# The Inspector General's Assessment of the Most Serious Management and Performance Challenges Facing the U.S. Nuclear Regulatory Commission in Fiscal Year 2024

Diablo Canyon Nuclear Power Plant, Units 1 and 2,
Avila Beach, California
(Source: Photo courtesy of ©Pacific Gas and Electric)

# At a glance

## WHY WE DID THIS REPORT

The Reports Consolidation Act of 2000 (Public Law 106-531) requires us to annually update our assessment of the U.S. Nuclear Regulatory Commission's (NRC) most serious management and performance challenges facing the agency and the agency's progress in addressing those challenges.

## WHAT WE FOUND

The Office of the Inspector General (OIG) has assessed, developed, and described each of the NRC's most serious challenges for fiscal year (FY) 2024, noting the NRC's already-completed actions and continuing work on each challenge. By addressing these challenges, the NRC will strengthen the execution of its mission, achieve its strategic goals, and maintain the highest level of accountability over taxpayer dollars.

The OIG has independently identified the following nine clear, specific, and actionable challenges that require the NRC's continued attention:

1. Ensuring safety and security through risk-informed regulation of established and new nuclear technologies, as well as cyber and physical security activities impacting the NRC's mission;
2. Overseeing the decommissioning process and the management of decommissioning trust funds;
3. Implementing new legislative requirements related to NRC core mission areas and corporate support;
4. Ensuring the effective acquisition, management, and protection of information technology and data;
5. Hiring and retaining sufficient highly skilled employees to carry out the NRC mission;
6. Overseeing the safe and secure use of nuclear materials and storage and disposal of high- and low-level waste;
7. Managing financial and acquisitions operations to enhance fiscal prudence and transparency of resource management;
8. Maintaining public outreach related to the agency's regulatory process; and,
9. Planning for and assessing the impact of Artificial Intelligence and Machine Learning on nuclear safety and security.

## AGENCY RESPONSE TO MANAGEMENT CHALLENGES FOR FY 2023

The NRC has constructively engaged with the OIG and sought to address OIG audit report recommendations throughout the year. The NRC faces extraordinary opportunities and challenges as it seeks to achieve its objective to become a more modern, risk-informed regulator.

# Contents

# Introduction

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## FROM THE INSPECTOR GENERAL

I am pleased to present our assessment of the most significant management and performance challenges facing the NRC in FY 2024.

The Reports Consolidation Act of 2000 requires us to annually update our assessment of the NRC's "most serious management and performance challenges facing the agency…and the agency's progress in addressing those challenges." This report provides the updated OIG assessment in these areas.

The NRC continues to accomplish its mission, demonstrating through its work that it is dedicated to ensuring public health and safety, promoting the common defense and security, and protecting the environment through the effective regulation of nuclear materials. Beyond its nuclear safety and security mission, as a federal agency, the NRC must be a responsible steward of taxpayer dollars and expend its budgeted funds properly.

## ABOUT THE INSPECTOR GENERAL

In accordance with the 1988 amendments to the Inspector General Act of 1978, the NRC's OIG was established on April 15, 1989, as an independent and objective unit to conduct and supervise audits and conduct investigations relating to the NRC's programs and operations. The purpose of the OIG's audits and investigations is to prevent and detect fraud, waste, abuse, and mismanagement, and promote economy, efficiency, and effectiveness in NRC programs and operations. In addition, the OIG reviews existing and proposed regulations, legislation, and directives and comments on any significant concerns. The Inspector General serves under the general supervision of the NRC Chair but operates with personnel, contracting, and budget authority independent of the NRC. The Inspector General informs the Chair and Congress about problems, recommends corrective actions, and monitors the NRC's progress in implementing such actions.

## ABOUT THE NRC

The NRC's mission is to license and regulate the nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment. The NRC's vision is to

carry out this mission as a trusted, independent, transparent, and effective nuclear regulator, consistent with the NRC Principles of Good Regulation.

NRC Headquarters
(Source: NRC)

The NRC is led by a group of up to five Commissioners appointed by the President and confirmed by the Senate for 5-year terms. One of the Commissioners is designated by the President as Chair, who serves as the official spokesperson of the Commission. On January 20, 2021, President Biden designated Christopher T. Hanson as Chair of the Commission. Chair Hanson is joined by Commissioners David A. Wright, Annie Caputo, and Bradley R. Crowell. The Commission formulates policies and approves regulations governing nuclear reactor and materials safety, issues certain orders to NRC-regulated entities, and adjudicates legal matters brought before it.

