



Joint Meeting of the Federal Energy Regulatory Commission and the Nuclear Regulatory Commission

March 31,
2022

Andrea Kock

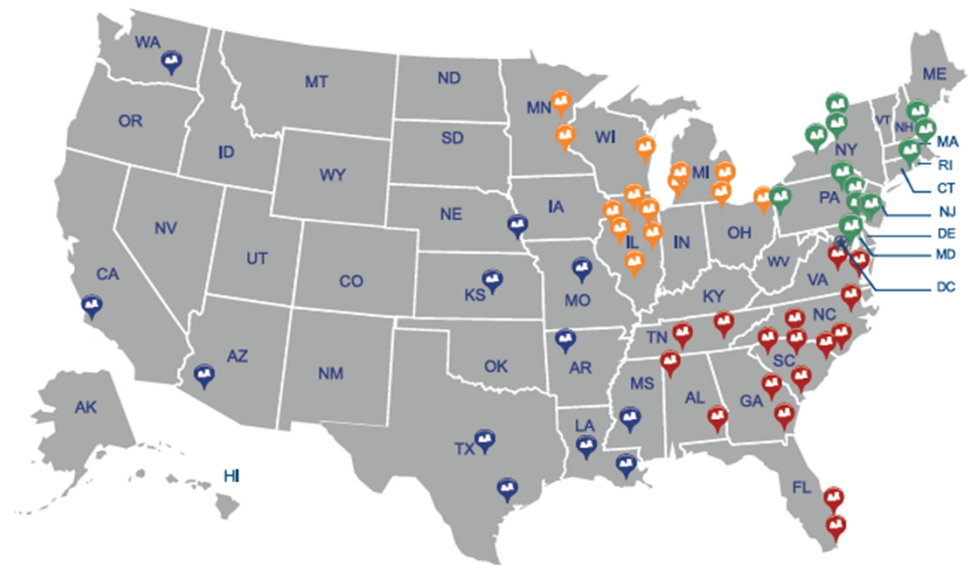
Deputy Director for Engineering
Office of Nuclear Reactor Regulation

Nuclear Power Plant Contributions to
the Grid



Protecting People and the Environment

Licensing and regulating the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security and to protect the environment.



- |  REGION I |  REGION II |  REGION III |  REGION IV |
|--|---|--|---|
| CONNECTICUT
Millstone 2 and 3 | ALABAMA
Browns Ferry 1, 2, and 3
Farley 1 and 2 | ILLINOIS
Braidwood 1 and 2
Byron 1 and 2
Clinton
Dresden 2 and 3
LaSalle 1 and 2
Quad Cities 1 and 2 | ARKANSAS
Arkansas Nuclear 1 and 2 |
| MARYLAND
Calvert Cliffs 1 and 2 | FLORIDA
St. Lucie 1 and 2
Turkey Point 3 and 4 | MICHIGAN
Cook 1 and 2
Fermi 2
Palisades | ARIZONA
Palo Verde 1, 2, and 3 |
| NEW HAMPSHIRE
Seabrook | GEORGIA
Hatch 1 and 2
Vogtle 1 and 2 | MINNESOTA
Monticello
Prairie Island 1 and 2 | CALIFORNIA
Diablo Canyon 1 and 2 |
| NEW JERSEY
Hope Creek
Salem 1 and 2 | NORTH CAROLINA
Brunswick 1 and 2
McGuire 1 and 2
Harris 1 | OHIO
Davis-Besse
Perry | KANSAS
Wolf Creek |
| NEW YORK
FitzPatrick
Ginna
Nine Mile Point 1 and 2 | SOUTH CAROLINA
Catawba 1 and 2
Oconee 1, 2, and 3
Robinson 2
Summer | WISCONSIN
Point Beach 1 and 2 | LOUISIANA
River Bend 1
Waterford 3 |
| PENNSYLVANIA
Beaver Valley 1 and 2
Limerick 1 and 2
Peach Bottom 2 and 3
Susquehanna 1 and 2 | TENNESSEE
Sequoyah 1 and 2
Watts Bar 1 and 2 | | MISSISSIPPI
Grand Gulf |
| | VIRGINIA
North Anna 1 and 2
Surry 1 and 2 | | MISSOURI
Callaway |
| | | | NEBRASKA
Cooper |
| | | | TEXAS
Comanche Peak 1 and 2
South Texas Project 1 and 2 |
| | | | WASHINGTON
Columbia |

