# Southern Nuclear

*Artificial Intelligence – By Words and Numbers*
*Building a Culture to Enable the Future!*

**Cheryl Gayheart**
**Vice President, Regulatory Affairs**

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# By the Words

# Let’s Start With the Words … Smart Machines!

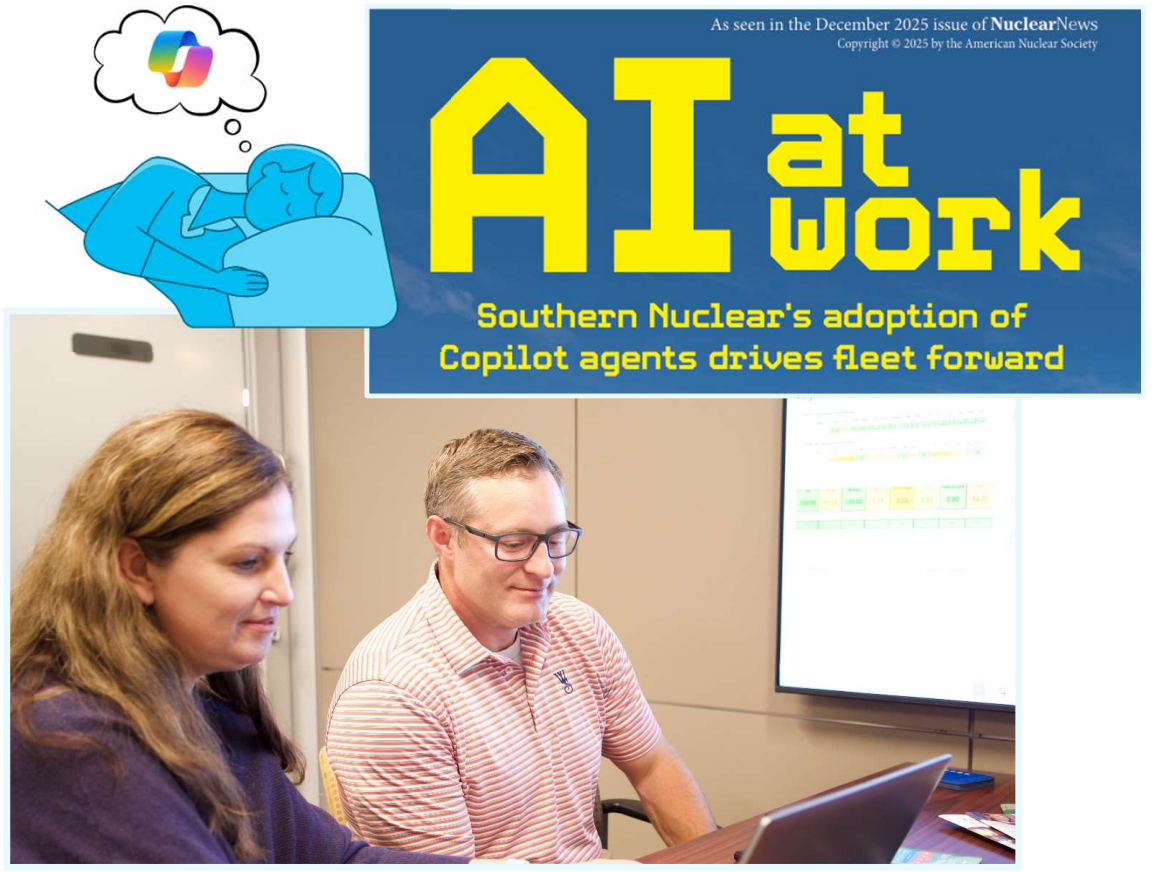
**Rapidly Evolving Technology**

**Limited Resources & Expertise**

**Fear of Failure**

# The Journey

- Fleet AI Working Group
- Growth of AI Agents
- Growth of Active AI Users
- “C Minus” Projects
- Citizen Developers