The Executive Director for Operations carries out the policies and decisions of the Commission and directs the activities of the program offices. The offices reporting to the Executive Director for Operations strive to ensure the safe use of nuclear materials for commercial, medical, industrial, and research applications in the United States. As part of the regulatory process, the NRC's four regional offices conduct inspection, enforcement, and emergency response programs for licensees within their regions or areas of responsibility.

The NRC's FY 2022–2026 Strategic Plan describes the agency's mission, vision, and principles of good regulation, along with strategic goals, objectives, and strategies. The strategic goals of continuing to foster a healthy organization and inspiring stakeholder confidence in the NRC complement the safety and security strategic goal. The safety and security strategic goal, objectives, and strategies ensure the safe and secure use of radioactive materials.

In-situ Uranium Recovery,
Crow Butte, Nebraska
(Source: Courtesy of
Cameco Corp.)

The NRC carries out its safety and security activities through two major programs: Nuclear Reactor Safety, consisting of the Operating Reactors and New Reactors business lines, and Nuclear Materials and Waste Safety, consisting of the Fuel Facilities, Nuclear Materials Users, Decommissioning and Low-Level Waste, Spent Fuel Storage and Transportation, and High-Level Waste business lines. The agency

accomplishes its mission to provide reasonable assurance of adequate protection of public health and safety through regulatory activities such as licensing, oversight, and rulemaking. In addition, the NRC's incident response activities prepare for and respond to emergencies involving radioactive materials.

Observing decommissioning activity at San Onofre Nuclear Generating Station, San Clemente, California (Source: nrc.gov)

The NRC's FY 2024 budget request is $1,006.4 million and includes 2,948.9 full-time equivalents (FTE). The FY 2024 budget request increased by approximately 6.7 percent over the FY 2023 Enacted Budget, primarily because of workload changes and adjustments to salaries and benefits.

## CLOSURE OF OIG AUDIT RECOMMENDATIONS

The NRC satisfactorily closed 27 OIG audit recommendations during FY 2023. Closing a recommendation means the NRC has identified an acceptable course of action to fulfill the intent of the recommendation and has documented its completion of the necessary work. Some of the corrective actions completed by the NRC during FY 2023 also resulted in the final closure of six associated audit reports, among which were:

- *Audit of the NRC's Material Control and Accounting Inspection Program for Special Nuclear Materials* (OIG-21-A-04);
- *Audit of the NRC's Nuclear Power Reactor Inspection Issue Screening* (OIG-21-A-07);
- *Audit of the NRC's Prohibited Security Ownership Process* (OIG-21-A-17); and,
- *Audit of the NRC's Process for Licensing Emerging Medical* Technologies (OIG-22-A-07).

During FY 2023 the NRC has made progress in achieving its safety and security goals through continued oversight of the operation of nuclear power plants and fuel cycle facilities, and of the possession and use of radioactive materials. NRC staff accomplishments continue to move the agency toward the objective of becoming a modern, risk-informed regulator. The management and performance challenges summarized in this report highlight critical areas that demand continued NRC management focus.

## NRC FY 2024 MANAGEMENT AND PERFORMANCE CHALLENGES

The OIG has assessed, developed, and described each of the NRC's most serious challenges for FY 2024, noting actions already completed by the agency, and the NRC's continuing work on each challenge. The challenges are not listed in any order of priority, nor do they necessarily equate to problems; rather, they should be considered areas of continuing focus for NRC management and staff.

NRC leadership noted its own assessment of the key challenges facing the agency in its response to the OIG's request for input in this area. We have considered this input and independently identified the following nine clear, specific, and actionable challenges that require the NRC's continued attention:

1. Ensuring safety and security through risk-informed regulation of established and new nuclear technologies, as well as cyber and physical security activities impacting the NRC's mission;
2. Overseeing the decommissioning process and the management of decommissioning trust funds;
3. Implementing new legislative requirements related to NRC core mission areas and corporate support;
4. Ensuring the effective acquisition, management, and protection of information technology and data;
5. Hiring and retaining sufficient highly skilled employees to carry out the NRC mission;
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8. Maintaining public outreach related to the agency's regulatory process; and,
9. Planning for and assessing the impact of Artificial Intelligence and Machine Learning on nuclear safety and security.