Nuclear Power Plays a Significant Role in the Nation's Electrical Grid Stability



Each unit delivers power to the grid about 90% of the time



Accounts for about 20% of total annual electricity generation

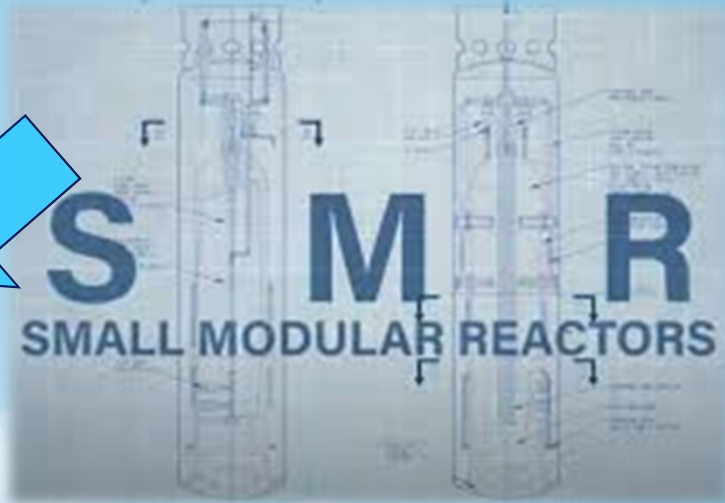


The average rating per unit is 1000 MW

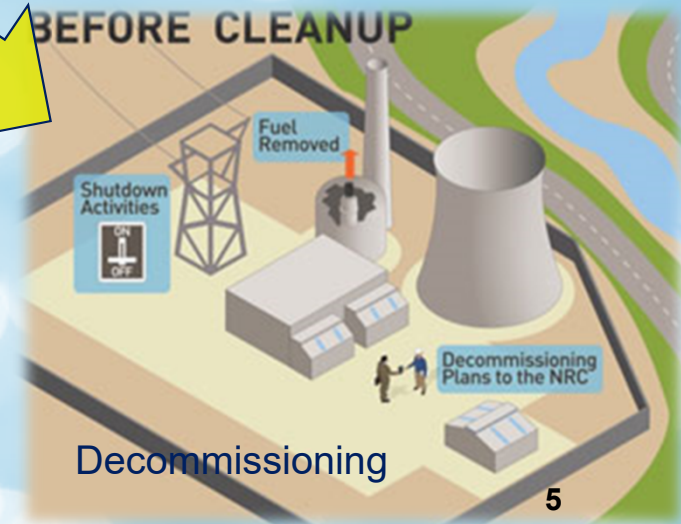
Vogtle
Units 3 and 4



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Nuclear Power
Continues to be a
Significant Contributor
of Baseload Power to
the Grid



The NRC's Strong Licensing and Oversight Role Contributes to Safe License Renewal

NRC issues initial license

NRC issues renewed license

NRC issues subsequent renewed license

Continuous NRC Oversight

**Initial License
40 years**

All operating units were initially licensed for 40 years

**License Renewal
20 years**

Issued 79 Renewed Licenses to current operating fleet to allow additional 20 years of operation.

**Subsequent License Renewal
20 years**

Issued 6 Subsequent Licenses since 2018.

