Illinois Microreactor Demonstration Project

Nuclear Regulatory Commission Briefing | February 22, 2024

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Mission Statement

The Illinois Microreactor Demonstration Project's mission is to de-risk advanced reactor deployment and enable a new paradigm of nuclear power through education, research, and at-scale demonstration.

Demonstrate the realizability of advanced nuclear in a representative setting

Seize the moment and cement the coming nuclear resurgence with leadership that only universities can provide

Perform the research and development needed to pave the way for safe and economic operation of advanced reactors

Project Missions

Core Mission
Education, Training, and Engagement

Engineers and scientists

general public

operator training

installation and maintenance

Producing the future workforce & redeeming public perception of nuclear power

Cross-cutting Mission:
At-scale Demonstration

electricity,

district heat,

hydrogen production,

Integrated thermal storage,

Other high value processes.

Demonstrating the future of nuclear power

Core Mission
Research & Development

Reactor and component

optimization

critical enabling technologies

synergistic applications

Enabling a new paradigm of nuclear

AEA 104c definition of “Research”

“ … the Commission is authorized and directed to make arrangements…for the conduct of research and development activities relating to …

(1) nuclear processes,

(2) the theory and production of atomic energy, including processes, materials, and devices related to such production;

(3) …

(4) utilization of special nuclear material, atomic energy, and radioactive material and processes entailed in the utilization or production of atomic energy or such material for all other purposes, including industrial or commercial uses, the generation of usable energy, and **the demonstration of advances in the commercial or industrial application of atomic energy**; and

(5) the protection of health and the promotion of safety during research and production activities...”

Utilizing a Class 104(c) Licensing Pathway for the Proposed UIUC Research and Test Reactor, White Paper, USNRC Project number 999020904, IMRDD-MMR-22-01, June 2022

Licensing: Overall Status

TOPIC	TYPE	Submittal Timeframe
Applicability of 104(c) Licensing Path	*WP*	*Completed*
Proposed contents of PSAR in accordance with NUREG-1537	*WP*	*Completed*
Quality Assurance Program Description	*TR*	*Completed*
Applicability of Nuclear Regulatory Commission Regulations	TR	Submitted: Dec. 2022 SE: May 2024
Fuel Qualification Methodology	TR	Original: Feb. 2023 After redesign: Feb. 2024
Safeguards Information Protection Plan	Plan	Submitted: Feb. 2023

TOPIC	TYPE	Submittal Timeframe
Accident Scenario Identification and SSC Safety Classification Methodology	TR	Submitted: Sept 2023 SE: soon
MMR Principal Design Criteria	TR	Submitted Nov 2023 SE: Sept 2024
Safety Analysis (Nuclear/Thermal-hydraulic/Structural)	TR	Q4 CY23
Environmental Analysis	Report	Q4 CY24
Preliminary Safety Analysis Report	Report	Q4 CY24
Operating License	Report	CY26

- Appropriate amount of communication
- Reasonable requests for Information
- Flexible in schedule and accommodating public meetings
- Good continuity through NRC staff turnover