By addressing these challenges, the NRC will strengthen the execution of its mission, achieve its strategic goals, and maintain the highest level of accountability over taxpayer dollars.

# Challenge 1: Ensuring Safety and Security Through Risk-Informed Regulation of Established and New Nuclear Technologies, as well as Cyber and Physical Security Activities Impacting the NRC's Mission

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

As the NRC continues to transform into a modern risk-informed regulator, the agency must continue to ensure safety and security through risk-informed regulations for established and new nuclear technologies as well as cyber and physical security activities impacting the NRC's mission. Specifically, the agency must: (1) Ensure risk-informed regulation is consistently applied to its licensing and oversight processes; (2) Be ready to license and regulate established and new reactor technologies; and, (3) Maintain robust and adaptive oversight programs to ensure nuclear power licensees can protect their facilities effectively against evolving cyber and physical threats.

## CHALLENGE SYNOPSIS

*Ensuring Risk-informed Regulation is Consistently Applied Through Regulatory Activities*

Since 1995, it has been the NRC policy to inform regulatory activities with risk insights. The agency has emphasized this policy in recent years through various risk-informed initiatives such as the BeRiskSMART model, a framework to support consistent guidance and practices to accept well-managed risks in NRC decision-making. Additionally, nuclear power licensees have increasingly used probabilistic risk assessment to support changes to their license requirements.

Nevertheless, the NRC and the nuclear industry have methodological differences in their respective approaches to probabilistic risk assessment, and agency staff members sometimes disagree internally on the use of risk analysis in regulatory actions such as license amendments and inspection findings.

*Readiness to License and Regulate Established and New Reactor Technologies*

With advancements in new reactor technologies, especially small modular reactors, the NRC must be ready to license and regulate new reactor technologies while managing the workload related to the existing nuclear power reactor fleet. The existing workload includes initial and subsequent license

renewal and other licensing reviews (amendments and exemptions) and oversight activities (security, inspections, and operator licensing examinations).

Further, domestic utilities are developing technologies that can extend the operating lifetimes of existing reactors, and Congress has passed legislation intended to facilitate research, development, and licensing of new reactor technologies. The technical complexity of these initiatives, combined with their cutting-edge nature, has challenged the NRC to adapt its regulatory processes to accommodate technologies that cannot be readily assessed using existing approaches.

*Maintaining Robust and Adaptive Cyber and Physical Security Oversight Programs*

Federal government policy organizes critical infrastructure into 16 sectors, each with assets, systems, and networks considered vital to the security, economy, and public health and safety of the United States. The Department of Homeland Security's Cybersecurity and Infrastructure Security Agency serves as the Sector Risk Management Agency for the Nuclear Reactors, Materials, and Waste Sector. The NRC regulates these activities in accordance with its statutory mission to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment.

Cybersecurity presents unique challenges to critical infrastructure protection because information technology and industrial control systems are highly complex, dynamic, technologically diverse, and often geographically dispersed. This complexity increases the difficulty in identifying, managing, and protecting the numerous operating systems, applications, and devices involved.

Further, nuclear power plants must be able to successfully defend against a set of hypothetical threats that the agency refers to as the design-basis threat. These hypothetical threats challenge a plant's physical security, personnel security, and cybersecurity. Therefore, the NRC must ensure its cyber and security oversight programs are robust and adaptive to evolving threats.

## Ongoing Actions

The NRC is updating probabilistic risk assessment models to improve the realism of the NRC's risk models.

The NRC is reviewing research and test reactor construction permits. One application is from Abilene Christian University, which requested permission to build its Molten Salt Research Reactor facility on the university's campus. The other is for the Kairos Hermes 2 non-power test reactor. The NRC is also conducting application reviews of several advanced reactor designs.

The Commission directed NRC staff to publish a proposed rule that includes the revision of the Generic Environmental Impact Statement (GEIS) for license renewal. The GEIS covers environmental topics relevant to all nuclear power plant licensees seeking renewed licenses. The staff updated the GEIS and developed the proposed rule to account for initial license renewal and one term of subsequent license renewal, including which issues must be considered on a site-specific basis.