Reactor unit average age is about 40 years

NRC is Preparing to Safely License Advanced Nuclear Reactors

Multiple Designs

Research and Test Reactors

Molten Salt Reactors

Microreactors

High-Temperature Gas-Cooled Reactors

Liquid Metal Cooled Fast Reactors

13+

Current and potential applications by 2027

6+

Potential operating licenses by 2027

- 10+** Entities actively engaged in pre-application activities
- 21** Topical reports and white paper reviews completed for 7 vendors
- 22** Topical reports and white papers under evaluation from 8 vendors



Eric Benner

Office of Nuclear Reactor Regulation
Director, Division of Engineering and
External Hazards

NRC's Coordination with FERC and NERC

Strong Coordination Between NRC, FERC, and NERC Supports Nuclear Safety and Security

Effective Agreements



- NRC-FERC:
 - Memorandum of Agreement on Grid Reliability, Cyber Security and Physical Security
 - Memorandum of Agreement on Dam Safety
 - Memorandum of Understanding on Critical Energy/Electric Infrastructure Information
- NRC-NERC:
 - Memorandum of Understanding on Security

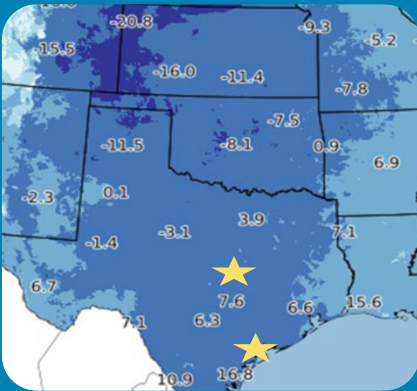
Technical, Regulatory and Policy Coordination



- NRC consults with FERC/NERC staff for transmission system status when NPPs request enforcement discretion
- Exchange information of interest during severe weather or other incidents affecting the grid

Nuclear Power Plants Remained Safe during the 2021 Texas Cold Weather Event

Unprecedented Cold Weather



- Both sites remained safe during degraded grid conditions

Comanche Peak 1 & 2



- Neither units shut down
- Proactively started an onsite emergency diesel generator

South Texas Project 1 & 2



- One unit safely shutdown due to a frozen instrumentation line

NRC Requirements Encompass the Effects of Severe Weather Events



Designed to Withstand Loss of Power



Operator Training and NRC Oversight



Requirements and Procedures to Protect Plant Equipment

Dams under NRC Regulatory Jurisdiction are Safe



Risk –informed inspection
schedules

Nuclear Power Plants Can Safely Shut Down Following an EMP Event

Executive Order 13865



Coordinating National Resilience to Electromagnetic Pulses (EMP)

Reasonable Assurance



Previous analyses demonstrate that NPPs can safely shut down during an EMP-related electric grid event.

