



# Strategic Overview of Decommissioning and Low-Level Waste and Nuclear Materials Users Business Lines

*Commission Briefing*

*January 27, 2022*



## Dan Dorman

Executive Director for Operations

*Decommissioning and  
Low-Level Waste Business  
Line*

# Decommissioning and Low-Level Waste

John Lubinski

General Program Overview; Priorities and Challenges

Ashley Roberts

Key Successes and Strategic Direction for the  
Decommissioning and Low-Level Waste Business Line

Ted Smith

Trends in Reactor Decommissioning

Richard Turtill

License Transfers for Purposes of Decommissioning  
Decommissioning Funding Assurance

Katherine Warner

Reactor and Materials Decommissioning Inspection  
Activities

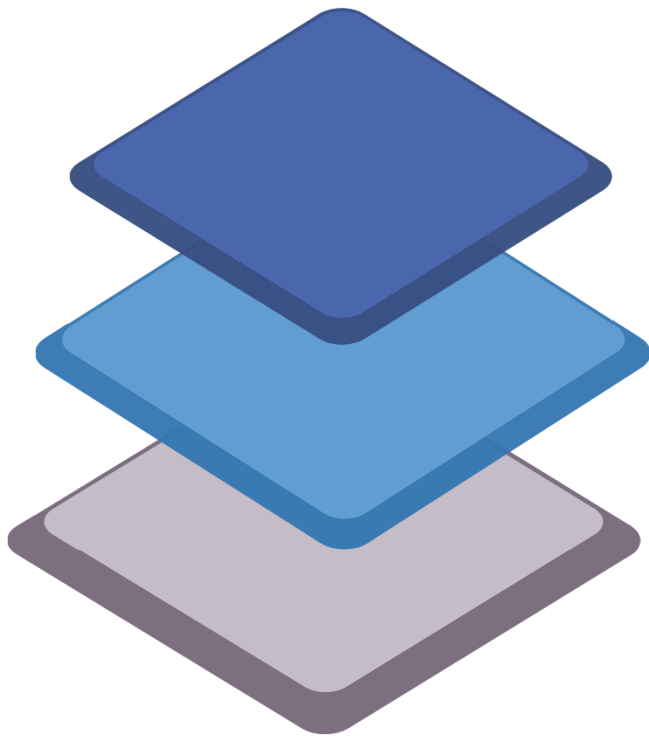


**John Lubinski**

Office Director, NMSS

*General Program  
Overview; Priorities and  
Challenges*

# NMSS Focus Areas



## Meet our Mission

Ensuring safety and security decisions and protecting the environment by making timely, risk-informed decisions.



## Focus on our People and our Future

Embracing a hybrid telework environment to support our mission, embrace a culture of continuous learning, and professional development.



## Optimize

Use workload management tools to streamline information and leverage prioritization within and across business lines and programs.



## Overview of the Decommissioning and Low-Level Waste Business Line

- Licensing and Oversight for Power Reactors
- Licensing and Oversight of Uranium Recovery facilities
- Low-level Radioactive waste
- Waste Incidental to Reprocessing
- DOE activities related to the West Valley Demonstration Project Act



## Evolution of Licensing and Oversight Activities

- Adjusting to the increasing number of power reactors entering decommissioning and accelerated decommissioning
- Assessing and strengthen existing inspection guidance
- Adapting to an increase in the uranium recovery workload



# Promoting Professional Growth and Knowledge Management



Training



Nuclepedia  
Decommissioning topics





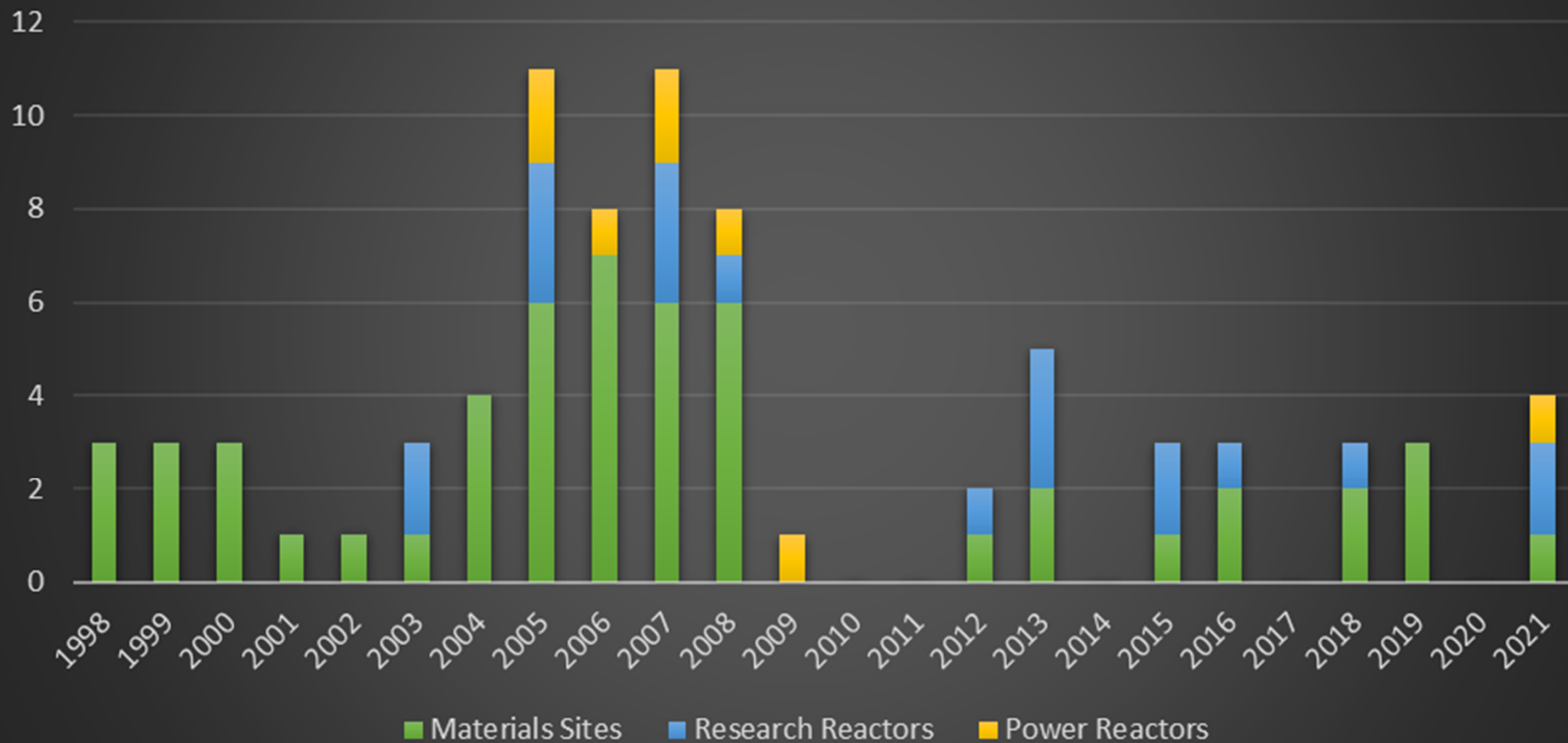
## **Ashley Roberts**

Deputy Director, DUWP, NMSS

*Key Successes and  
Strategic Direction for the  
Decommissioning and  
Low-Level Waste Business  
Line*

