









# POWER

The United States Power Systems Development, Technology & Financing Summit

# 2025



**USA POWER SYSTEMS DEVELOPMENT SUMMIT  
& SMART GRID ENGAGE TECHNOLOGY FORUM**  
19th - 21st November 2025 | AUSTIN | TEXAS

## **Invited Speakers:**

- Clay Sell, CEO, X-energy
- Jeffrey Lyash, CEO, Tennessee Valley Authority
- Chris Nolan, VP – New Nuclear Generation Strategy and Regulatory Engagement, Duke Energy
- Julie Kozeracki, Director of Strategy, U.S. Department of Energy

---

## **2. Licensing Innovation & Regulatory Reform: Reducing Time-to-Market for Advanced Reactors**

New licensing pathways (e.g., Part 53, Risk-Informed approaches) and pilot programs under NRC review.

Cross-sector collaboration on digital twin modeling, simulation, and adaptive licensing.

Addressing environmental permitting, public comment cycles, and federal-state coordination.

---

### **Session Overview:**

This session will delve into the evolving regulatory landscape aimed at accelerating the licensing process for advanced nuclear reactors. Discussions will center on innovative licensing pathways, technological advancements aiding regulatory compliance, and collaborative efforts among stakeholders to streamline approvals.

### **Key Discussion Points:**

#### **Emerging Licensing Frameworks:**

- Examination of the NRC's development of *Part 53*, a technology-inclusive, risk-informed regulatory framework designed to accommodate diverse advanced reactor designs.
- Insights into the *Nuclear Energy Innovation and Modernization Act (NEIMA)* and its impact on modernizing the NRC's licensing processes.

# POWER

The United States Power Systems Development, Technology & Financing Summit

# 2025



**USA POWER SYSTEMS DEVELOPMENT SUMMIT  
& SMART GRID ENGAGE TECHNOLOGY FORUM**  
19th - 21st November 2025 | AUSTIN | TEXAS

## Technological Innovations in Licensing:

- The role of digital twin modeling and AI-driven compliance tools in enhancing the efficiency and accuracy of licensing applications.
- Case study: NANO Nuclear Energy's collaboration with Everstar to develop AI-driven regulatory solutions for the nuclear industry.

## Collaborative Regulatory Efforts:

- Discussion on the trilateral agreement among the U.S., U.K., and Canada to expedite the licensing of advanced and small modular reactors through shared regulatory practices.
- Strategies for harmonizing international regulatory standards to facilitate global deployment of advanced nuclear technologies.

## University-Led Licensing Initiatives:

- Highlighting the University of Illinois Urbana-Champaign's partnership with NANO Nuclear Energy to license and construct the KRONOS Micro Modular Reactor (MMR) on campus, serving as a model for integrating research and regulatory processes.
- Overview of other academic institutions, such as Penn State University and Abilene Christian University, engaging in licensing research reactors to advance nuclear education and innovation.

## *Invited Speakers:*

- **William Orders**, Senior Licensing Project Manager, Office of Nuclear Reactor Regulation, U.S. NRC.
- **Caleb Brooks**, Principal Investigator, University of Illinois Urbana-Champaign, leading the KRONOS MMR project.
- **Brent Hamilton**, Director of Quality Assurance, NANO Nuclear Energy, overseeing regulatory compliance initiatives.

**Representative from the Department of Energy** – To discuss federal support programs for advanced reactor licensing.





# POWER

The United States Power Systems Development, Technology & Financing Summit

# 2025



**USA POWER SYSTEMS DEVELOPMENT SUMMIT  
& SMART GRID ENGAGE TECHNOLOGY FORUM**  
19th - 21st November 2025 | AUSTIN | TEXAS

## Session Overview:

This theme explores the pivotal role of nuclear power in supporting advanced industrial processes and the growing demands of modern energy systems, including hydrogen production, data center power supply, and hybrid energy solutions. As the world moves toward carbon-neutral energy solutions, integrating nuclear energy into diverse energy systems will be key to achieving zero-carbon industrial operations and grid resilience.

## Key Discussion Points:

### 1. Using Nuclear for Off-Grid and Behind-the-Meter Solutions (Hydrogen Production, Steel, Ammonia)

- **Unlocking Hydrogen Economy with Nuclear:**
  - Harnessing nuclear energy to produce clean hydrogen via high-temperature gas reactors (HTGRs) or electrolyzers powered by nuclear plants.
  - The role of nuclear in supporting large-scale hydrogen production for decarbonizing sectors like steel manufacturing, ammonia production, and heavy transport.
  - **Key Stakeholders:**
    - **DOE's Hydrogen and Fuel Cell Technologies Office (H2@Scale Initiative)**
    - **U.S. Department of Energy's Nuclear Energy Division**
  - **Relevant Organizations and Technologies:**
    - **X-energy**, working on small modular reactors (SMRs) for hydrogen production.
    - **NuScale Power**, developing scalable reactors that integrate with clean hydrogen production.

### 2. Co-Location of Microreactors with Hyperscale Data Centers for Zero-Carbon Power Continuity

#### Micro-Reactors for Critical Infrastructure:

- **The role of nuclear microreactors in providing reliable, clean, and continuous energy for hyperscale data centers**, which require uninterrupted power for data storage and processing.

