STATE TO STATE ASSISTANCE

SARAH SANDERLIN, CHAIR (NJ) – OAS

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WHY IS THERE A NEED?

- Lack of staffing
- Lack of training
- Lack of subject matter experts
- Lack of resources

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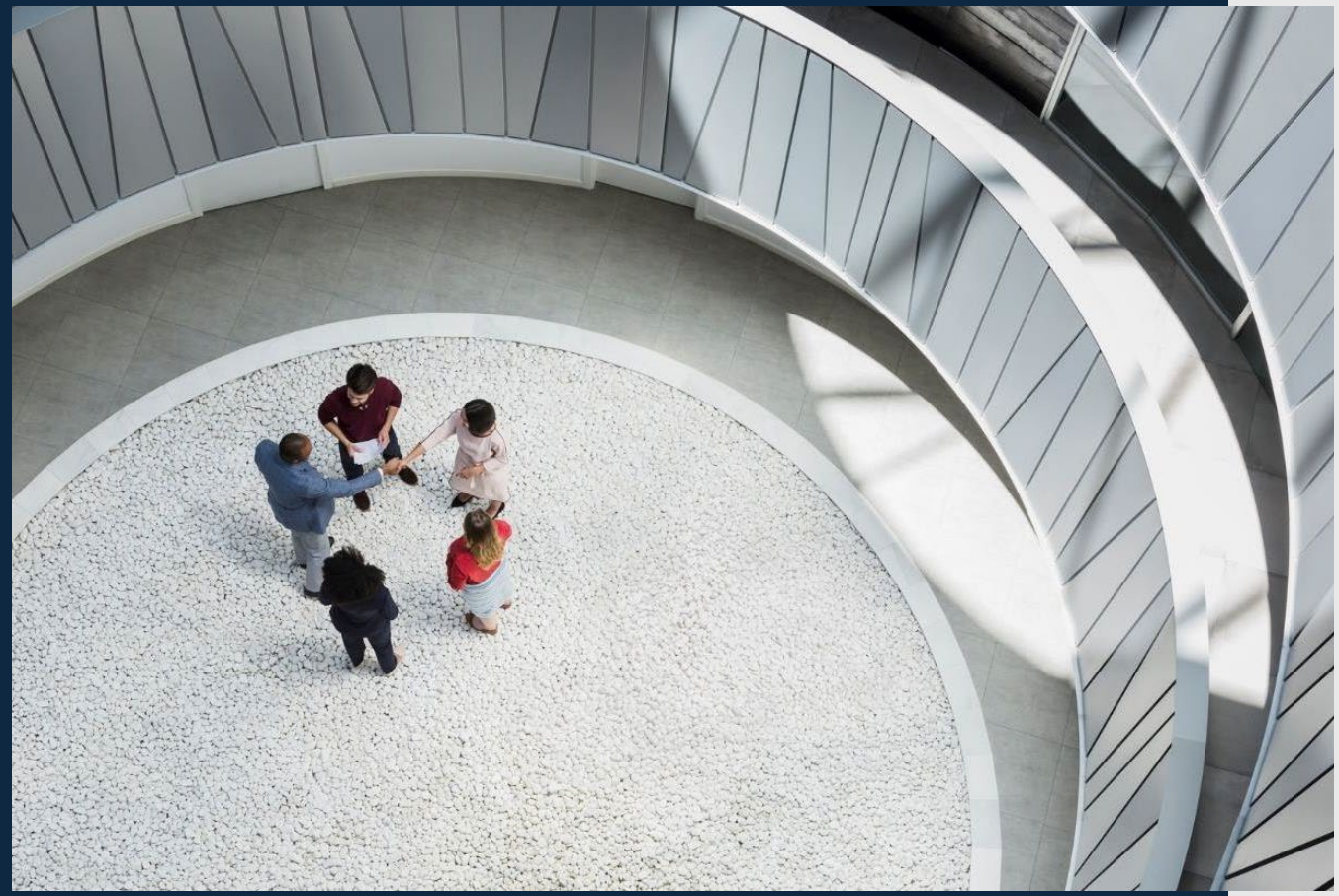
LEVELS OF ASSISTANCE

- Inspection
  - Physically in person
- Licensing
  - Virtual assistance
- Training
  - Subject matter expertise
  - Best practices
  - Teaching NRC courses



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BENEFITS

- Encourages communication & networking
- Establishes contacts in areas of expertise
- It shows that the challenges we face are not unique and we are not alone

CONTINUED CHALLENGES

- Finding help
- Funding
  - NRC's commitment to fund and support training

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QUESTIONS?