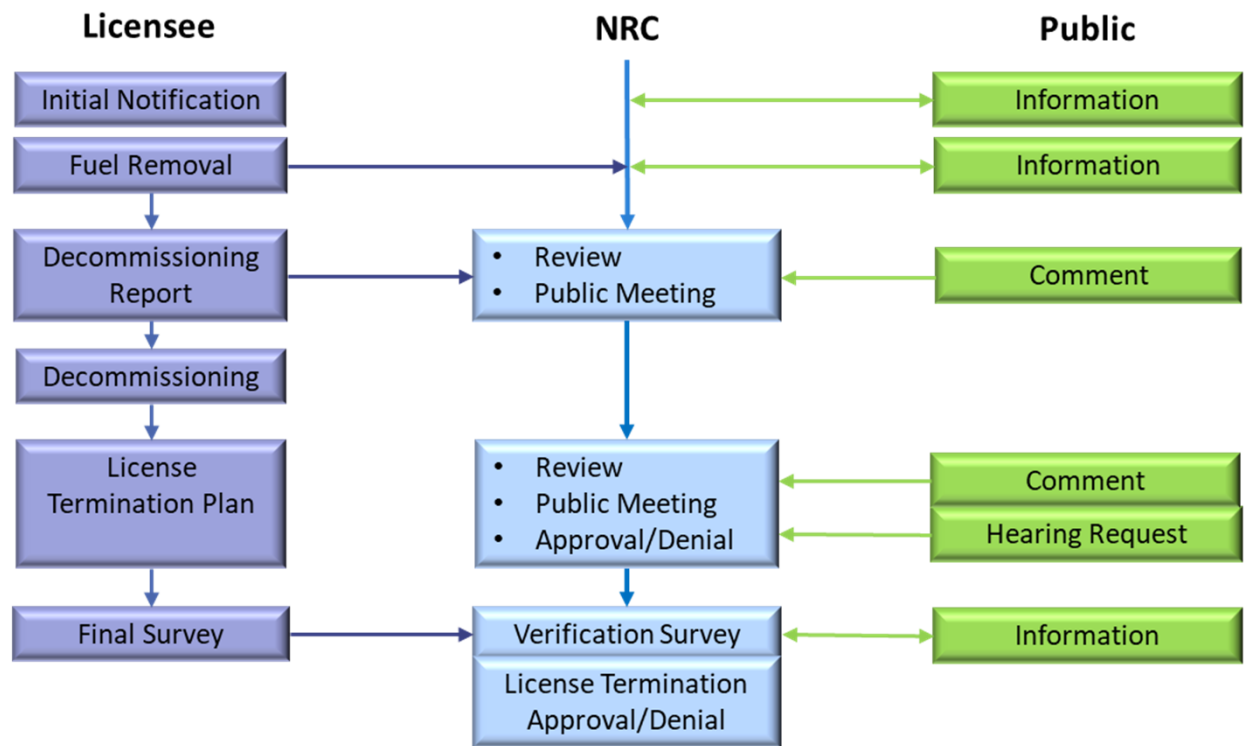


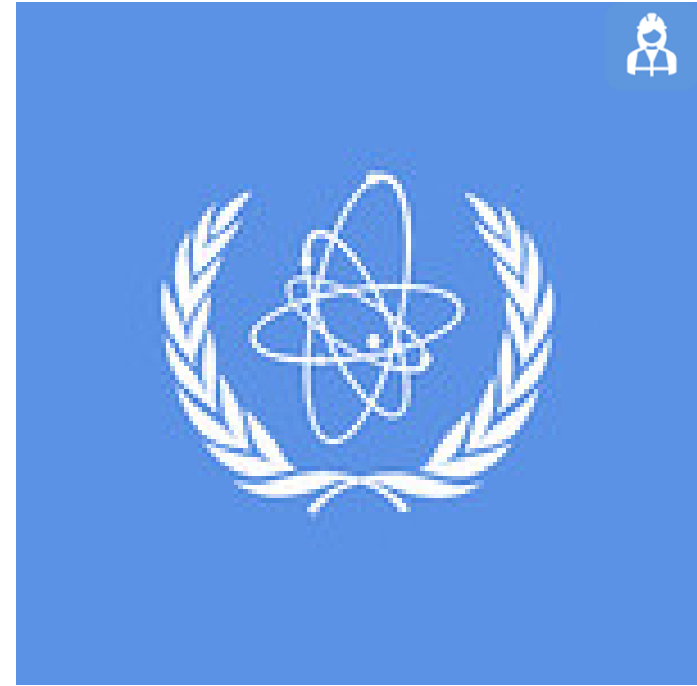
## License Terminations Over Last 20+ Years