The NRC continues to be involved in several interagency activities for cyber and physical security with multiple agencies and stakeholders.

The NRC continues to perform the new nuclear power cybersecurity inspection procedure biennially as part of the Reactor Oversight Process.

## Completed Actions

The NRC staff completed the Final Safety Evaluation Report for SHINE Medical Technology LLC's application for a license to operate a medical isotope production facility, concluding there are no safety aspects that would preclude issuing the license for operation of the facility.

To support modernization of its infrastructure for advanced reactor licensing, the NRC staff provided the draft proposed Part 53 rulemaking package and 10 supporting draft guidance documents to the Commission for consideration. The NRC has also issued for public comment draft guidance for risk-informing the content of advanced reactor applications.

In February 2023, the NRC issued Regulatory Guide 5.71, Revision 1, "Cybersecurity Programs for Nuclear Power Reactors."

The NRC authorized Southern Nuclear Operating Company to load fuel and begin operation of Vogtle Unit 4 in Georgia.

The NRC issued the final safety evaluation report and final environmental impact statement for the Kairos Hermes non-power test reactor construction permit application.

# Challenge 2: Overseeing the Decommissioning Process and the Management of Decommissioning Trust Funds

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

The increased numbers of power reactor sites in decommissioning, and of those opting for accelerated decommissioning, add to demands on decommissioning program resources for all decommissioning licensing and oversight activities, including the NRC's independent analyses of licensees' decommissioning funding status reports.

**CHALLENGE SYNOPSIS**

There are 25 power reactors currently undergoing decommissioning. The licensees for these reactors and other nuclear reactors must provide reasonable assurance that funds will be available for the entire decommissioning process.

To oversee licensees' decommissioning funding, the NRC requires licensees to provide a decommissioning financial status report biennially, and annually for five years prior to permanent cessation of operations. Prior to or within 2 years after permanent cessation of operations, licensees are required to submit a Post Shut-Down Decommissioning Activities Report that includes a description and schedule for the planned decommissioning activities and a site-specific cost estimate. Licensees in decommissioning must then annually submit decommissioning funding status reports.

The NRC has identified technical resource needs for the program in inspection, risk analysis, licensing review, and project management. Local communities may have additional concerns about the accelerated decommissioning model, entailing augmented opportunities for public interactions.

Key decommissioning challenges include:

- Ensuring that agency processes adequately address current reactor decommissioning business models, including those that provide for accelerated decommissioning activities;
- Managing oversight of the adequacy and use of decommissioning trust funds maintained by both operating and decommissioning reactors;
- Maintaining reasonable assurance that operating reactors will have sufficient funds to decommission safely;
- Overseeing accelerated schedules for decommissioning; and,
- Improving decommissioning guidance.

## Ongoing Actions

The NRC is performing licensing reviews and oversight for 25 power reactors currently in various stages of decommissioning. This includes the review of two license termination plans. The agency anticipates submission of four additional license termination plans in the next year.

As of July 2023, the NRC is reviewing the Decommissioning Funding Status (DFS) reports that were due from decommissioning licensees on March 31, 2023. Following the previous biennial review, NRC staff reported to the Commission in December 2021, that all licensees were in compliance with funding requirements.

The NRC is going through rulemaking to clarify when an exemption is necessary for using the decommissioning trust funds. The rulemaking's estimated completion date is in the first quarter of FY 2025. A Regulatory Guide, RG 1.184, is planned to follow the rulemaking to provide further guidance for NRC staff and licensees.

## Completed Actions

The NRC supported licensing and oversight for decommissioning programs with guidance updates and public outreach activities, including the issuance of NUREG-1757, "Consolidated Decommissioning Guidance," Vol. 2.

The NRC participated in a Congressional field hearing near the Pilgrim Nuclear Power Station site, and conducted two Post-Shutdown Decommissioning Activities Report public meetings.

The NRC improved its tracking of Decommissioning Funding Status reports and updated LIC-205, "Procedures for NRC's Independent Analysis of Decommissioning Funding Assurance for Operating Nuclear Power Reactors and Power Reactors in Decommissioning," to clarify the roles and responsibilities and procedures related to DFS report review.

# Challenge 3: Implementing New Legislative Requirements Related to NRC Core Mission Areas and Corporate Support

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

Recent legislation promotes NRC review and licensing of new nuclear technologies but imposes strict corporate support budget limits.

