

# **Overview of Reactor Decommissioning**

## **Pilgrim Nuclear Decommissioning Citizens Advisory Panel Briefing**

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# NRC's Mission

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- NRC's mission is to ensure plant safety, whether the plant is operating, or transitioning from operating to decommissioning, and through the entire process until the plant has been radiologically decommissioned and the license is terminated.

## Present Status

- 6 Power Plants in active decommissioning
- 14 Power Plants in SAFSTOR
- 8 announced and more shutdowns are anticipated

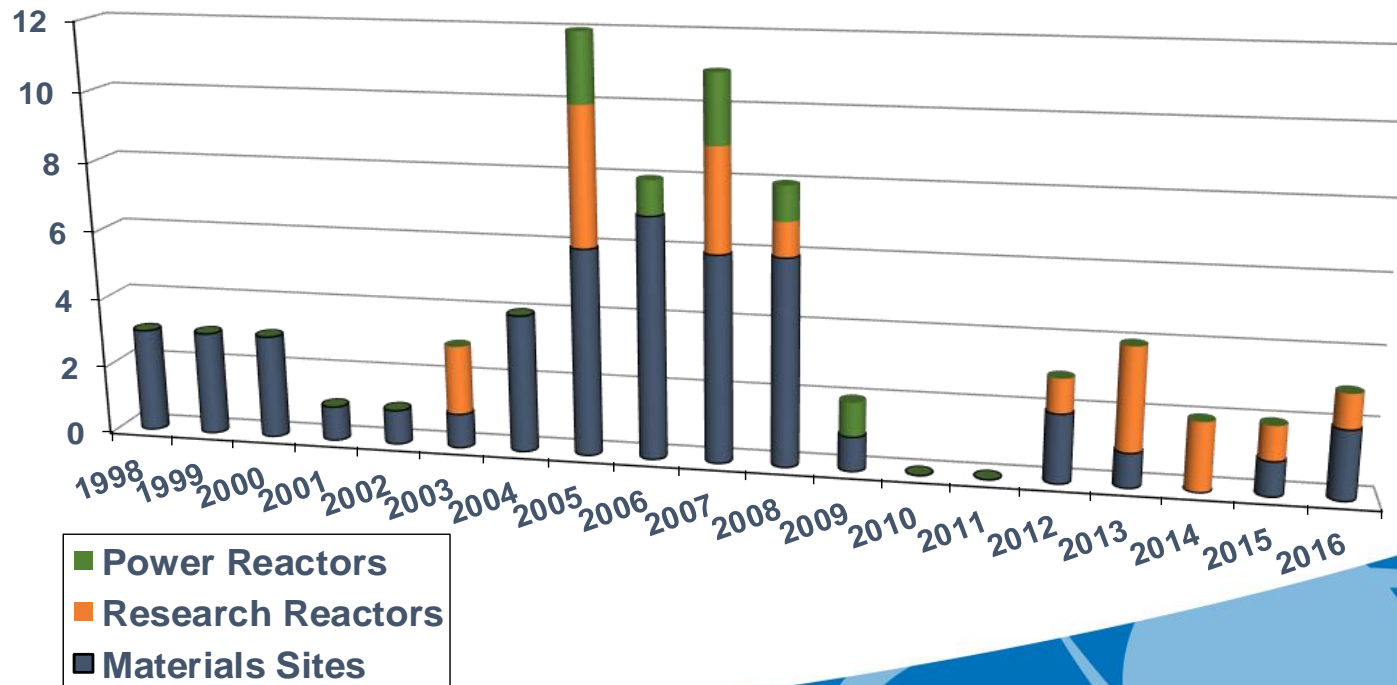
# Reactor Decommissioning

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- Decommissioning Experience
- Power Reactor Decommissioning Process (10 CFR 50.82)
- Decommissioning Topics of High Public Interest
- Decommissioning in Massachusetts
- Summary