Sarah Sanderlin
Radiation Physicist II
NJDEP Bureau of Env. Radiation
Sarah.Sanderlin@dep.nj.gov

State's Role in New Reactor Technology Deployment: Risk Assessment and Public Trust

Pat Mulligan, Chair

CRCPD

Federal Strategy Boosting Advanced Reactor Deployment

Key Impacts of NEIMA, ADVANCE Act & Executive Orders:

Streamlined Licensing: NRC directed to simplify and modernize approval for new reactor designs.

Financial Support: Incentives and cost-sharing reduce upfront investment risks.

Market Expansion: Policies promote nuclear use for national security and repowering existing sites.

Secure Supply Chain: Focus on domestic HALEU fuel production to ensure long-term viability.

State Role in Emerging Reactor Technology Deployment

State government agencies will have a **dual role** in the deployment of new nuclear technologies**, acting as facilitators in the deployment process** and **potentially in a regulatory capacity**. This deployment, which includes small modular reactors (SMRs) and other advanced designs, will significantly impact state emergency response organizations and security support from state and local law enforcement.

State governments are taking on a more **active role** in promoting and enabling the deployment of advanced nuclear technologies.

Technology promotion and planning

Regulatory framework

Siting and development

Workforce development

Risk Assessment and State Emergency Response Organization

For new nuclear reactor designs, the developer is responsible for performing risk assessments, while the NRC oversees and approves the analysis.

CRCPD has every confidence that the NRC will continue to hold safety and security as the number one priority as designs are approved and deployed.

However, it is critical for state emergency planners to fully understand these risks and offsite impacts to develop effective, independent, and flexible emergency response plans.

Importance of Understanding Risk Assessment for State Emergency Planners

For state emergency planners, **understanding the risks and offsite impacts** of a nuclear reactor **is critical** for several reasons:

- **Protect Public Safety**: Understand reactor risks to develop appropriate and effective protective strategies.
- **Enable Smart Planning**: Use impact analysis to guide flexible, scenario-based emergency plans.
- **Coordinate Rapid Response**: Equip state/local officials to make timely, informed decisions during incidents.
- **Allocate Resources Wisely**: Match staffing, equipment, and communication systems to risk levels.
- **Communicate Clearly**: Build public trust through transparent, accurate risk messaging.

Educating State Emergency Planners

NRC strengthens state preparedness for nuclear emergencies by:	**Sharing Risk Insights** – Focuses planning on the most critical safety risks
	Joint Exercises and Drills – Maintains responder readiness through full-scale training.
	Technical Expertise – Provides real-time reactor knowledge for informed decisions.
	Guidance and Regulations – Establishes best practices and preparedness frameworks.
	Open Communication – Coordinates directly with state and federal agencies during events.

Emergency Planning Impacts

It is critically important for industry developing new plant designs to recognize the distinction between **Emergency Planning (EP)** and an **Emergency Planning Zone (EPZ).**

Emergency Planning (EP): A comprehensive framework that ensures coordination between state, local, and federal agencies in the event of a nuclear incident. EP covers communication, decision-making, and response activities, whether or not public protective actions are required.

Emergency Planning Zone (EPZ): A specific tool used by offsite organizations to guide planning for incidents that could affect surrounding jurisdictions. The EPZ supports effective coordination but does not replace the need for broader emergency planning.

Regardless of the potential offsite dose impacts, **emergency planning will always be required** for any reactor design. Coordination with state and local agencies is essential to ensure communication and response readiness, with or without the implementation of public protective actions.