Building on Previous Evaluations



Continue to refine NRC and interagency assessments

Validation Efforts



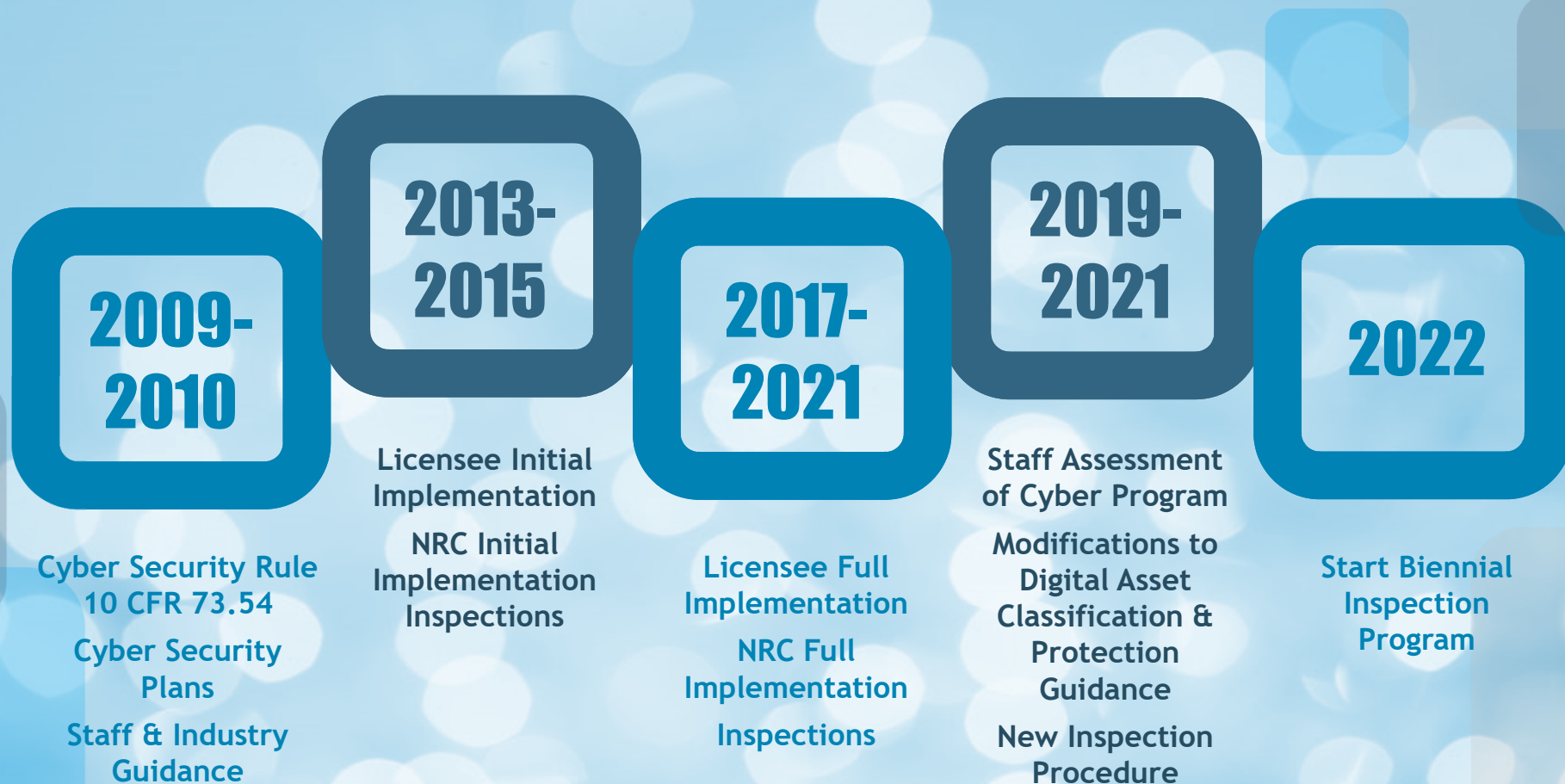
NRC providing technical input for interagency efforts to obtain additional data through testing

Jim Beardsley

Deputy Division Director (Acting)
Division of Physical & Cyber Security
Office of Nuclear Security & Incident Response

Cyber Security Accomplishments

Progress in NRC's Cyber Security Inspection Program



Risk-informing NPP Cyber Security Program

Proposed Changes

Emergency Preparedness
Balance-of-plant
Safety Related /
Important-to-safety
Physical Security

Engagement

Offices & Regions
Public Meetings
NRC-FERC Discussions

Acceptance

Proposals Found to Be
Within Scope
Formal Industry &
Staff Guidance
Changes

Continued Focus on Emerging Technologies and Cyber Threats

DHS/CISA



Nuclear Sector Risk Management Agency

DOE/CESER



Electric Grid Resilience

Cyber Security Preparedness

Incident Response

RESEARCH



Ensuring Cyber Security
Modernization and Innovation

INTERNATIONAL



Cooperation & Collaboration
Guidance Standards

Developing Technology-Neutral, Graded Cyber Security Requirements for Advanced Reactor Designs



Cyber Security included in
Advanced Reactor
Rulemaking



Graded-approach To Facilitate
Risk-informed Approaches