**CHALLENGE SYNOPSIS**

The Nuclear Energy Innovation and Modernization Act of 2019 (Public Law 115-439) (NEIMA) imposed caps on NRC corporate support costs, which include expenditures for acquisitions, administrative services, human resources, financial management, information technology (IT), and training. The NRC has experienced difficulties achieving the corporate support cap and anticipates significant challenges in future years. Notably, the corporate support cap decreases over time, ending at 28% for FY 2025 and beyond. Yet the NRC must still fund fixed costs, meet inflationary cost increases, and comply with other federal mandates, while working to meet the corporate cap requirement percentage to the maximum extent practicable. Additionally, the NRC's FY 2018 Congressional Budget Justification serves as the baseline for corporate support cost reductions, so the NRC is unable to make any adjustments based on benchmarking or operational experience. As a result, the NRC has reduced or postponed critical investments or services solely to meet the corporate support cap and anticipates substantial difficulties in future years with the declining percentage. The NRC also anticipates challenges associated with the cap on operating reactors annual fees and advanced reactors application fees.

Resources requested in the FY 2024 budget for Corporate Support are $304.0 million and 588.0 FTEs, an increase of $18.7 million when compared to the FY 2023 Enacted Budget. The FY 2024 budget request supports modernization of the agency's information technology to increase productivity and security, leverage data as a strategic asset, and increase the efficiency and effectiveness of administrative services.

The proposed Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy (ADVANCE) Act of 2023 could help the NRC mitigate some challenges associated with the NEIMA by fixing the corporate support cost cap at 30 percent of the agency's budget, and by providing funding and other tools to help the NRC hire staff with specific technical skills needed for anticipated advanced reactor licensing activities.

## Ongoing Actions

Ongoing NRC IT modernization efforts are intended to facilitate reductions in costs over time, increase efficiency, allow for better management of major acquisitions, and support effectiveness of administrative services.

The NRC continues to develop the infrastructure for advanced reactors in accordance with the NEIMA and at a rate consistent with the NRC's projections for interest in new technologies and cognizance of prospective applicants' plans.

## Completed Actions

The FY 2024 budget request of $304 million for corporate support would comprise 30.2 percent of the NRC's total requested budget, which reflects the agency's efforts to comply with the corporate support cap mandated by the NEIMA to the maximum extent practicable.

In January 2023, the NRC staff submitted a paper to the Commission that provided options for licensing and regulating fusion energy systems. Consistent with the NEIMA, the NRC staff presented these options to support the development of a regulatory framework for fusion energy systems by 2027.

# Challenge 4: Ensuring the Effective Acquisition, Management, and Protection of Information Technology and Data

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

Information technology continues to advance rapidly. The challenge is supporting a future-ready workforce equipped with the modern tools, technologies, skills, and knowledge necessary to meet current and future mission needs.

**CHALLENGE SYNOPSIS**

The NRC must continue to meet the regulatory and statutory federal mandates for Information Technology and Information Management (IT/IM) while remaining within statutory budget limitations for corporate support. The responsibility of the NRC's IT/IM program is to maintain and enhance services and infrastructure to enable accomplishment of the agency's mission. The NRC also faces evolving cyber threats and challenges to the security of data related to its oversight of operating and decommissioning facilities, use of nuclear materials, emergency preparedness, and incident response.

The NRC has increased investments to enhance its cybersecurity posture in the face of evolving threats and new federal mandates by automating compliance activities, developing an Information Security Architecture, and migrating Federal Information Security Modernization Act (FISMA) systems to a more streamlined environment. As the agency continues its efforts to modernize IT, it also works to better manage acquisitions by using best practices, and to improve the customer experience.

Key IT and information management and security oversight challenges for the NRC include:

- Managing ongoing supply chain risks posed to IT and operational infrastructure;
- Managing risk-based security strategies to protect against increasing numbers, types, and sophistication of cyber threats;
- Managing rigorous patching to meet compliance targets in the face of evolving threats and vulnerabilities;
- Aligning agencywide information resource planning to achieve benefits and flexibilities in support of workforce development, recruitment, and retention of critical cyber and IT staff;
- Protecting intellectual property associated with new technologies under development and licensing review;

- Executing the insider threat prevention and detection program to protect classified and safeguards information; and,
- Executing actions required by the FISMA, to strengthen information technology security.