# Decommissioning Experience

- Current 1997 Decommissioning Regulations are performance-based and risk-informed
- Extensive Decommissioning Experience
- A total of 10 Power Reactor sites have completed decommissioning, had the reactor license terminated and released for unrestricted use



# Power Reactor Decommissioning

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- 10 CFR 50.82/Regulatory Guide 1.184
- Notification of Intent to Permanently Shutdown
- Submission of Certifications of Permanent Shutdown and Permanent Removal of Fuel from Reactor Vessel
- Submittal of Post Shutdown Decommissioning Activities Report (PSDAR) and NRC Public Meeting
- Decommissioning must be completed within 60 years of permanent cessation of operations.
- License Termination Plan is submitted 2 years prior to requesting license termination and NRC Public Meeting
- NRC terminates the license by letter

# Reactor Decommissioning Process

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## Phase 1

- Reactor is permanently shutdown and nuclear fuel is transferred to the spent fuel pool
- Plant is prepared for decommissioning
- Modifications are typically made to facilitate decommissioning

# Reactor Decommissioning Process

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## Phase 1 (Continued)

### Post Shutdown Decommissioning Activities Report (PSDAR) (Regulatory Guide 1.185)

- Decommissioning Strategy – DECON or SAFSTOR - 60 years to complete decommissioning
- Site Decommissioning Funding Status
- Affirmation of the Environmental Review

NRC holds Public Meeting for comments

NRC does not approve the PSDAR

# Reactor Decommissioning Process

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## Phase 2 – Decommissioning Phase

- DECON - immediate dismantlement
- SAFSTOR – deferred dismantlement
- 60 years to complete (50 years for radioactive decay + 10 years to dismantle)

## Phase 3 – last 2 years

- License Termination Plan (License Amendment)
- NRC holds a Public Meeting



# Reactor Decommissioning Inspection Program

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- Continues until the license is terminated
- Inspection Manual Chapter 2561
- ~ 40 Inspection procedures
- Minimum Annual Inspection - 12 Core procedures are required each year
- Resident Inspector up to 1 year after shutdown, but can be extended
- Inspection Reports are publically available

# Rancho Seco - 2009



# Big Rock Point - 2007





# Maine Yankee - 2005



# Connecticut Yankee - 2007



# Decommissioning Topics of High Public Interest

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- Economic losses to the local community
- Community Involvement - Advisory Groups
- Future use of the site
- Independent Spent Fuel Storage Installations (ISFSI), Time in Storage and Transportation
- Reactor Decommissioning – 60 years to complete
- Reductions in Emergency Plans
- Decommissioning Fund Adequacy
- Decommissioning License Transfers



# Yankee Rowe - 2007



# Worcester Polytechnic Research Reactor - 2013





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# Transitioning from Operation to Decommissioning

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- License Amendments
  - Permanently Defueled Technical Specifications
  - Revised Emergency Plan and Emergency Action Level Scheme
- Exemptions from Title 10 Code of Federal Regulations
  - Emergency Preparedness (Part 50, Appendix E)
  - Security Plan and Procedures (CFR Part 73)
  - Decommissioning Trust Fund (CFR 50.82)
  - Insurance and Financial Protection (CFR 50.54 and Part 140)
- Requests to Rescind or Relax Orders
- Certified Fuel Handler Training Program
- NRC to issue lessons learned report with emphasis on decommissioning licensing and oversight activities

# **Reasonable Assurance of Decommissioning Funding**

- Initial Certification of Financial Assurance.
- Maintains the NRC Minimum Funding Amount throughout the life of the reactor.
- Uses one or more funding methods specified in the regulation.
- Monitoring and Updating of Decommissioning Funding -
  - Operating Licensee provides Decommissioning Fund Status Report to the NRC (every 2 years).
  - Licensee must Provide SSCE 5 years prior to permanent cessation of operations & in PSDAR.
  - Reviewed Annually in decommissioning