# Overview of the Power Reactor Decommissioning Process





**Meeting our  
Mission in an  
Innovative Manner**



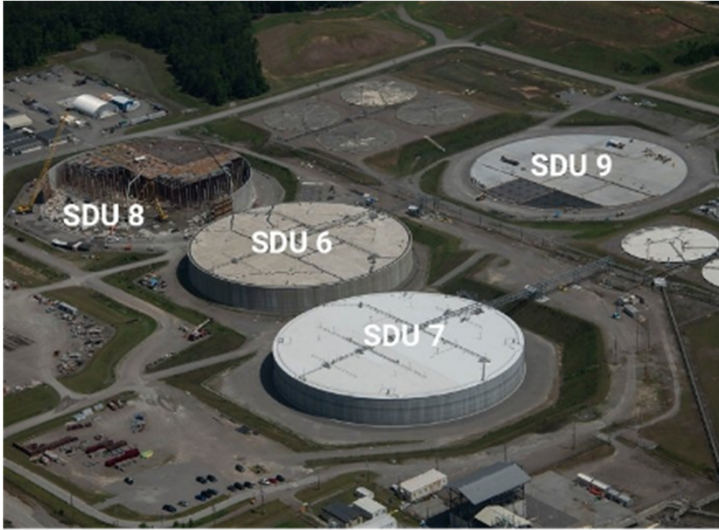
# Professional Development



Cross qualification



IdeaScale



**Striving Towards  
Systematic Optimization**

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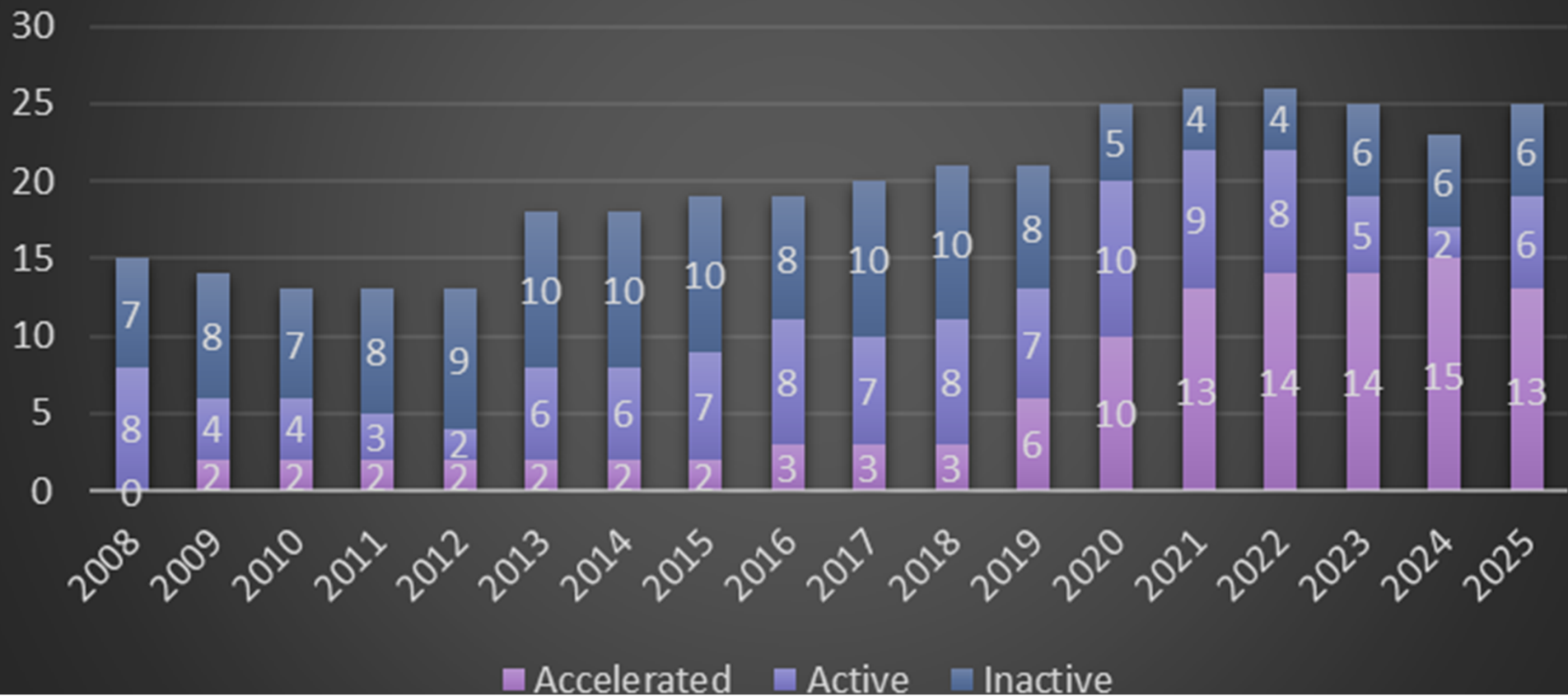
**Ted Smith**

Project Manager, DUWP, NMSS

*Trends in Reactor  
Decommissioning*



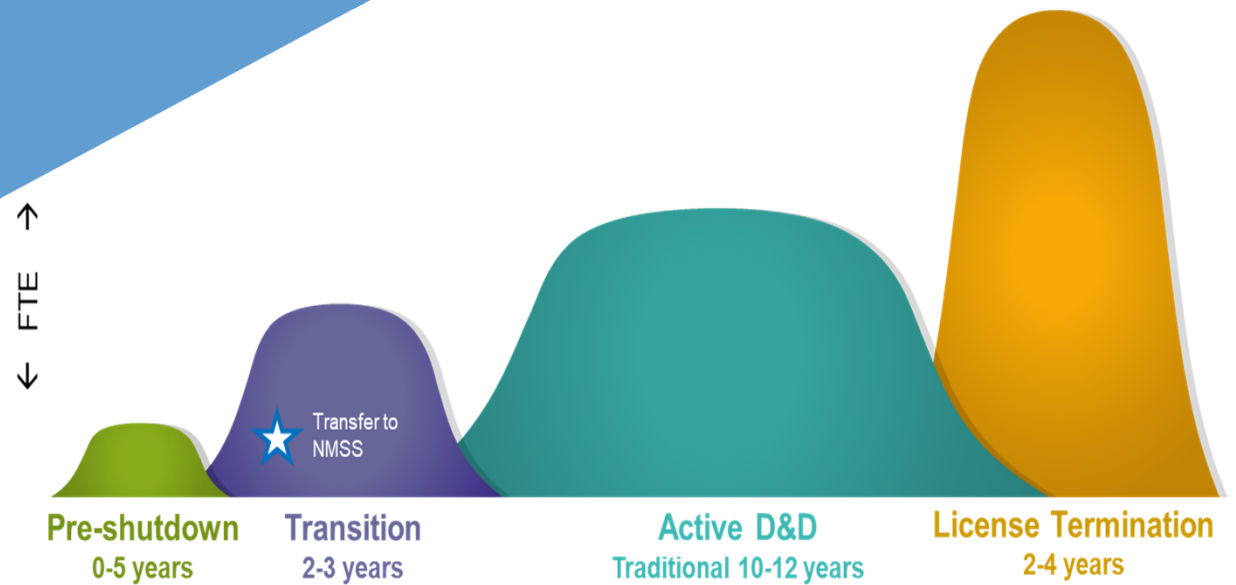
# Power Reactor Decommissioning - Program Growth