### ONGOING ACTIONS

The NRC continues to address FISMA compliance recommendations resulting from the OIG's annual audits.

NRC IT investments include those related to Executive Order 14028, "Improving the Nation's Cybersecurity," and related Cybersecurity and Infrastructure Security Agency and Office of Management and Budget (OMB) mandates, such as OMB M-22-09, "Federal Zero Trust Strategy."

### COMPLETED ACTIONS

The NRC has integrated the privacy program with other security areas and business processes as well as embedded the privacy program into daily decision-making to help identify and manage privacy risks.

The NRC has developed a supplemental supply chain risk assessment (SCRA) process that provides a basis for measuring and monitoring metrics to assess risks associated with contractor systems and services.

# Challenge 5: Hiring and Retaining Sufficient Highly Skilled Employees to Carry Out the NRC Mission

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

Increased interest in nuclear power places higher demands on NRC staff to support pre-licensing, licensing, and inspection of new and existing technologies, following a period in which hiring has not kept pace with attrition.

**CHALLENGE SYNOPSIS**

Renewed commercial interest in nuclear power—particularly regarding advanced and small modular reactor designs—has increased NRC pre-licensing work involving prospective reactor licensees, as well as a rulemaking to develop regulations for advanced reactor technologies. At the same time, agency personnel continue to perform licensing and inspection work for operating reactors and nuclear materials, while overseeing decommissioning activities for a growing number of reactors that have ceased operations.

External and internal stakeholders have raised questions about the NRC's ability to carry out its mission as the agency's full-time staff declined from approximately 3,780 in FY 2015 to approximately 2,860 in FY 2023. Current agency annual attrition rates under 10 percent are considered manageable; however, NRC officials acknowledge that hiring in recent years has not kept pace with attrition. Accordingly, the agency enhanced its strategic workforce planning process in FY 2022 to forecast future work requirements and hire personnel to meet those demands.

Even as new staff members are recruited, the challenge remains to strengthen organizational culture and maintain a collaborative work environment to retain and develop staff and effectively meet the NRC mission. Knowledge management efforts also support culture, staff development, and mission goals.

## Ongoing Actions

NRC management continues efforts to understand and strengthen organizational culture, while recruiting new staff and operating in a hybrid work environment.

NRC management is working to balance workloads across pre-licensing and licensing of new facilities and technologies, while maintaining licensing and oversight of the existing reactor fleet and licensed users of radioactive materials. Training new employees and developing current ones is necessary to support efficient workload management.

The NRC is evaluating its Strategic Workforce Planning Process and will update associated guidance to provide specific methodologies, detailed instructions, measurement criteria, and scales that can be used to estimate the anticipated level of workload change, rank position risk factors, and prioritize workforce gaps or surpluses.

The NRC is working to address recommendations by the OIG to strengthen the NRC's vacancy announcement process.

## Completed Actions

In FY 2023, NRC staff participated in recruitment events at college campuses and professional conferences, and organized a career exposition where NRC managers held on-the-spot interviews with job applicants.

The NRC staff posted two resume repository announcements for entry level engineers and scientists and advertised NRC employment opportunities on various internet-based job search platforms.

Through expansion of recruitment and targeted outreach efforts to fill current and anticipated vacancies, 197 new external hires have been onboarded as of July 29, 2023.

# Challenge 6: Overseeing the Safe and Secure Use of Nuclear Materials and the Storage and Disposal of High- and Low-Level Waste

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

This challenge involves the NRC's ability to continue its effective oversight of the use of nuclear materials and the storage and disposal of nuclear waste. The NRC must also coordinate with the 39 Agreement States to ensure a consistent understanding and implementation of regulations associated with the oversight of radioactive materials.

## CHALLENGE SYNOPSIS

The Nuclear Materials and Waste Safety Program encompasses the NRC's licensing and oversight of nuclear materials in a manner that adequately protects public health and safety. This program provides assurance of the physical security of materials and waste and protection against radiological sabotage, theft, or diversion of nuclear materials.

