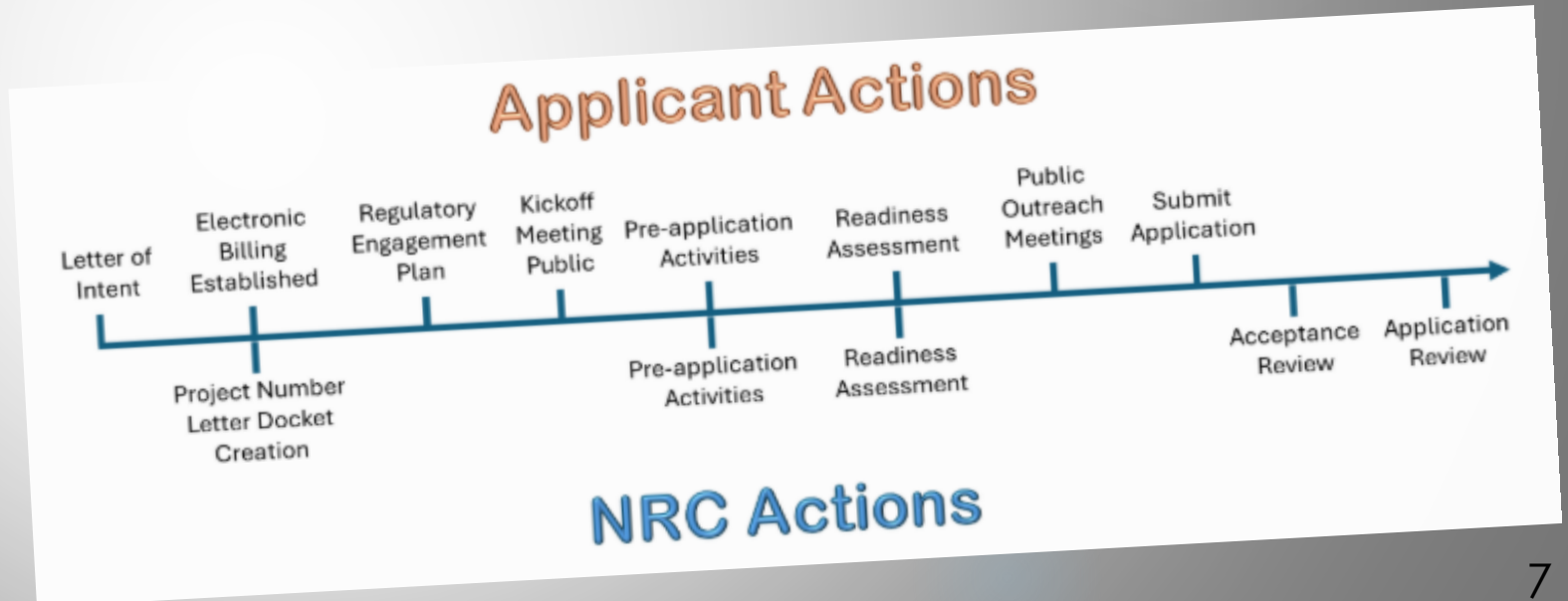
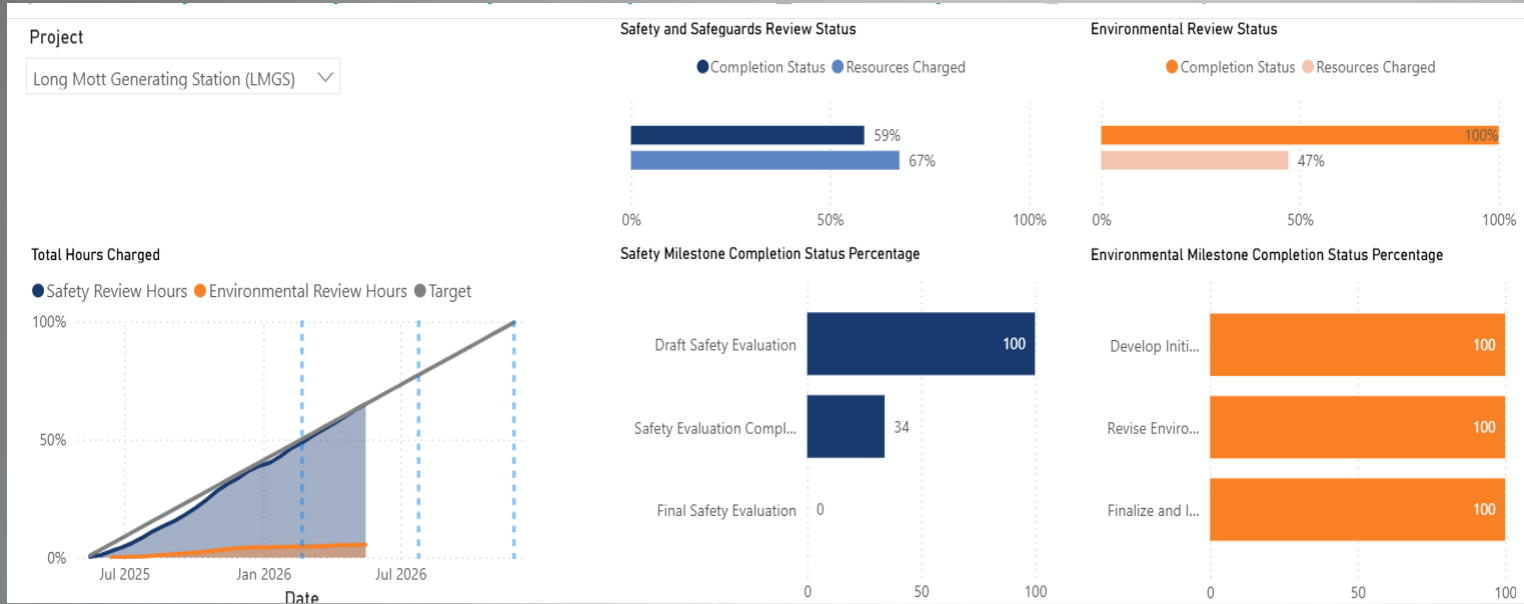