# A Strategic Approach

1. Strategic Alignment with AI Initiatives
2. Ownership and Collaboration
3. Support for Grassroots Efforts
4. Diversifying Partners

# Challenges – Mitigations – Opportunities

FIRST IMPRESSION BIAS

CHOICE OVERLOAD

DATA DOMAIN KNOWLEDGE

MEASURING USE AND SUCCESS

THE NUCLEAR DNA

DATA SECURITY

# SNC Generative AI Successes – Results & Enablement

- **Organizational Effectiveness/Performance Improvement Agent**
- **SNC Safety Advisor**
- **Internal Operating Experience (OE) Agent**
- **PULSE: AI-enabled Supervisor Observation Program**
- **Winter & Summer Generation Readiness Classification Model**

**70+**

Copilot agents deployed in 2025

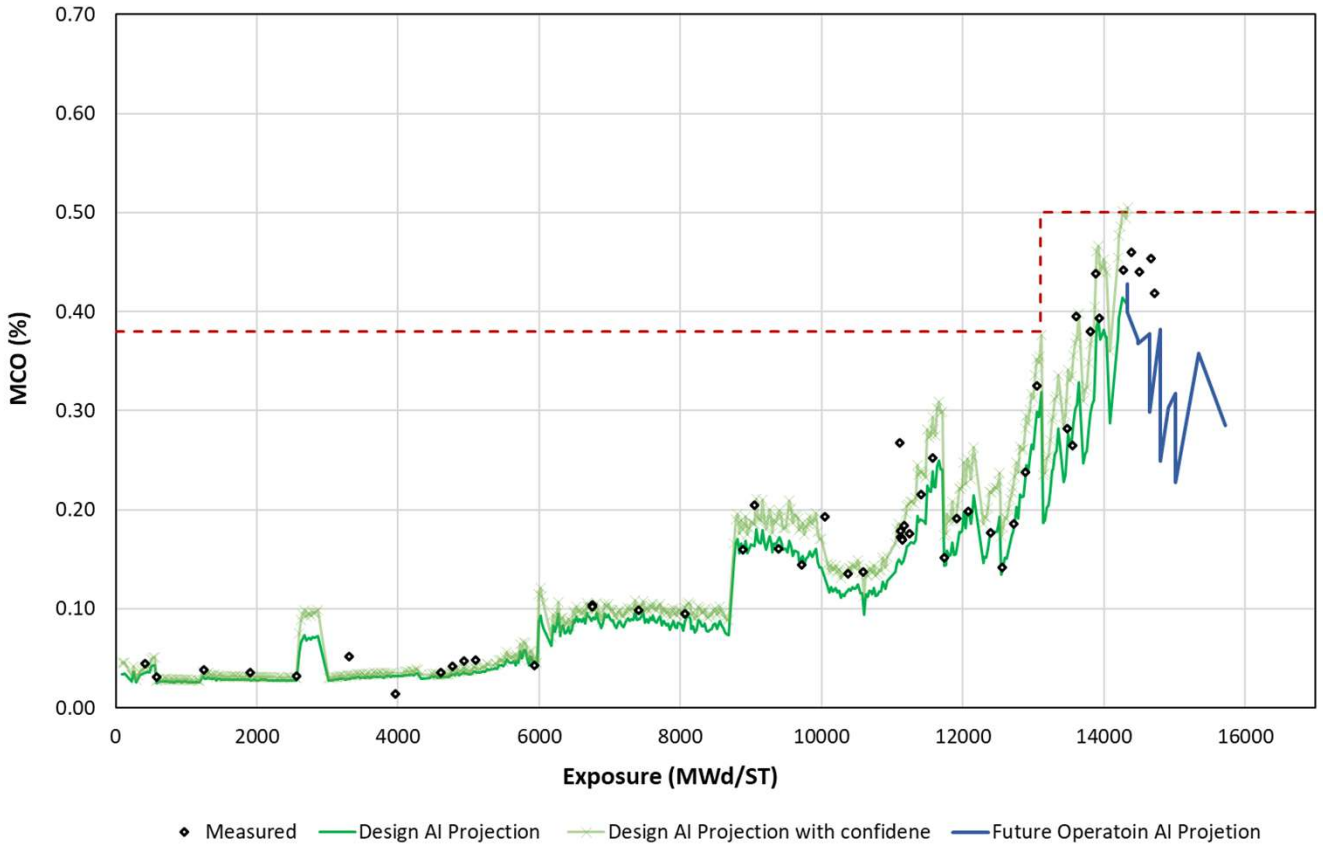
# By the Numbers

# Nuclear-Grade AI™ Applications for Nuclear Fuel


*IAEA Honors Blue Wave AI Labs, Constellation and SNC with 2025 Global Innovation Award for Pioneering AI in Nuclear Power*

- SNC Nuclear Fuel Team has deployed BlueWave AI Labs Machine Learning (ML) Tools at Hatch, and they've been in use for several years.
- ML Tools deployed to **provide insight into difficult to predict performance parameters**; Moisture Carryover (MCO) and Thermal Limit biases.