How states can assist NRC with building public trust

1. State governments can strengthen public acceptance by:

- **Engaging communities early and often –** integrate public input from planning through operation.
- **Educating on oversight –** emphasize NRC's daily monitoring role to reinforce safety.
- **Being transparent –** communicate risks and benefits openly, acknowledging concerns.

CRCPD helping to build Public Trust

2. Foster Credible, Local Communication

- Train **state radiation experts** to serve as **trusted voices** in their communities
- **Use familiar, respected channels** to share safety information and **build confidence**

3. Expand NRC's Communication Network

- **Equip state experts** with advanced reactor knowledge
- **Enable accurate info-sharing** with emergency managers, health officials, and the public
- **Facilitate** two-way **dialogue**—ensuring community concerns reach NRC decision-makers

CRCPD helping to build Public Trust

4. Reinforce Transparency and Independence

Training independent **state officials demonstrates** that NRC **safety standards can withstand external review.** This **visible independence enhances public trust** in both **state and federal oversight**.

5. Strengthen Emergency Preparedness and Response

In a radiological incident, state and local authorities are on the front lines. **Training state experts ensures** they are **equipped to coordinate** with federal partners and **provide clear, confident communication to the public during emergencies.**

CRCPD helping to build Public Trust

6. Addressing Misconceptions About Advanced Reactors

- **Demystify New Tech:** Train state experts to explain unfamiliar reactor designs and address concerns about radiation and waste.
- **Communicate Risk Clearly:** Equip officials to lead fact-based discussions on benefits and safety.
- **Educate to Build Acceptance:** Public understanding of nuclear tech directly boosts trust – expert-led outreach is essential.

Concluding remarks

CRCPD is a **trusted national leader** in radiation protection with **strong state and local connections.**

States can **strengthen public trust** by **engaging CRCPD** in **nuclear technology deployment and risk communication.**

A **coordinated national effort** with CRCPD **builds confidence, ensures consistent public engagement**, and **supports the safe growth** of the nuclear industry.

REGULATING FUSION MACHINES-THE STATES' PERSPECTIVE

BETH SHELTON, PAST CHAIR (TN) - OAS

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THE NRC AND THE AGREEMENT STATES MUST FUNCTION AS REGULATORY PARTNERS AND WORK TOGETHER IN THE DEVELOPMENT OF:

- REGULATORY GUIDES AND PROCEDURES
- REGULATIONS

KEY DETAIL TO REMEMBER:

- STATES HAVE BEEN REGULATING FUSION R&D FOR DECADES.
- VALUABLE EXPERIENCE AND INSIGHTS TO SHARE.
- NRC AND THE STATES ARE USING THIS EXPERIENCE TO DEVELOP A COMPREHENSIVE AND CONSISTENT REGULATORY FRAMEWORK.

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CURRENT WORKINGS AND DIALOGUE

- Draft NUREG & Rules Comments
- Current Working Groups
  - *Study on the Mass Production of Fusion Machines*
  - *Standing Committee on Fusion Machine Oversight*
  - *CRCPD's SSRS Working Group- Development of Rules Pertaining to Fusion Facilities*
- Public Meetings
- Champions Chats
- Sessions During Meetings and Conferences
  - *Fusion Day during the OAS Annual Meeting*
- Communication, Communication, and more communication
  - *Especially Between the Regulator and the Licensee*

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ACCOMPLISHMENTS THIS YEAR:

- Standing Committee on Fusion Machine Oversight
- Section 205 report to Congress
- Plan for fusion training courses for regulators


WHAT IS LEFT TO DO AND HOW DO WE GET TO THE FINISH LINE???

CHALLENGES FOR STATES:

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- Do states have enough staff to support a fusion program?
- Do current programs have enough money to fund the creation of a fusion program (are the states fee funded)?
- Access to modeling to independently verify neutron shielding and off-site consequences
- Instrumentation & Environmental monitoring specific to tritium
- Public outreach
- How will fusion fit into a State's existing x-ray/accelerator programs?
- Are changes to the State's statute needed?

THE KEY IS……

- Commercial deployment of fusion machines will require coordination on a national level with NRC.
- Sharing of best practices and lessons learned between the regulatory agencies and industry will be important to establish a viable and heathy commercial framework.
  - The Regulatory Agency working directly with the licensee to ensure a thorough and efficient process.