Applications Under Current NRC Review	Technology	Schedule
Project Long Mott Construction Permit (CP)	X-energy Xe-100	18 months
Belews Creek Early Site Permit	TBD	15 months
Palisades Pioneer Limited Work Authorization	Holtec SMR-300	13 months
University of Illinois Urbana Champaign CP	Nano KRONOS	16 months
Eden Radioisotopes CP	Isotope Production	16 months



20+ Applications
Expected in Next 2 Years

Transparency & Accountability



NRC

The logo consists of the letters 'NRC' in a bold, dark blue, sans-serif font. The letter 'R' is stylized with a horizontal gap in its upper loop, through which five small, gold-colored stars are arranged in a horizontal row.

Christian Araguas

DEPUTY DIRECTOR FOR ENGINEERING AND SCIENCE,
OFFICE OF ADVANCED REACTORS

Leveraging Pre-Application Engagements

Engagement Opportunities and Issue Finality

Pre-App Tools

-  Pre-application readiness assessment
-  Topical reports
-  Technical reports
-  White papers
-  Public meetings
-  Regulatory engagement plans
-  Drop-in meetings

NRC Products

- Report identifying observations/gaps
- Safety evaluation
- Letter documenting staff feedback
- Letter documenting staff feedback
- Meeting summary
- Coordination and planning
- Dialogue on plans/schedules/status

Ongoing Preapplication Activities

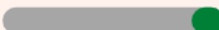
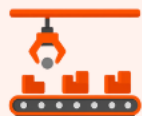


