


# N<sup>th</sup> of a Kind Licensing Considerations for Micro-Reactors



Mission: Licenses and regulate the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security and to protect the environment.



NeXT Licensing

## **Enabling safe and timely decisions for advanced reactors.**

- **Execute safety-focused regulatory actions**
- **Optimize regulatory framework**
- **Advance technology readiness**
- **Maximize benefits of standardization**
- **Enable efficient stakeholder engagement**

# What is NeXT Licensing?

An approach by which a robust up-front approval of a common design enables efficient, predictable licensing of “nth-of-a-kind” reactors

Up-Front Approval of the Common Plant

- Standard design approved in a manufacturing license, design certification, construction permit and operating license, or combined operating license
- Technical issues resolved
- Standardized operational programs (as appropriate)
- Generic environmental review (as appropriate)
- Hearing covering the common design

Nth-of-a-Kind Licensing

- Address administrative processes
- Confirmation of site suitability for design
- Closure of ITAAC/license conditions
- Confirmatory site-specific inspection
- Hearings on site-specific issues
- Operating decision



**The NRC staff is proactively enhancing clarity, reliability, and efficiency for licensing and regulation of micro-reactors**

**Clear**

Coherent, logical, and practical regulatory approaches that will allow for safe and secure deployment

**Reliable**

Prompt, fair, and decisive regulation that lends stability to licensing and deployment

**Efficient**

Risk-informed and performance-based regulation that delivers timely results and uses resources effectively



## Regulatory Modernization

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## Licensing Efficiencies

- Risk-informed licensing
- Consequence oriented approaches
- Advanced Reactor Generic Environmental Impact Statement
- Fees, ARCOP, Policy Issues, Guidance (ARCAP)
- Emergency Preparedness rule

- Pre-application
- Staged licensing
- Core teams
- International engagement
- Direct communication (audits)
- Focused ACRS interactions
- Streamlined documentation
- Optimized environmental reviews

The NRC staff is taking actions to prioritize and address licensing and deployment considerations related to micro-reactors.

- SECY-24-0008: “Micro-Reactor Licensing and Deployment Considerations: Fuel Loading and Operational Testing at a Factory” (ML23207A252)
- “Micro-reactors Licensing Strategies” White Paper (ML21235A418)
- SECY-20-0093: “Policy and Licensing Considerations Related to Micro-Reactors” (ML20254A363)

## SECY-24-0008

SECY-24-0008, “Micro-Reactor Licensing and Deployment Considerations: Fuel Loading and Operational Testing at a Factory,” seeks Commission policy direction on regulatory approaches related to three topics:

- (1) Features to preclude criticality
- (2) Fuel loading at a factory
- (3) Operational testing at a factory

# Catalyzing Micro-Reactors

- Loading Fuel and Operational Testing
- Transportation of fueled reactors
- Standardization of operational programs (as appropriate)
- Environmental review
- Site characterization
- Timeframe for authorization to operate at the deployment site
- Physical and Cyber Security
- Emergency Preparedness
- Decommissioning process and decommissioning funding assurance
- Staffing, training, qualification requirements
- Commercial mobile micro-reactors
- Licensing replacement reactors
- Autonomous operation and remote operation
- Storage of fuel after irradiation in a power reactor
- Siting in densely populated areas
- Aircraft impact assessment
- Commercial maritime and space applications





## WHAT'S NEXT?

### Topics of interest:

- Maximal design standardization
- Standardization of operation programs (as appropriate)
- Site characterization
- Streamlined licensing process and safety review
- Environmental review
- Construction inspection

Continued stakeholder engagement

# Success Strategies

## Optimizing Licensing Reviews



## Proactive Stakeholder Engagement



## Robust Preapplication Activities





Thank you.