Through this program, the NRC regulates uranium processing and fuel facilities; research and pilot facilities; nuclear materials users (medical, industrial, research, and academic); spent fuel storage; decontamination and decommissioning of facilities; and, low-level and high-level radioactive waste. The NRC has sole responsibility for overseeing high-level radioactive waste, the highly radioactive byproduct of the reactions that occur inside nuclear reactors. Spent (used) reactor fuel is one form of high-level waste.

Nuclear materials and waste safety and security oversight also entails coordination and consultation with other governmental entities, including federal agencies, tribal governments, and state governments. In particular, the NRC's regulatory framework includes Agreement States, which are U.S. states that have entered into an agreement with the NRC to regulate certain radioactive materials and limited quantities of special nuclear material.

Combined, the NRC and the Agreement States constitute the National Materials Program. Agreement States must demonstrate that their regulatory programs are adequate to protect public health, safety, and the environment, and are compatible with the NRC's program. There are currently 39 Agreement States; however, Connecticut, Indiana, and West Virginia have submitted letters of intent to also become Agreement States.

## Ongoing Actions

The NRC is completing reviews of approximately 1,480 materials licensing actions (new applications, amendments, renewals, and terminations) and approximately 600 routine health, safety, and security inspections, as well as reciprocity and reactive inspections.

The Office of Nuclear Material Safety and Safeguards will review the existing processes, guidance, and applicable regulations to develop a standardized process related to the handling and processing of irretrievable well logging source abandonments.

## Completed Actions

The NRC issued 10 new inspection procedures under the Materials Inspection Program for the inspection process for approximately 70 percent of the more than 18,000 materials licensees across the National Materials Program.

The NRC issued the 2022 Radiation Source Protection and Security Task Force Report, which is prepared every 4 years and reflects the input of 14 federal agencies and the Organization of Agreement States.

The NRC issued the Final Environmental Impact Statement, and Supplement, related to the Holtec Consolidated Interim Storage Facility in New Mexico.

The NRC licensed a Rare Element Resources Inc. pilot project for the extraction of rare earth elements important to clean energy industries and other advanced technologies. The process will produce waste streams including some radioactive elements, requiring the NRC license.

# Challenge 7: Managing Financial and Acquisitions Operations to Enhance Fiscal Prudence and Transparency of Resource Management

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

Sound financial management is vital for federal agencies to accomplish their missions effectively and efficiently. A strong acquisitions management process increases the likelihood that the agency awards contracts to the right contractors and monitors contracting actions in accordance with regulations.

**CHALLENGE SYNOPSIS**

To maintain transparency, the NRC must continue to implement robust internal controls over financial management and reporting. A rigorous acquisition process is also an important aspect of NRC operations. The agency has continued to promote sound acquisition practices, improvements in contract management, and timely closeout of contracting actions. In addition, the agency must continue to administer its grants program in accordance with the prescribed federal regulations.

The NEIMA requires the NRC to recover, to the maximum extent practicable, approximately 100 percent of its annual budget, less certain amounts excluded from this fee-recovery requirement. It also requires the NRC to establish a schedule of charges that fairly and equitably assesses the fees to licensees and permit holders. To improve efficiency and accuracy, the NRC is piloting new IT applications to improve its fee billing process.

Key financial and acquisition concerns include the following:

- Developing and implementing the agency's budget in accordance with federal laws, regulations, and guidance;
- Maintaining a fee structure in accordance with laws and regulations that is fair to all types of entities regulated by the agency;
- Managing space planning, maintenance, remodeling, and restacking of the NRC headquarters and regional facilities;
- Continuing the effective management of appropriations; and,
- Exploring ways to improve the award, management, and timely closeout of acquisition actions.

## Ongoing Actions

The NRC has implemented the G-Invoicing system which is required for new orders for federal program agencies.

The NRC continues to address recommendations made by the OIG in separate audits of the NRC's property management program and its enterprise risk management program.

## Completed Actions

In November 2022 the NRC achieved an unmodified opinion on its FY 2022 financial statements and internal controls over financial reporting and complied with laws and regulations.

An independent audit organization concluded in May 2023 that the NRC complied with the requirements of the Payment Integrity Information Act of 2019 for FY 2022.

Fee billing improvements resulted in 100 percent invoice timeliness for FY 2023.

# Challenge 8: Maintaining Public Outreach Related to the Agency's Regulatory Process

**WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?**

It is the NRC's policy to provide the public with opportunities for meaningful participation in NRC processes. The pace of regulatory work increases the need for outreach activities, and new technologies open possibilities to enhance outreach efforts.