Sample of current pre-applicants

Lessons Learned From Recent Reviews



Advanced Reactor Licensing Framework – Clear Pathways, Real Optionality

Pathway	Primary Use	How It Works	Design Maturity	When To Use It	Safety Approach	Environmental	All Deliver
 Part 50	First of a Kind and NPUFs	 2-Step	 Low → High (CP → OL)	 Early Design Maturity; Sequential Licensing	 Defense-in-Depth and Safety Margins	 ER with EA/EIS or Applicant Prepared EA/EIS	 Consistent Safety Expectations
 Part 52	Standardized Reactors	 Flexible Toolkit	 Moderate → High (Varies By Mechanism)	 Fleet Deployment; Standardized Design			 Licensing of Various Design Maturities and Business Models
 Part 53	Advanced Reactors of All Technologies	 Flexible Toolkit	 Any	 New Designs; Optimization & Scaling	 Fully Risk-Informed Performance Based		 Deployment at Scale and Speed
 Part 57 (Proposed)	Microreactors	 Simplified 1-Step	 High	 Factory-Built; Rapid Deployment	 Bounding Entry Criteria	 Categorical Exclusion Possible	 Risk-Informed, Safety-Focused Reviews
CP= Construction Permit OL=Operating License COL= Combined Operating License ESP=Early Site Permit SDA=Standard Design Approval ML=Manufacturing License EIS=Environmental Impact Statement DC=Design Certification ER=Environmental Report EA=Environmental Assessment							

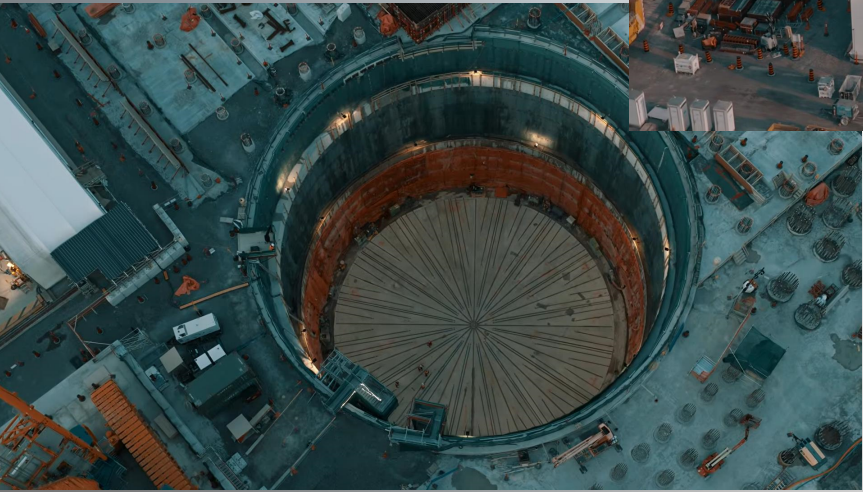
Michele Sampson

DEPUTY DIRECTOR FOR LICENSING AND
PROGRAMS, OFFICE OF ADVANCED REACTORS

International Partnerships Yeilding Results



Aerial view of OPG's
Darlington site



Joint Report on GEH BWRX-300 Steel-Plate Composite Containment Vessel and Reactor Building Structural Design Topical Report

A Collaborative Review by the U.S. Nuclear Regulatory Commission and the Canadian Nuclear Safety Commission

December 2025



Approved by

MICHELE
X SAMPSON

Digitally signed by MICHELE SAMPSON
Date: 2025.12.23
10:10:42 -05'00'

Michele Sampson, Director
Division of New and Renewed Licenses
United States Nuclear Regulatory Commission



Approved by

X SJ Eaton

Sarah Eaton
Director General, Directorate of Advanced Re...
Signed by: Eaton, SarahJane

Sarah Eaton, Director General
Directorate of Advanced Reactor Technologies
Canadian Nuclear Safety Commission

2025-12-18

Review of Westinghouse report on Factory Manufacturing of the eVinci™ Microreactor

