

THE MISSION OF A TECHNICAL SUPPORT ORGANIZATION

PERSPECTIVES OF THE U.S. NUCLEAR REGULATORY COMMISSION

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Support Organizations in Enhancing Nuclear Safety and Security**

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Topics

- The NRC and Strategic Plan
- Office of Regulatory Research (RES)
 - Role and Functions
 - Research Areas
 - Budget
 - Quality
- Strategic Initiatives to Adapt to Changing Environment

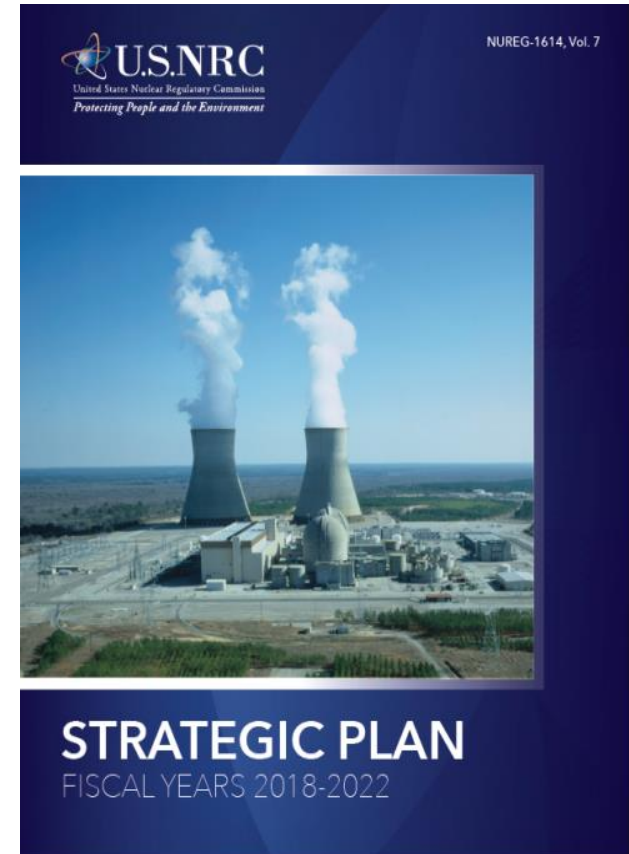
The NRC

- Energy Reorganization Act of 1974 established the NRC
- NRC is headed by five Commissioners
- Chairman: Kristine Svinicki
- New (2018) Commissioners Caputo and Wright
- New Executive Director for Operations
- Staff size continues to decrease

NRC Strategic Plan 2018-2022

Vision: Demonstrate the Principles of Good Regulation (independence, openness, efficiency, clarity, and reliability) in performing our mission.

- Establishes the NRC's strategic goals and performance expectations
- Identifies long-term strategies to guide the agency
- Provides the basis for agency budget and performance plans



NRC Office of Nuclear Regulatory Research (RES)

RES Mission:

To provide technical advice, tools, and information for meeting the NRC's mission, including resolving safety and security issues, making regulatory decisions, and promulgating regulations and guidance.

- Notable attributes :
 - Internal to the NRC organizational structure
 - Supports only NRC – Does not work on behalf of commercial industry or other governmental research and development entities
 - Safety and security focused only – Does not perform research and development for new and improved technologies
 - Does not manage or operate experimental testing facilities.

RES as a TSO

“Recommending and conducting research which the Commission deems necessary for the performance of NRC’s licensing and related regulatory functions”

- Develop technical bases to support regulatory decisions
- Conduct research to confirm safety and security
- Provide specialized technical expertise and tools to the regulatory and regional offices
- Cooperate with National Laboratories, commercial contractors, universities, other government agencies, industry organizations, and international organizations
- Prepare and issue Commission and congressionally mandated reports
- Manage the Generic Issues Program

Key Research Areas

- Thermal Hydraulics
- Fuel and reactor core behavior
- Severe accidents and accident consequences
- Radiation effects and environmental protection
- Risk analysis
- Human Reliability and human factors
- Fire protection and fire safety
- External events
- Materials performance and degradation
- Structural performance
- Digital instrumentation and controls and electrical systems



Planning and Budgeting

- Developed through NRC Planning, Budgeting, and Performance Management (PBPM) process
 - Operating Reactors (~ 85%)
 - New Reactors (~ 10%)
 - Remaining business lines
- Research Operating Plan
- Enhanced Reporting and Tracking
- Control Points

RES Budget:

- Large percentage of agency budget in early years
- Declined throughout agency history
- Spiked following key events
- Leveraged domestic and international partnerships and grants

NRC Budget Process

NRC is required by law to recover through fees approximately 90 percent of its budget authority.

Work drivers

Staff identifies workload drivers and resource needs



Staff budget

Staff proposes a budget to the Commission



Commission Budget

Commission makes changes and votes on an approved budget



President's Budget

Commission submits budget request to U.S. President



Congressional Appropriation

Budget is voted on and appropriation is made by U.S. Congress

- Research makes up around 5 to 7% of the NRC budget.
- Current annual research budget is less than 10% of its peak in the early 1980s