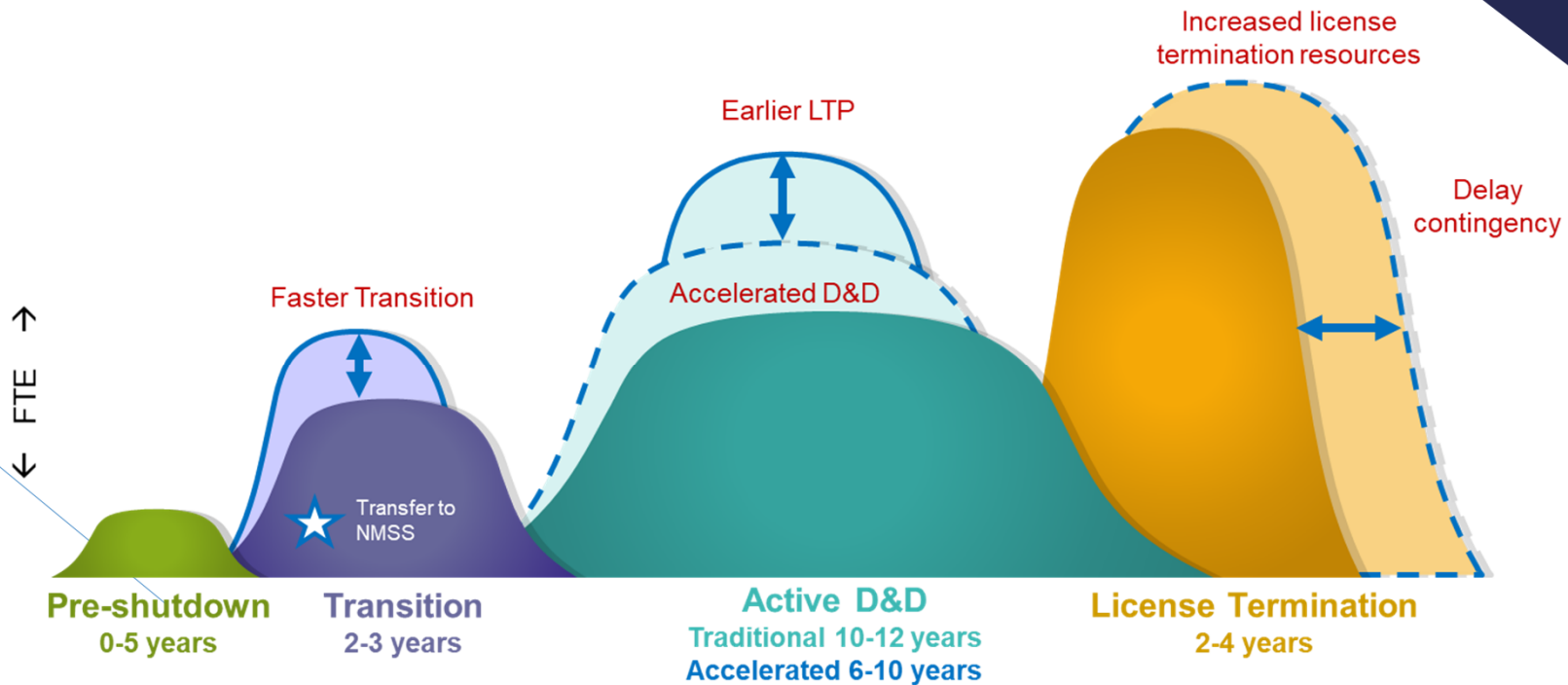


# Systematic Approach to Planning



# Revisiting the Systematic Approach

How do we adjust for accelerated schedules in the phased approach?



# Enhancing Guidance and Staff Resources

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- Guidance
  - NUREG-1575, Radiological Surveys
  - NUREG-1757, Volume 2
  - NEI Guidance
- Staffing
  - Strategic Workforce Planning
  - Nuclear Regulator Apprenticeship Network
  - Inspector Cross-Qualification
  - Regional Reorganization
  - Training





## **Richard Turtil**

Senior Financial Analyst, REFS,  
NMSS

*License Transfers for  
Purposes of  
Decommissioning*

*Decommissioning Funding  
Assurance*



## NMSS' Financial Center of Expertise (FCOE) - Who We Are?



### Agency-wide resource

- Nuclear Materials
- Nuclear Reactor Licensing

### Staff

- Engineering
- Finance and Business
- Accounting
- Economics and Public Policy
- Nuclear Navy Experience
- Nuclear Security Experience

# FCOE - What We Do?

## Provides direct support to:

- NMSS' Reactor Decommissioning Branch
- NRR's Division of Operating Reactor Licensing Branches
- Regions

## Evaluates:

- Financial Qualifications and Decommissioning Funding Assurance of Licensees
- Foreign Ownership, Control, or Domination
- On-site Insurance and Price-Anderson Indemnity





# Decommissioning Funding Assurance - What it does?

- Regulation-based decommissioning funding oversight program
- “Reasonable Assurance” regulatory standard
  - Establishes funding at initiation of operations;
  - Maintains acceptable financial assurance and continuous funding to Minimum Formula amount throughout operating life; and
  - Status of funds reported throughout life of operations.
- Processes are available to address decommissioning funding shortfalls



# Decommissioning Funding Assurance- How is it done?

## Recent Reporting

- 24 decommissioning reactors reviewed (annual review)
- Over \$12 billion in decommissioning trusts
- All plants in decommissioning met NRC funding requirements

## Current activities

- Financial Procedures and Guidance
  - Improvements in oversight
  - Awareness of decommissioning activities and affiliated spending
- Improvement of the funding review process controls and internal guidance





## **Katherine Warner**

Senior Health Physicist, DRSS,  
Region I

*Reactor and Materials  
Decommissioning  
Inspection Activities*

# Staffing Challenges in the Decommissioning Oversight Program



Increased Workload & Attrition

Hire and train new inspectors

Cross-train current inspectors

Improve oversight documents

# Risk-Informing Decommissioning Inspection Oversight Guidance



**IMC 2561,**  
“Decommissioning  
Power Reactor  
Inspection Program”



**IMC 2602,**  
“Decommissioning  
Oversight and  
Inspection Program for  
Fuel Cycle Facilities and  
Materials Licensees”