Review by the U.S. Nuclear Regulatory Commission and the Canadian Nuclear Safety Commission

December 2025



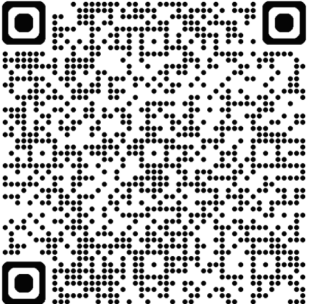
Approved by

X Eaton,
X SarahJane

Digitally signed by Eaton, SarahJane
Date: 2025.12.23
10:10:42 -05'00'

Sarah Eaton, Director General
Directorate of Advanced Reactor Technologies
Canadian Nuclear Safety Commission

2025-12-18



CNSC DocID UE4EBQ2AZ8ZR-1275496610-400

Leveraging Demonstration Pilot Information

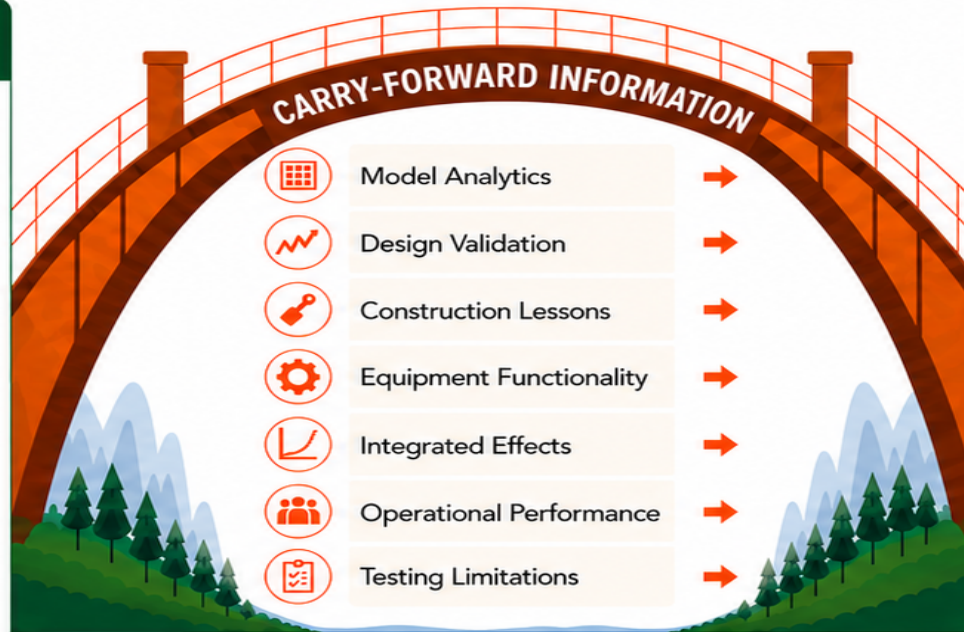
FROM DOE AUTHORIZATION TO NRC LICENSING

SIMILAR PRINCIPLES, DIFFERENT PURPOSE

 **DOE AUTHORIZATION**

RESEARCH, DEMONSTRATION, AND PROTOTYPE TESTING

-  Contractor responsible for safety, under DOE oversight
-  Requirements in 10 CFR and DOE orders and standards
-  Contractual agreements with developers
-  No formal public process
-  Operated on government and certain private sites
-  Construction at risk; may require design changes/limits
-  Joint test group with DOE oversight
-  Variety of scale and limited testing demonstration period



HOW TO EFFECTIVELY LEVERAGE A DOE AUTHORIZATION FOR AN NRC LICENSE

-  Early engagement
-  Define clear purpose and objective
-  Understand gaps (e.g., materials, fuels, equipment qualification, EP, security, siting, and other statutory requirements)