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THANK YOU!

Beth Shelton | Director
TN Division of Radiological Health
Organization of Agreement States, Past Chair
Beth.Shelton@tn.gov

STATE LICENSING, REGISTRATION, AND INSPECTION OF MACHINE SOURCES AND HOW FUSION RULES COULD IMPACT STATE REGULATIONS

RIKKI WALLER
CRCPD PAST CHAIR

- State licensing, registration, and inspection are crucial for ensuring the safe operation of radiation-producing machines.
- The emergence of fusion energy will require a tailored regulatory approach that recognizes its unique characteristics and potential benefits.
- Proactive engagement from both developers and regulators to foster safe and successful commercial deployment will be essential.

Technical White Paper:
State Regulation of Fusion Machines
June 5, 2025
Prepared by
CRCPD's E-47 Committee on Commercial Nuclear Power
https://crcpd.org/wp-content/uploads/2025/08/25-2-Technical-White-Paper-State-Regulation-on-Fusion-Machines.pdf

- States have existing radiation control programs for devices like X-ray machines.
- Regulating fusion machines presents unique challenges.

- Particle accelerators have been regulated by State radiation control programs for decades
- Fusion machines are a subset of particle accelerators
- Agreement States also license the radioactive material associated with fusion machines
- To date, the NRC has not regulated fusion machines with targets other than tritium (neutron generators).

KEY REGULATORY CONSIDERATIONS

- Fuel Management
- Radiological Dose Compliance
- Neutron Management
- Activation Dose Products
- Emergency Planning
- Inspection and Training

REGULATORY CHALLENGES

- Diverse Technologies
- Emergency Planning Integration
- Material Control
- Dose Assessment
- Decommissioning Planning
- Emergent Issues

RECOMMENDED BEST PRACTICES

- Phased Licensing
- Stakeholder Engagement
- Cross-Program Collaboration
- Use of External Expertise
- Emergency Coordination

REGULATORY COORDINATION

- Collaboration
- Clarity in Jurisdiction
- Training and Resource Sharing

KEY STATE NEEDS

- Need for training. Both tritium and fusion technology are new for most states.
- Need for programs for software modelling for both tritium releases and uptakes
- Need for standard assumptions for accident modelling – for example, there is a wide variety of assumptions used for percentage of tritium released in fire scenarios, anywhere from 10% to 100%
- Clarity on cybersecurity requirements
- Emphasis that we need to use operational experience to update our guidance as these are still new technologies

"Ultimately, the regulation of nuclear fusion machines will involve a multifaceted approach: leveraging delegated NRC authority in Agreement States, utilizing established state and local permitting systems, coordinating with the NRC to shape the regulatory framework, and aligning with policies governing electric utilities. To successfully navigate this dynamic regulatory environment, early and proactive collaboration between fusion companies and both federal and state regulators is essential."

ENHANCING THE IMPEP PROCESS FOR AGREEMENT STATES

BECKI HARISIS, CHAIR-ELECT (TN) - OAS

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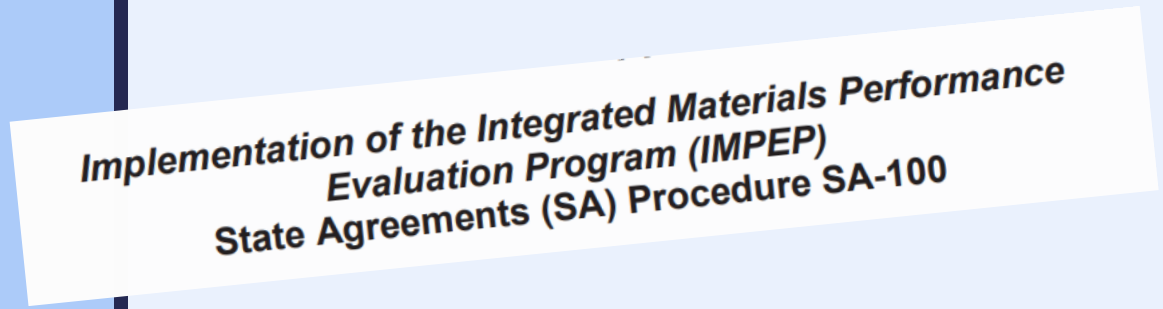
Background

- Agreement States support IMPEP as a tool for program oversight and accountability.
- NRC Staff identified potential opportunities to improve efficiency and effectiveness while preserving program integrity.