**IMC 1248, Appendix F,**  
“Training Requirements  
and Qualification  
Journal for  
Decommissioning  
Inspectors”





## COVID-19 Influence on Oversight Document Revisions



**Dan Dorman**

Executive Director for  
Operations

*Closing Remarks*



## **Dan Dorman**

Executive Director for  
Operations

*Nuclear Materials  
Users Business Line*

# Nuclear Materials Users

Rob Lewis

General Program Overview; Priorities and Challenges

Theresa Clark

Key Successes and Future Considerations

Transforming our Health Physics Workforce Strategy

The NMSS Data Foundation

Maryann Ayoade

Update on Emerging Medical Technologies Review Process

Leveraging External Partnerships to Identify New Technologies

James Thompson

Programmatic Enhancements in a Dynamic Environment

Cross-Regional Support Efforts



**Rob Lewis**

Deputy Director, NMSS

*General Program Overview*

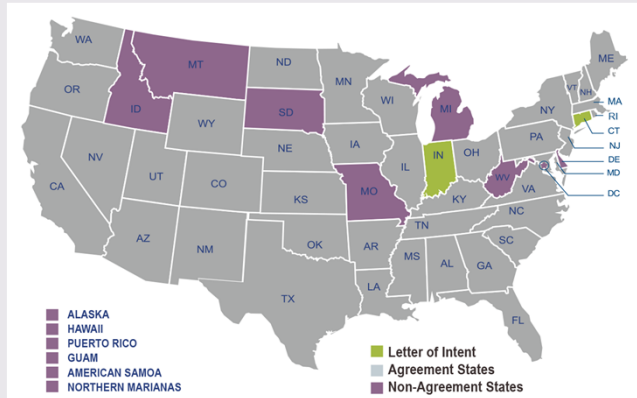
*Priorities and Challenges*



# Leaders of the National Materials Program




## How We Regulate




**11** NRC States  
**39** Agreement States  
**2** Letters of Intent


## Who We Regulate

 **18,000+** licenses

 8,631 industrial

 543 other

 8,082 medical

 309 academic

# Supporting a Culture of Continuous Learning and Professional Growth



**STORYTIME WITH DUNCAN**  
**11 EPISODES**



**MEDICAL REGULATIONS 101**  
**10 VIDEOS**

# Adapting and Sharing Insights During COVID-19

- Evaluated oversight activities during the pandemic
- Held 2 public meetings and 1 meeting with Agreement States
- Sharing insights and lessons learned across NRC and Agreement States





# Theresa Clark

Deputy Director, MSST, NMSS

*Key Successes and Future Considerations*

*Transforming Our Health Physics Workforce Strategy*

*The NMSS Data Foundation*

# Receptive to New Ideas

## NRC as One IMPEP

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Evaluated Regional and HQ materials programs at the same time

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NRR staff managed preparations to maintain independence

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3 Agreement State staff and  
5 NRC staff

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All indicators determined to be  
satisfactory

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MRB recommended next IMPEP in  
5 years





# Receptive to New Ideas

## *Rulemaking Innovations*

### EMT Rulemaking

- Codify existing EMTs
- Provide flexibility for future EMTs
- Address requirements for Rb-82 generators

### Agile PRM Reviews

- Piloted with extravasations PRM
- PRB 6 weeks ahead of schedule
- Reduced resources and late redirection
- Plan to do a 2<sup>nd</sup> pilot



RULEMAKING  
Center of Expertise

# Getting Ahead of Challenges through Extensive Outreach





# Evaluating the Future of the National Materials Program



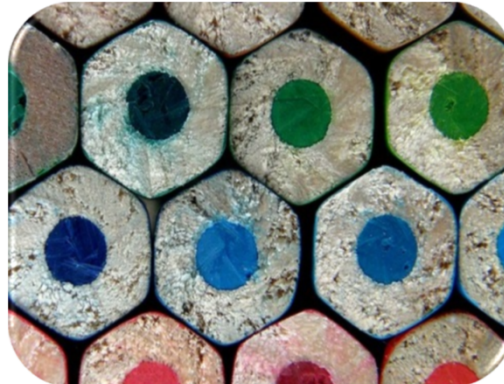
What will the **FUTURE** NMP look like?



What are the **IMPACTS** to NRC and States?



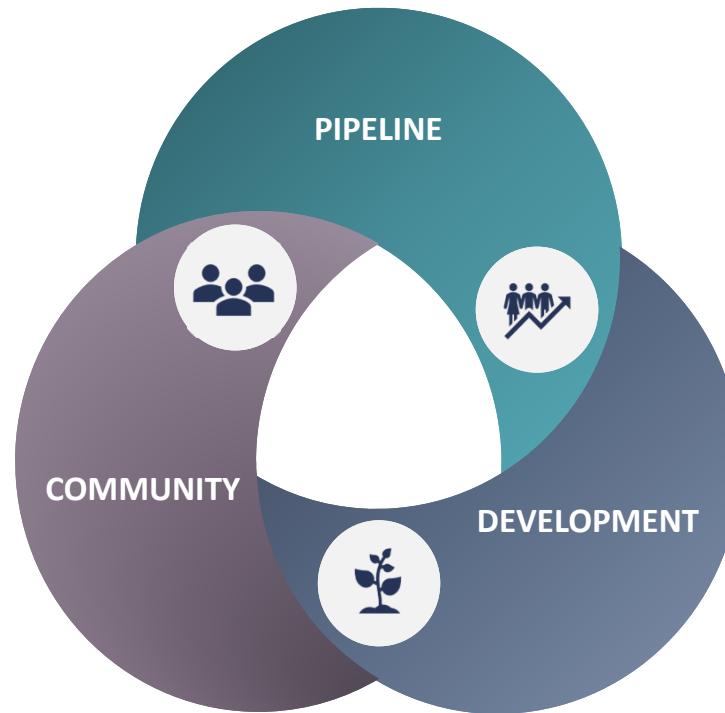
Will we have the **RESOURCES** needed?



How will we implement a **COHERENT** NMP?



# Partnering to Grow Our Health Physics Expertise



# Using Data to Manage Our Workload and Make Decisions



**NMSS DATA**  
Foundation



# Inspection Timeliness

Reset

Region

- Region 1
- Region 3
- Region 4

Date range filter

10/1/2020 9/30/2021

Performed Inspection totals only for Initial and Routine

<=50% of schedule	>50% of schedule	Overdue	Avg. % performed on time (Target: 98%)
108	118	3	99

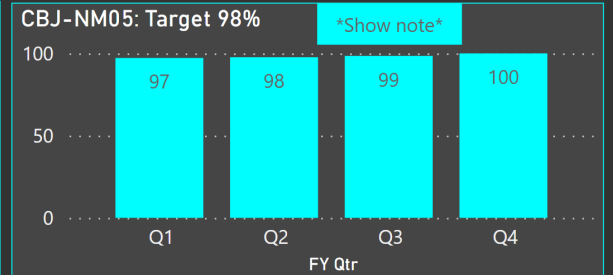
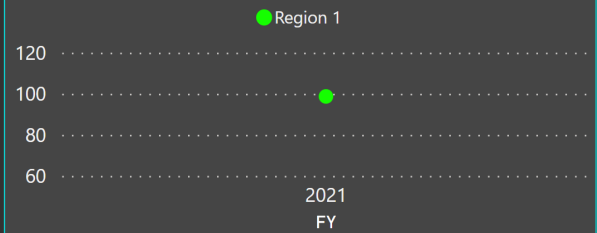
Fiscal Year

- 2021

### Summary of all inspection types performed

Frequency	Region 1	Total
1	20	20
2	50	50
3	53	53
5	106	106
<b>Total</b>	<b>229</b>	<b>229</b>