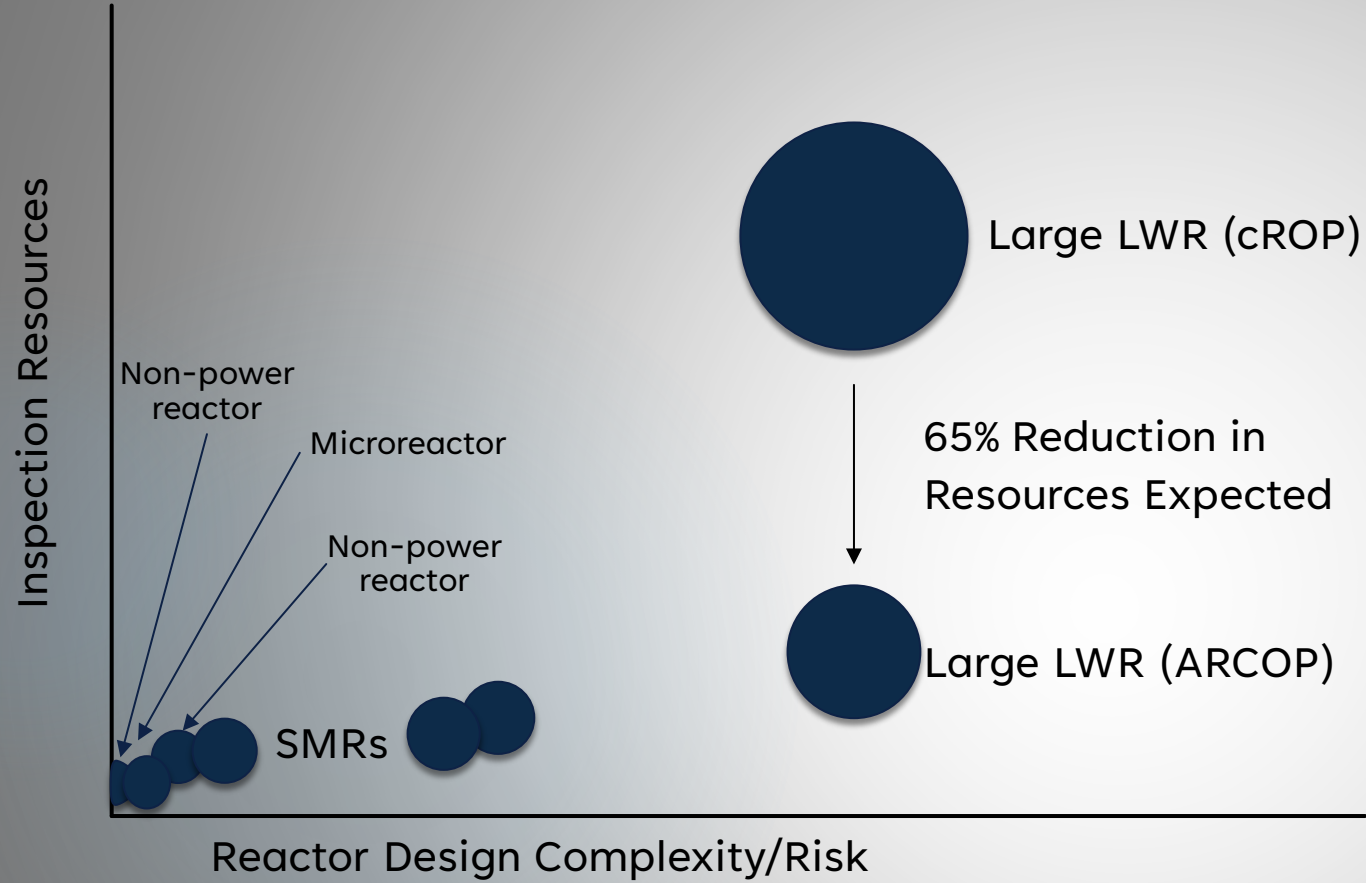
 **NRC LICENSING**

COMMERCIAL DEPLOYMENT AND LONG-TERM OPERATION

-  Licensee responsible for safety
-  Requirements in 10 CFR
-  Final NRC permit/license
-  Legally mandated public engagement and transparency
-  Commercially owned sites
-  Construction authorized by NRC permit
-  Performance-based NRC inspections
-  Long-term commercial operation