# POWER

The United States Power Systems Development, Technology & Financing Summit

# 2025



**USA POWER SYSTEMS DEVELOPMENT SUMMIT  
& SMART GRID ENGAGE TECHNOLOGY FORUM**  
19th - 21st November 2025 | AUSTIN | TEXAS

- **Integrating nuclear with renewable energy** to meet the evolving demand for data processing while ensuring grid stability.

### 3. Hybrid Energy Systems Combining Nuclear, Renewables, and Storage Technologies

#### Creating Reliable, Zero-Carbon Hybrid Systems:

- Integrating nuclear energy with renewable sources (e.g., wind, solar) and energy storage systems (batteries, pumped storage) to ensure stable, flexible, and clean energy generation for grid stability and decarbonization.
- Examining case studies where nuclear power can complement intermittent renewable energy generation, filling gaps during peak demand and low renewable generation periods.

#### Relevant Technologies and Policies:

- **Advanced Reactor Concepts** integrating renewable sources for grid flexibility.
- **DOE's Grid Modernization Initiative** promoting hybrid systems and energy storage for grid stability.

#### Relevant US Universities and Research Institutions Working on Nuclear and Hybrid Energy Systems:

##### Massachusetts Institute of Technology (MIT) – Nuclear Science and Engineering:

MIT's **Nuclear Reactor Laboratory** has several ongoing projects focusing on nuclear energy for industrial decarbonization, including hydrogen production and data center applications.

MIT's **Energy Initiative** focuses on hybrid energy systems that integrate nuclear with renewables and storage technologies.

**University of California, Berkeley – Nuclear Engineering:** Focused on small modular reactors (SMRs) and their application in industrial applications like hydrogen production and carbon-free energy for data centers.

##### University of Michigan – Nuclear Engineering and Radiological Sciences:

The **Michigan Institute for Plasma Science and Engineering (MIPSE)** works on clean nuclear energy solutions, including advanced reactors and their integration with renewable sources.



# POWER

The United States Power Systems Development, Technology & Financing Summit

# 2025



**USA POWER SYSTEMS DEVELOPMENT SUMMIT  
& SMART GRID ENGAGE TECHNOLOGY FORUM**  
19th - 21st November 2025 | AUSTIN | TEXAS

## Session Overview:

As the U.S. embarks on a nuclear renaissance, ensuring a robust supply chain and a skilled workforce is paramount. This session will delve into strategies to revitalize domestic manufacturing, enhance training programs, and integrate innovative technologies to support the next generation of nuclear energy deployment.

---

## Key Discussion Points:

### Revitalizing Domestic Manufacturing:

- Assess current capabilities and identify gaps in the U.S. nuclear supply chain.
- Explore initiatives to boost domestic production of critical components.
- Discuss partnerships between government and industry to strengthen manufacturing infrastructure.

### Scaling Training Programs:

- Highlight successful collaborations between the Department of Energy (DOE), Electric Power Research Institute (EPRI), and academic institutions.
- Share best practices in curriculum development and hands-on training.
- Address strategies to attract and retain talent in the nuclear sector.

### Innovations in Modular Construction & AI Integration:

- Examine the role of modular construction techniques in reducing project timelines and costs.
- Discuss the integration of artificial intelligence in plant operations for enhanced safety and efficiency.
- Explore case studies showcasing successful implementation of these technologies.

## Featured Institutions & Programs:

### North Carolina State University & EPRI:

Awarded a \$500,000 grant to assess advanced reactor workforce needs in the Southeast U.S.

### Texas A&M University – ReCENT Program:

Offers professional development for educators in renewable and nuclear technologies.



# POWER

The United States Power Systems Development, Technology & Financing Summit

# 2025



**USA POWER SYSTEMS DEVELOPMENT SUMMIT  
& SMART GRID ENGAGE TECHNOLOGY FORUM**  
19th - 21st November 2025 | AUSTIN | TEXAS

## Joint Ventures and Technology Transfer:

- Identify opportunities for joint ventures and technology transfer in emerging markets, emphasizing the role of international cooperation in expanding nuclear energy deployment.
- Examine the role of the International Atomic Energy Agency (IAEA) in facilitating global nuclear collaboration and safety standards.

## Competing with State-Backed Global Suppliers:

- Develop strategies to enhance the competitiveness of U.S. nuclear technology providers against state-backed entities from countries like China and Russia.
- Discuss the implications of the International Nuclear Energy Act (INEA) of 2023, which promotes U.S. engagement with ally and partner nations to develop a civil nuclear export strategy.

## Relevant U.S. Universities:

**Idaho National Laboratory (INL):** Hosts international researchers and promotes cross-cultural exchange through its International Researcher and Visitor Program.

**Universities Participating in the International Nuclear Management Academy (INMA):** Collaborate to provide sustainable nuclear technology management programs, reflecting industry best practices.

## Invited Speakers:

- **Aleshia Duncan:** Deputy Assistant Secretary, International Cooperation, Office of Nuclear Energy, U.S. Department of Energy.
- **William D. Magwood, IV:** Director General, Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD-NEA).
- **Michael Shellenberger:** President, Environmental Progress, known for advocacy on nuclear energy and environmental issues.