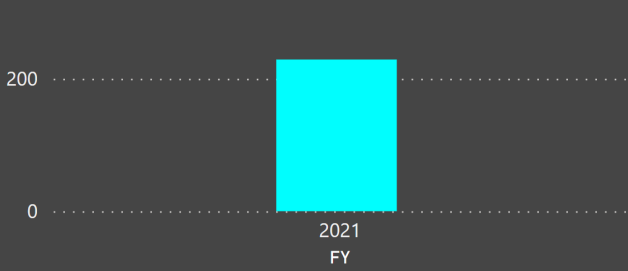
### Avg % performed on time by year



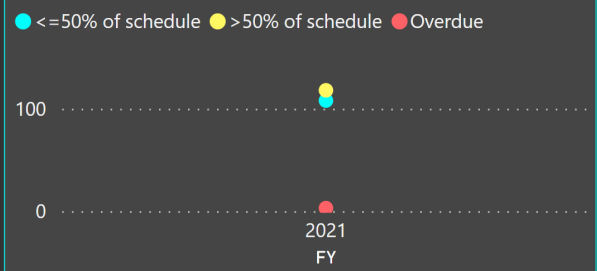
Insp Type

- Field
- Initial
- Reactive
- Routine
- Security
- Special
- Overdue

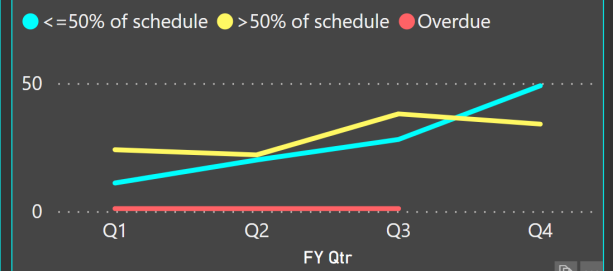
### No. of inspections performed per year



### No. of inspections performed by year



### No. of inspections performed by quarter



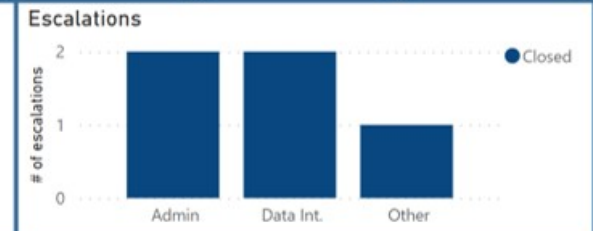
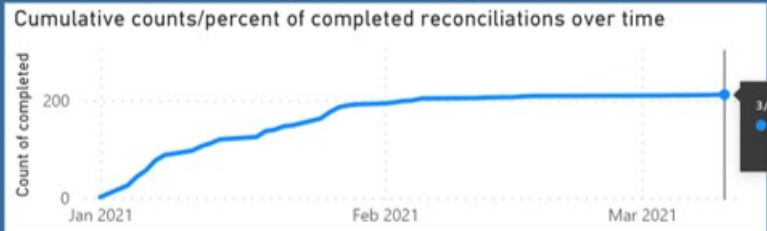


# Annual Inventory Reconciliation Status

AIR Year: 2021 | Agency: NR | State: All | License #: All | License name: All | [Reset filters](#)

**212** Total licensees  
 Not started | In process | **212** Complete | **100.0%** % complete

Open escalations: 0 | **5** Closed | **5** Total escalations | **2.4%** % lics w escalations



### Escalation information

#	Lic ID	License #	License name	Esc. status	Esc. type	Esc. description
D: 982	982	NPF-47	River Bend 1	Closed	Administrative	Primary contact change
D: 1008	1008	DPR-70	Salem 1	Closed	Administrative	Primary contact change
D: 5745	5745	DPR-38	Duke Energy Carolinas, LLC (Oconee 1)	Closed	Data Integrity	Model and make
D: 5805	5805	NPF-76	South Texas 1	Closed	Other	NPF-80 license not in NSTS
D: 5897	5897	NPF-86	FPL Energy Seabrook, LLC (Seabrook 1)	Closed	Data Integrity	Source activity discrepancy



### Licensee information

Agency	State	Lic ID	License #	License name	Status	First Name	Last Name	Title
NR	AK	963	50-16084-01	Alaska Industrial X-ray, Inc.	Complete	Donald	Millar	
NR	AK	964	50-27667-01	Kakivik Asset Management, LLC	Complete	David	Torres	RSO
NR	AK	967	50-29114-01	BLOOD BANK OF ALASKA, INC.	Complete	KENNETH	Harper	RSO
NR	AK	6564	50-35068-01	Anchorage Radiation Oncology Management, Inc.	Complete	Noah	Arvidson	
NR	AK	6986	50-35494-01	Southern Services, Inc.	Complete	Ruben	Rojas	Corporate Radi
NR	AL	640	01-00126-16	ARMY, DEPARTMENT OF THE	Complete	Shen	Zhu	
NR	AL	6555	41-08165-20	TENNESSEE VALLEY AUTHORITY	Complete	Jeffrey	Wooldridge	
NR	AL	999	DPR-33	Browns Ferry 1	Complete	Jamie	Paul	Site Licensing Iv





## **Maryann Ayoade**

Medical Physicist, NMSS

*Update on Emerging  
Medical Technologies  
Review Process*

*Leveraging External  
Partnerships to Identify  
New Technologies*



# Ensuring Safety Through a One-of-a-Kind Approach

- Flexible approach for licensing of emerging medical technologies
- Ensures patient access to new technologies in a timely manner
- Captures medical uses and technologies not addressed in our current regulatory framework

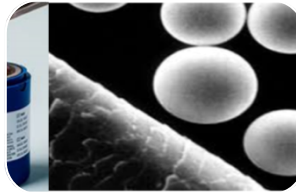
20 Years of  
Experience  
Licensing  
EMTs under  
with 10 CFR  
35.1000