Efficiency in Construction Oversight



Vogtle Units 3 & 4

June 2017

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TerraPower via YouTube

Kimyata Savoy

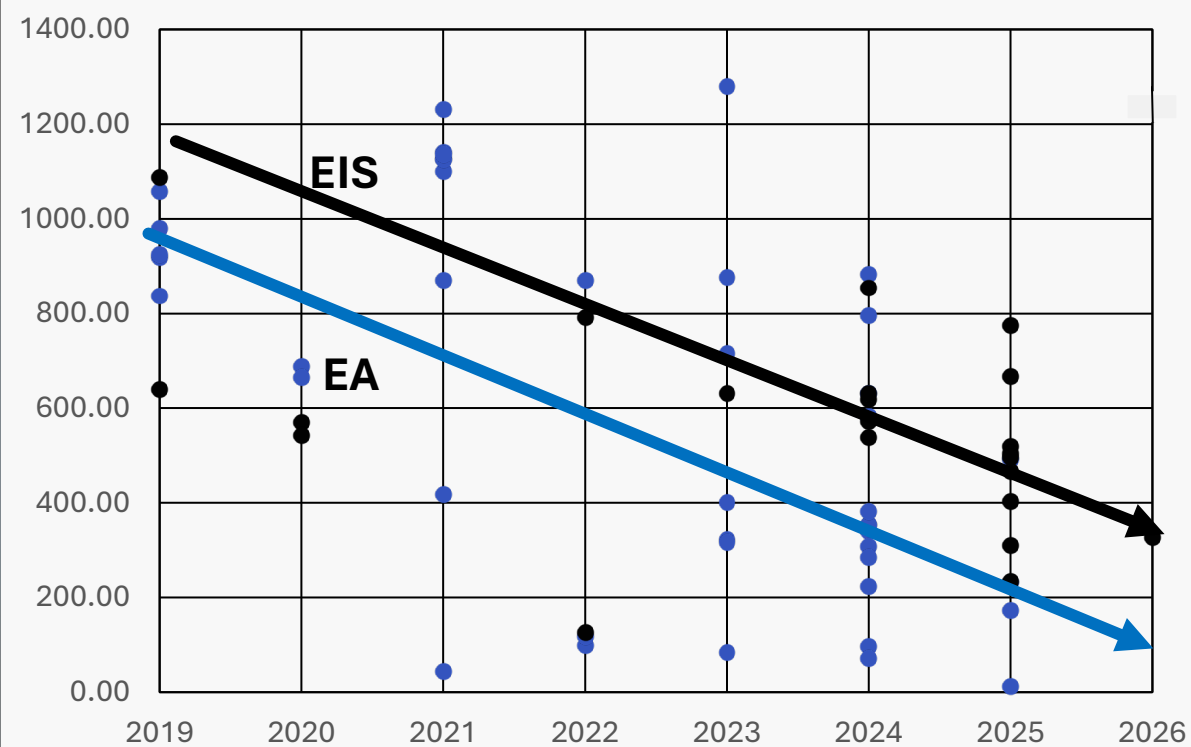
DIRECTOR, DIVISION OF SPENT FUEL STORAGE
AND TRANSPORT, OFFICE OF NUCLEAR MATERIAL
SAFETY AND SAFEGUARDS