Quality Focus

External Peer Review

- Conference presentations and papers
- Technical counterpart meetings

Internal User Reviews

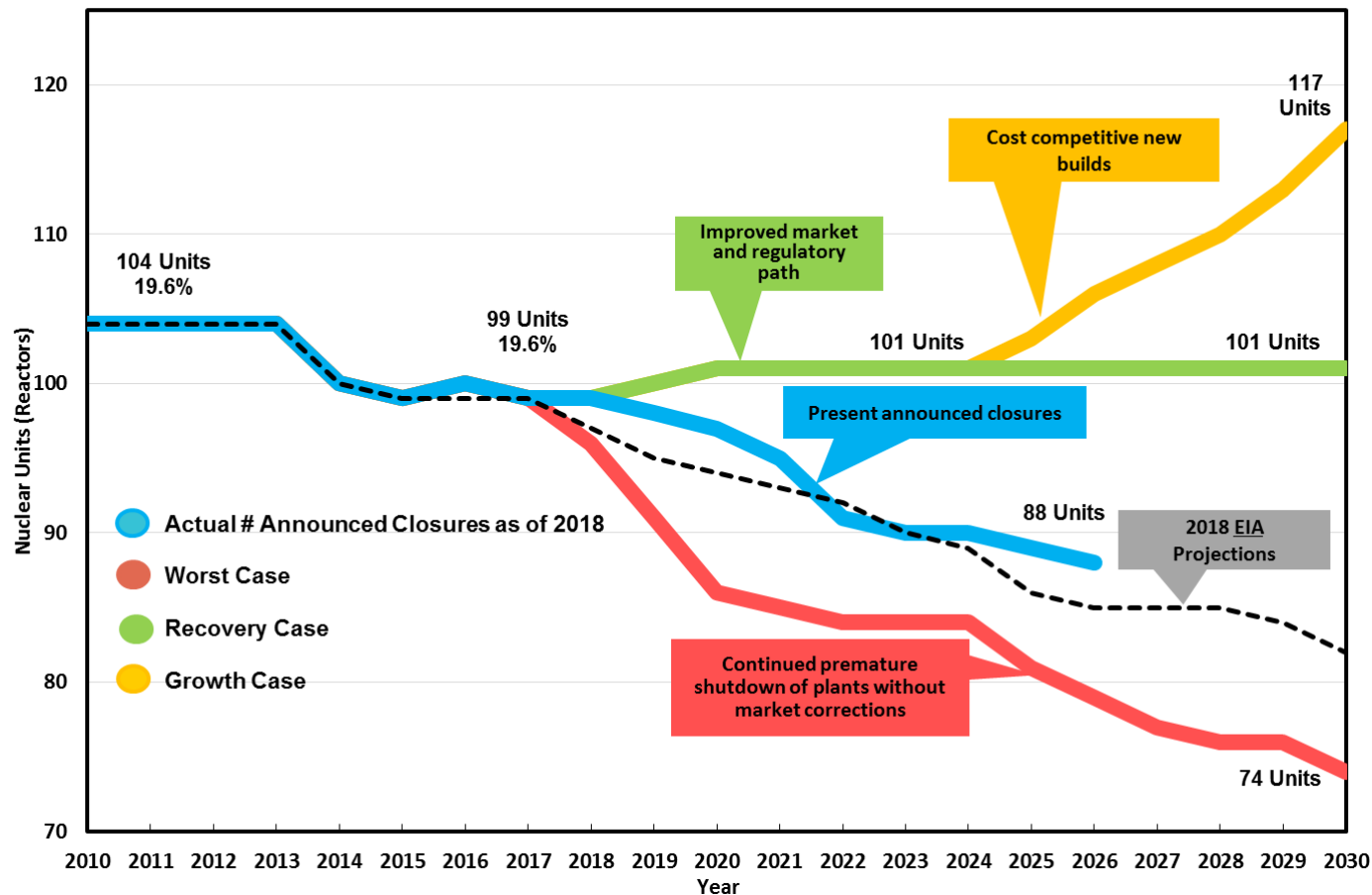
- Regular project status updates
- Pre-publication review of reports
- Technical quality surveys

Advisory Committee on Reactor Safeguards (ACRS)

- Statutorily designated to independently review and advise the Commission on safety issues
- RES regularly briefs ACRS members on project status
- Annual quality review for RES reports
- Biannual RES program review

U. S. Commercial Nuclear Landscape

Projected Electric Capacity



Adapted from R. Furstenau (DOE), "U.S. Nuclear Energy and Its Future," 23 January 2018
<<https://www.inmm.org>>

Project Aim

- SECY-15-0015, “Project Aim 2020 Report and Recommendations”
- The Project Aim tasks were the beginning of our transformation to become a more effective, efficient, and agile regulator.

Implications for RES:

- Shedding work as part of Rebaselining (\$5.3 million and 12 FTEs)
- Strategic Workforce Planning to ensure maintenance of existing critical skills and developing new ones
- Changing the culture to boost efficiency, agility, and responsiveness
- Standardizing Contracting Officer Representative (COR) functions
- Staff remains committed to continuous enhancements in process efficiency and effectiveness and the development of tools to systematically enable innovation and to leverage employee creativity.

Innovation at NRC

- Ensure we continue to identify and embrace better ways of doing our work
- **“InnovateNRC”**
 - Includes agency-level Innovation Forum and office-level Innovation Initiatives
 - Facilitate an environment and culture that nurtures innovation and creativity
 - Will be an integral part of sustaining transformation

Transformation at NRC

What is it? Identify fundamentally different ways of regulating that enable the safe and secure use of new technologies

How are we addressing it? Engaged internal and external stakeholders on these and other areas:

- Digital instrumentation and controls
- Advanced fuel technology
- Advanced reactor applications
- New and emerging materials and manufacturing methods
- Big data

What are the recommendations?

- Agencywide process and organizational tools to expand the systematic use of qualitative and quantitative risk and safety insights;
- Revise Title 10 of the Code of Federal Regulations (10 CFR) 50.59 to allow licensees additional flexibility to make facility changes
- Performance-based, technology-inclusive regulation as an alternative approach for licensing for non-light-water reactors; and
- High-level performance-based I&C safety design principles and associated regulatory guidance

Status: Submitted a Commission Paper – May 2018

The Journey Continues

- Transformation and innovation efforts are well under way and will continue
- We remain mission focused

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Thank You Questions?