- Application resulted in a design that **allowed improved operational flexibility** and a **reduction in the risk of lost generation** due to low MCO and Thermal Limit margins.

# Nuclear-Grade AI™ Applications for Nuclear Fuel




The ability to predict moisture carryover (MCO) with confidence using the Machine Learning/AI models allows fuel engineers to **keep fuel cost low** while **minimizing operational impacts and loss generation** as a result of elevated MCO.

# AI/ML Tool Development – Confidence in the Numbers

## Enabling Behaviors:

- Utility and AI Vendor **collaboration** is fundamental.
- **Significant data requirements** and validation to understand tool capabilities.
- **Continuous learning** and validation to improve tool capabilities.

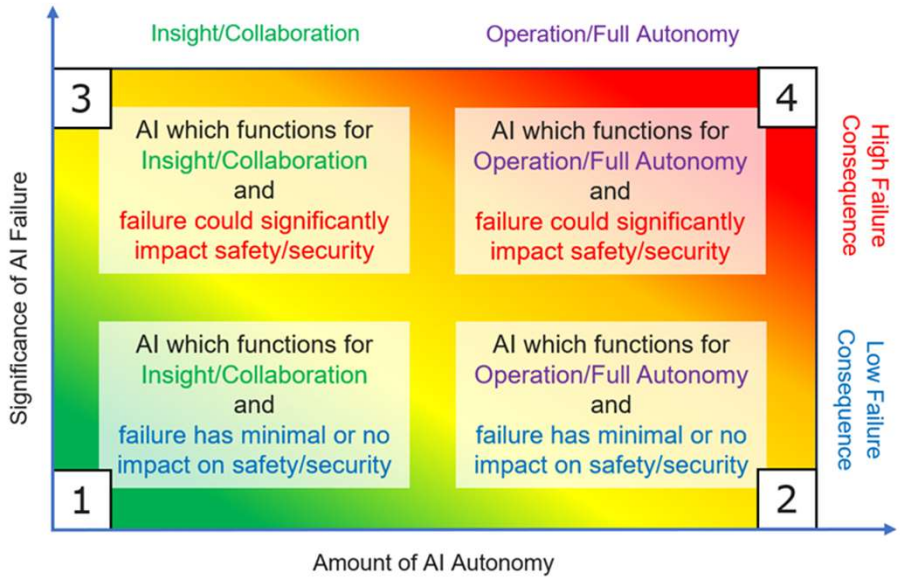



*Figure 1. Categorizing AI failure significance and AI autonomy*

Source: "Considerations for Developing Artificial Intelligence Systems in Nuclear Applications," Sept 2024
https://www.onr.org.uk/media/03zl1osf/canukus_trilateral_ai_principles_paper_2024_08_28-final.pdf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