Streamlined Environmental Reviews & Modern Framework

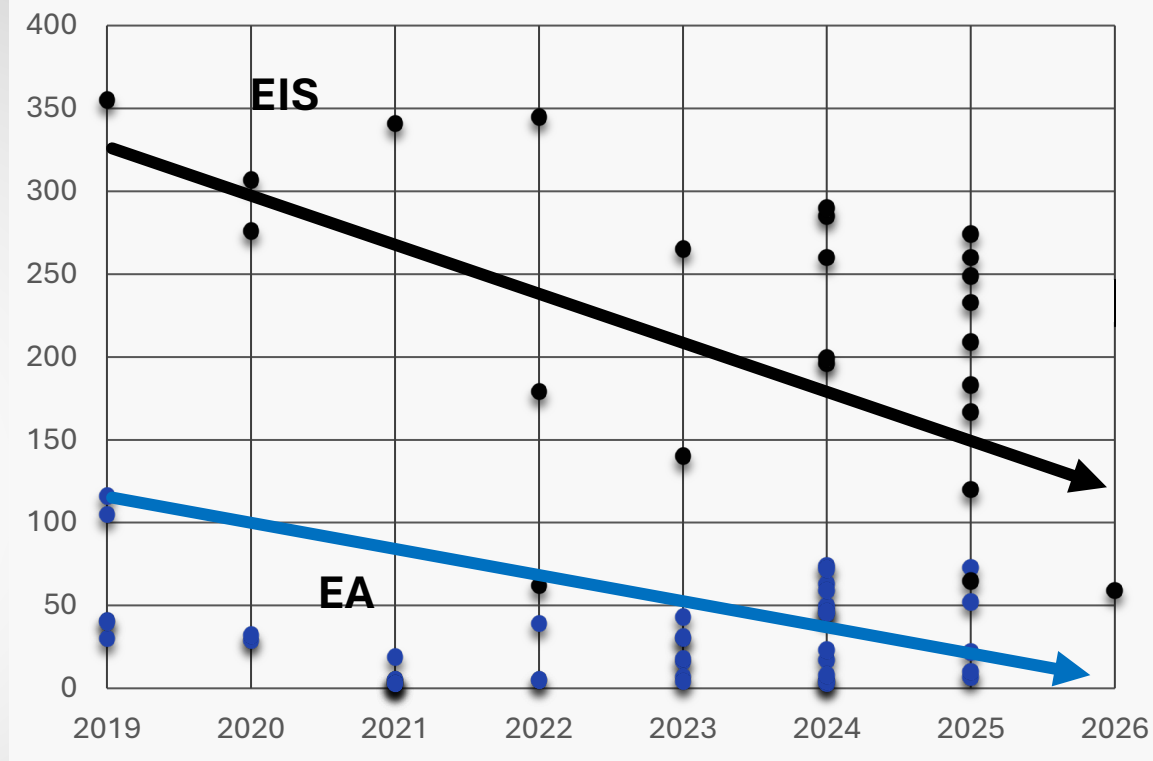
71
Total
EA and EIS

7,457
Total
pages

Number of Days EA and EIS



Page Count EA and EIS



**How did we
get here ?**

Schedule and
resource
models

Pre-app
engagement

Expanded audit
usage

Use of RCIs

Streamline
comment
resolution

Recent Accomplishments and Efficiency Gains

Schedule and Resource Reductions



Up to 55% less than required timeframes from Advance Act and EOs.

Up to 48% decrease in resources from original model estimates reflecting continuous improvement.

Iterative reductions/improvements in schedule templates and resource models.

Hermes 1 CP EIS (2023)

Schedule (months): 20.5 actual vs 24 required (↓ ~15%)

Resources (hrs): 8400 (at estimate)

Hermes 2 CP EA (2024)

Schedule (months): 11.5 actual vs 12 required (↓ ~4%)

Resources (hrs): 2421 vs 4574 (↓ ~ 47%)

ACU CP EA (2024)

Schedule (months): 15 actual vs 18 estimate (↓ ~17%)

Resources (hrs): 2870 (at estimate)

TerraPower KU1 CP EIS (2025)

Schedule (months): 16.5 actual vs 24 required (↓ ~30%)