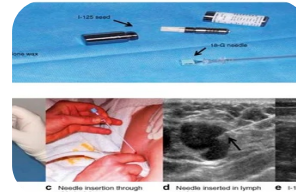
NorthStar RadioGenix  
Generator System



RadioMedix™ GeGant  
Ge-68/Ga-68  
Generator System



Y-90  
Microspheres



Radioactive Seed  
Localization



Novoste Beta-Cath  
Intravascular Brachytherapy  
System



Gamma Stereotactic  
RadioSurgery  
Perfexion and Icon



Gamma Stereotactic  
RadioSurgery  
GammaPod



ViewRay™ System  
Co-60 Radiation  
Therapy Device

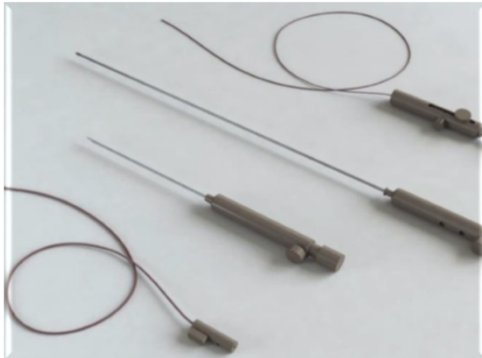


# Piloting New Streamlined Process

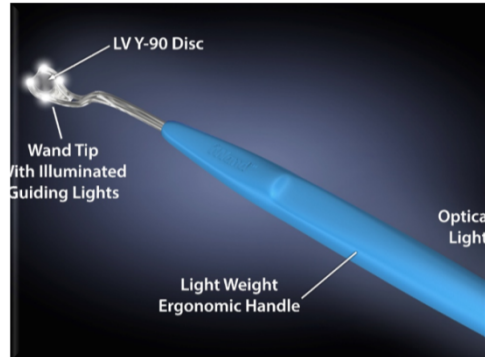




# New Emerging Medical Technologies Under Review



**Alpha DaRT™**  
Alpha radiation therapy  
for solid cancer tumors

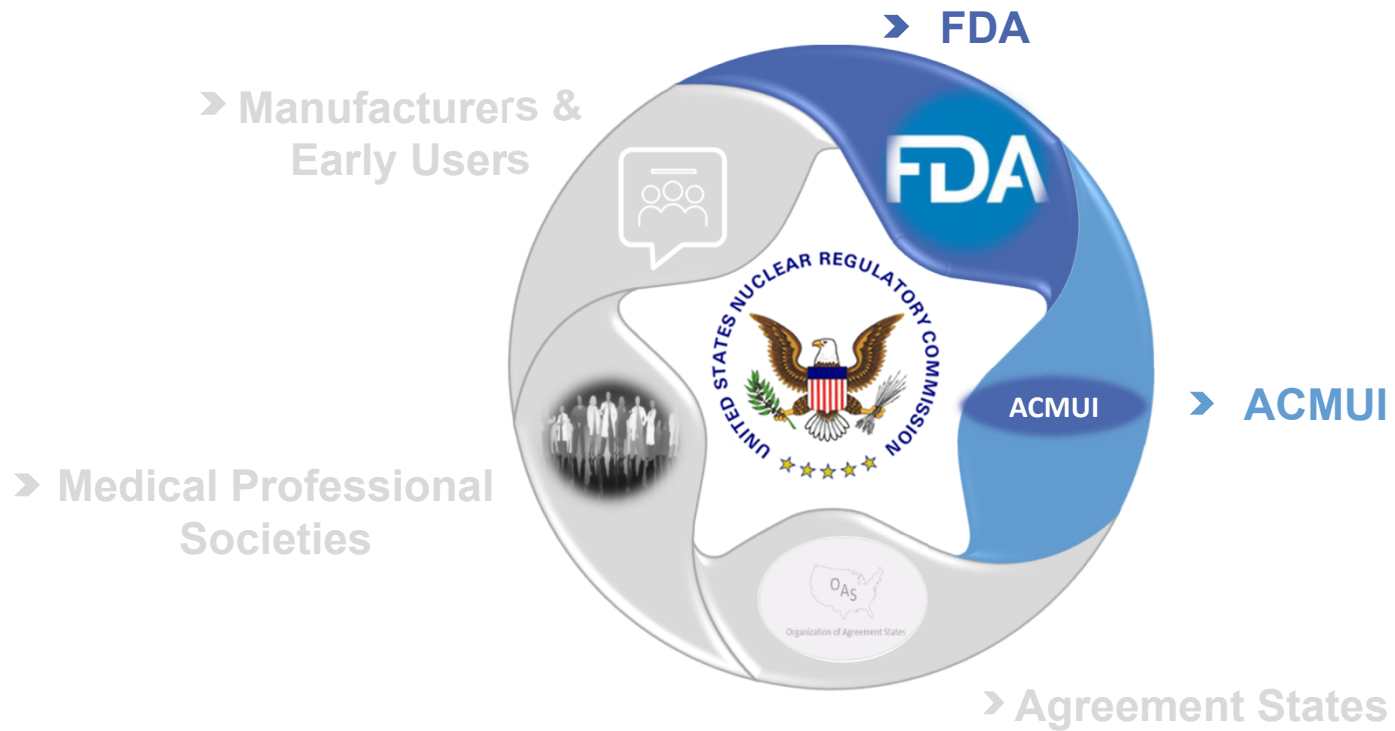


**Liberty Vision Y-90 Disc Source**  
Brachytherapy for treatment of  
ocular tumors and benign  
growths

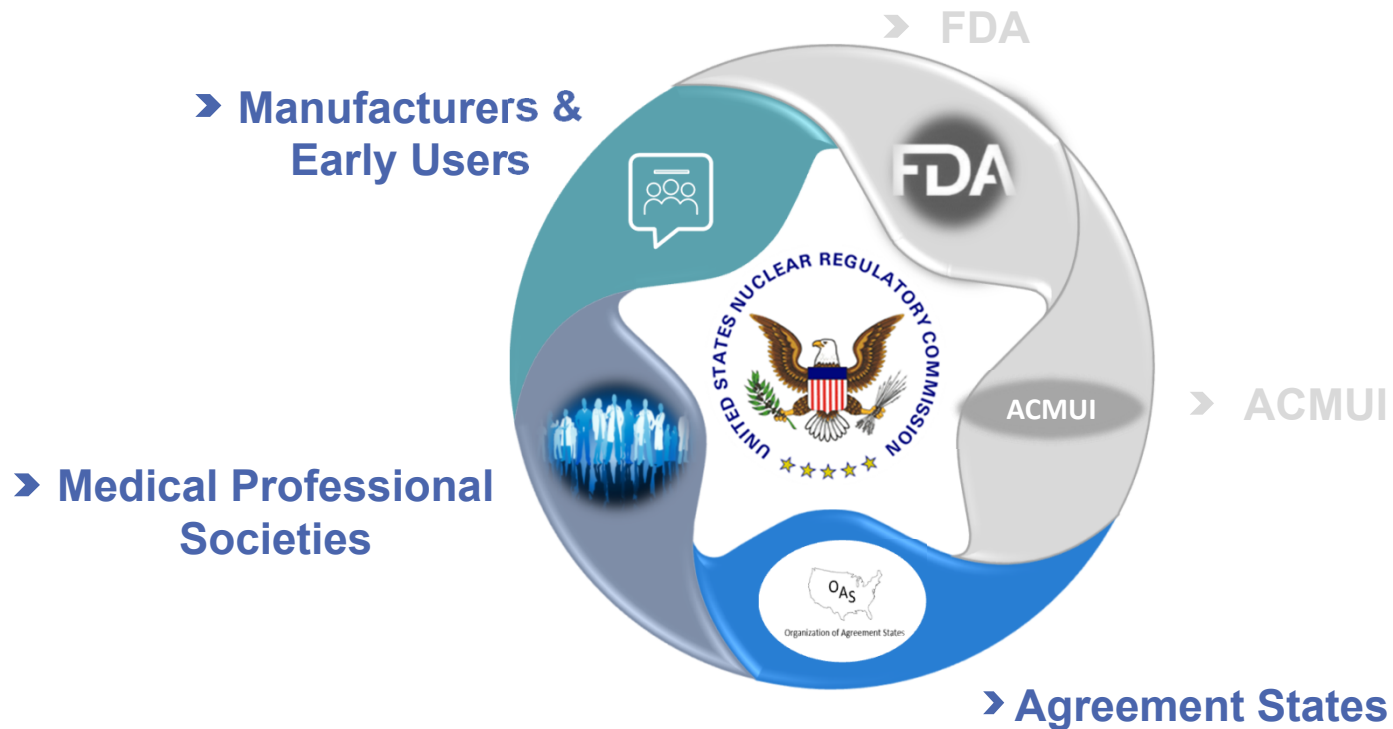


**CivaDerm**  
Temporary radiation  
therapy for skin cancer and  
other lesions

# Leveraging External Partnerships to Identify New Technologies



# Leveraging External Partnerships to Identify New Technologies





## **James Thompson**

Senior Health Physicist, Region IV

*Programmatic  
Enhancements in a  
Dynamic Environment*

*Cross-Regional Support  
Efforts*



## Aligning our IPs to Focus on Greater Risk

- Risk modules based on higher risk activities and the type of material
- New IPs to better align risk modules to licensed activities





# Inspecting in Pandemic Conditions



## Leveraged All Available Tools

- Email
- Telephone
- Video conferencing
- Secure file sharing



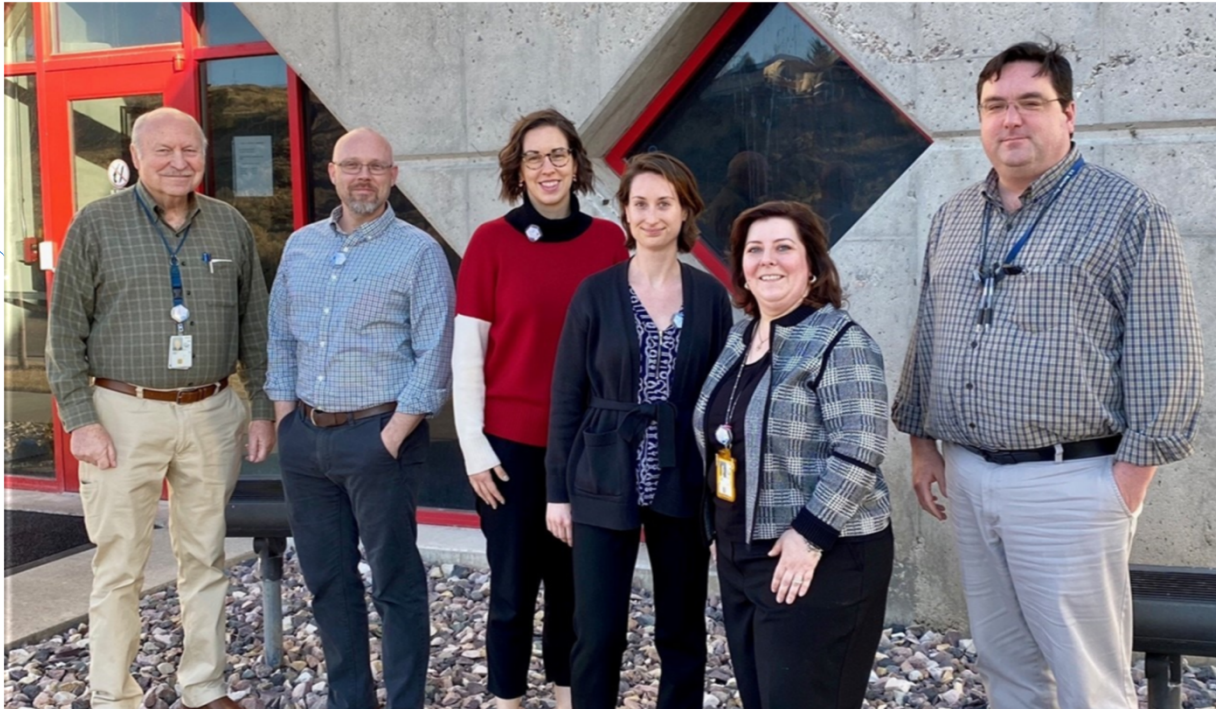
## Announced Inspections

- Ensure safety of inspector and licensee staff
- Comply with licensee pandemic protocols