Agreement State Perspective

States recognize IMPEP as valuable, but resource-intensive.

Because the process is so intensive, it deters from the priorities of the program.

Improving the process still protects program quality but frees up staff to focus on what matters most."

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Proposed Changes

Reducing IMPEP frequency from 4 to 5 years.

Conducting some performance indicator reviews and periodic meetings remotely.

Streamlining the IMPEP report and MRB meetings.

Program Integrity Preserved

Oversight standards remain unchanged.

The goal is to improve efficiency without losing the quality of oversight.

OAS agrees that these changes can strengthen the IMPEP process.

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Next Steps

NRC decision-makers review and approve improvements.

Joint implementation planning between NRC and Agreement States.

Commitment: An IMPEP process that is efficient and effective.

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Questions?

Becki Harisis
TN Division of Radiological Health
Organization of Agreement States, Chair-Elect
Becki.Harisis@tn.gov

DOSE MODELING FOR ADVANCED REACTOR DESIGNS

Tanya Ridgle
CRCPD Chair-elect

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Key Emergency Planning Questions to Determine Public Health and Safety

- How much radioactive material could actually be released in an event?
  - What should be the size and shape of the emergency planning zones?
- How far off-site could radioactive material travel?
  - What level of public protection is truly necessary?

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Accurate offsite dose assessment is critical for state and local organizations to answer these questions and ensure public health and safety.

Dose Modeling Key Components & Goals

- Dose Modeling - Key Components
  - Projection of quantity, type and release patterns of radioactive material.
  - Simulate movement of radionuclides in the air based on local meteorological data.
  - Accident Simulation
  - Long-term Dose Assessment.
- Goals
  - Ensure regulatory compliance.
  - Manage public health and safety.
  - Help responders make real-time decisions, such as whether to recommend that the public evacuation or shelter in place.

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Unique Considerations for Advanced Reactors

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New Design Technology

- Some designs still in demonstration phase
- Technology is not yet well known to state and local emergency planners.

Advanced reactors are often factory-fabricated and transportable.

Smaller size and footprint allows for a wider variety of locations.

Feature passive safety systems that do not rely on electricity or operator intervention.

Modular Technology – Multiple advanced reactors at one location.

Components of Offsite Dose Modeling

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- **Source Term** – Heavily influenced by new fuel types.
- **Release Model** – Varies with novel reactor designs.
- **Dispersion Model** – Might be altered depending on release form and timing
- **Dosimetry Model** –Must accommodate new isotopes.

Dose Modeling Challenges and Uncertainties for Advanced Reactors

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- Limited operational and design data.
  - Diverse reactor designs
  - Unknowns in real-world performance.
  - Difficulty in proving reliability and safety over long durations
- Installed in multiples at a single site (modular)
  - A single event may affect multiple modules (common-cause failure)
  - Is the licensee required to submit plans for the failure of all modules at one time?
- Advanced reactors may be in remote locations.
  - Local emergency response infrastructure may be limited.
- Gap in knowledge and familiarity at the state and local level.
  - States are used to large power plant technology and response. Suggest targeted training for local and state programs on advanced reactor designs and safety features.

Importance of Independent Dose Assessment!

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- NRC must ensure independent dose modeling tools exist for this new technology.
  - Simply providing the release information does not allow states to conduct independent dose assessment.
  - Ground truth alone is insufficient—models must be predictive.
  - Past reliance on RASCAL enabled independent assessments.
- Can NRC confirm that an independent dose model is available as part of approval process?
  - FRMAC and IMAAC should have validated models for new reactor types.
- ***Modeling and measuring is important for public trust.***

QUESTIONS?

Thank You

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