Resources (hrs): ~8000 vs 15000 (↓ ~ 46%)

Clinch River CP SEIS (April 2026)

Schedule (months): ~9.5 actual vs 18 estimate (24 required) (↓ ~55%)

Resources (hrs): ~3200 vs 5500 (↓ ~ 38%)

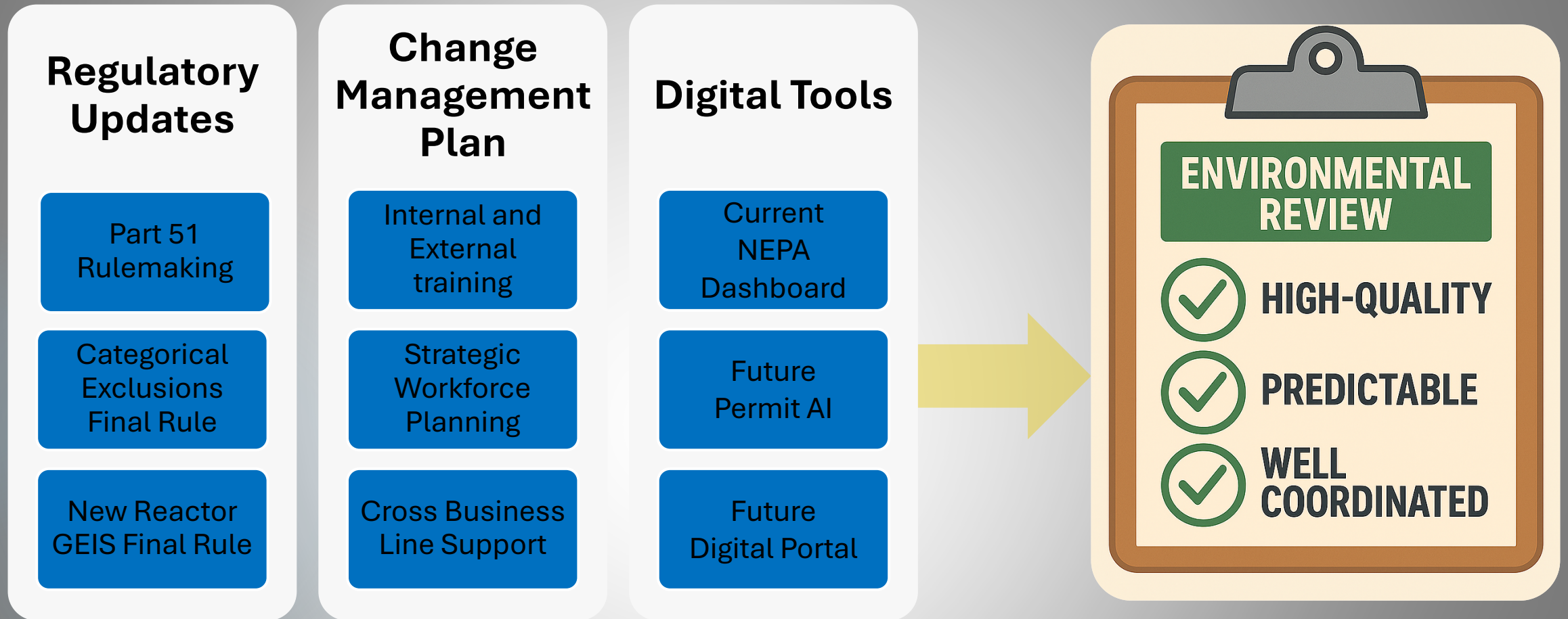
Long Mott CP EA (May 2026)

Schedule (months): 11.5 actual vs 12 required (↓ ~6%)

Resources (hrs): ~3650 vs 7000 (↓ ~ 48%)



Future Direction





NRC

Nuclear
Regulatory
Commission



Office of Advanced Reactors

U.S. Nuclear Regulatory Commission
Safely Empowering the Future