# Cross-Regional Support Efforts

## *Composition of Inspection Teams*



- Include inspectors and/or license reviewers from other Regions or HQ on team inspections
- Leverage experiences and knowledge across the agency



# Cross-Regional Support Efforts

## *Licensing and Inspection Assistance*

- Collaborating across NMSS and the Regions to manage inspection and licensing workload as one unit
- Aligning our training of new inspectors and license reviewers to manage attrition







**Dan Dorman**

Executive Director for  
Operations

*Closing Remarks*

# ACRONYMS

- ACMUI – Advisory Committee on the Medical Uses of Isotopes
- CFR – Code of Federal Regulations
- Co-60 – Cobalt-60
- DOE – Department of Energy
- D&D – Deactivation & Decommissioning
- DRSS – Division of Radiological Safety and Security
- DUWP – Division of Decommissioning, Uranium Recovery, and Waste Programs
- EMT – Emerging Medical Technology(ies)
- FDA – Food and Drug Administration
- FTE – Full-time Equivalent

# ACRONYMS (continued)

- Ge-68 – Germanium-68
- Ga-68 – Gallium-68
- HQ – Headquarters
- IMPEP – Integrated Materials Performance Evaluation Program
- IMC – Inspection Manual Chapter
- IP – Inspection Procedure
- LTP – License Termination Plan
- MRB – Management Review Board
- NEI – Nuclear Energy Institute
- NMSS – Office of Nuclear Material Safety and Safeguards

## ACRONYMS (continued)

- NMP – National Materials Program
- NMU – Nuclear Materials Users
- NRC – Nuclear Regulatory Commission
- NRR – Office of Nuclear Reactor Regulation
- PRB – Petition Review Board
- PRM – Petition for Rulemaking
- REFS – Division of Rulemaking, Environmental, and Financial Support
- Rb-82 – Rubidium-82
- Y-90 – Yttrium-90