## CHALLENGE SYNOPSIS

The NRC has a long history of, and commitment to, public participation and collaboration in agency regulatory activities. The NRC has had a formal policy regarding open meetings since 1978. In March 2021, the Commission published its most recent update to the policy statement, *Enhancing Public Participation in NRC Meetings*. It reiterated the NRC policy "to open meetings between the agency staff and one or more outside persons to observation and participation to the extent possible," and "to balance openness and transparency with the need to exercise regulatory and safety responsibilities without undue administrative burden." In addition, the NRC Strategic Plan for Fiscal Years 2022–2026 emphasizes the public participation policy through the goal of inspiring stakeholder confidence in the NRC. One objective in this goal is to communicate in clear and accessible ways with diverse stakeholders.

Between October 1, 2022, and July 31, 2023, the NRC held more than 575 public meetings. Public meetings and opportunities for comment may occur as part of numerous NRC activities, ranging from rulemaking and guidance development to some licensing processes, certain oversight activities and performance assessments, and symposia regarding regulatory research.

In the recent policy statement update, the Commission committed the NRC to making efforts to find new and innovative ways to interact with individuals, including exploring varied meeting formats and other ways to incorporate technologies that allow participation from locations other than a meeting room.

Key public outreach challenges include the following:

- Communicating risk and the NRC's regulatory processes;
- Considering environmental justice in decision-making;
- Sharing information transparently; and,
- Enhancing stakeholder confidence in the NRC's technical decision-making.

## Ongoing Actions

The NRC continues to implement strategic multilateral and bilateral cooperation on new reactor design and commissioning, as well as supporting International Atomic Energy Agency and Nuclear Energy Agency activities, such as those related to generic small modular reactor issues, standards development, and new reactor design. These interactions allow the NRC to communicate its regulatory positions, receive feedback from international regulators, and share operating experience for operating reactors.

The NRC implements its Tribal Policy Statement through outreach, guidance development, and staff training; coordination with other federal agencies on Tribal matters and NRC projects involving Tribal consideration; and, updating Tribal contact databases and mapping tools.

From October 2022 through March 2023, the NRC processed 89 Freedom of Information Act requests and received an additional 89 requests during the reporting period.

## Completed Actions

The NRC developed and shared preliminary proposed rule language and guidance and held multiple public meetings regarding the draft safety and security requirements for the 10 C.F.R. Part 53, "Licensing and regulation of advanced nuclear reactors," rulemaking on a risk-informed, performance-based, and technology-inclusive regulatory framework for advanced reactors.

The NRC held its first offsite Commission meetings in over 40 years in New Mexico. The meetings provided the Commission with an overview of the interagency actions to address the impacts of uranium contamination on the Navajo Nation, and updates on, and lessons learned from, remediation activities at former uranium mill sites throughout the West. The Commission also received a first-hand account from the members of the Red Water Pond Road community on the impacts of uranium contamination on the Navajo Nation.

The NRC supported licensing and oversight for decommissioning programs with guidance updates and public outreach activities, including the issuance of NUREG-1757 "Consolidated Decommissioning Guidance," Vol. 2; NRC participation in a Congressional field hearing near the Pilgrim Nuclear Power Station site; and, conducting two Post-Shutdown Decommissioning Activities Report public meetings.

# Challenge 9: Planning for and Assessing the Impact of Artificial Intelligence and Machine Learning on Nuclear Safety and Security

### WHY IS THIS A SERIOUS MANAGEMENT AND PERFORMANCE CHALLENGE?

As a modern, risk-informed regulator, the NRC must be prepared to review and evaluate the use of Artificial Intelligence (AI) and Machine Learning in NRC-regulated activities.

### CHALLENGE SYNOPSIS

The NRC held three public workshops in 2021, and another in September 2023, to provide a forum for the NRC, the nuclear industry, and stakeholders to discuss the state of knowledge and research activities related to data science and AI and their application in the nuclear industry. The NRC must be prepared to review and evaluate the use of AI and Machine Learning in NRC-regulated activities, particularly since the nuclear industry is determining how best to deploy AI applications in its operations.

The NRC also needs to identify how AI can support decision-making across the agency, considering the intentions of Executive Orders 13859, "Maintaining American Leadership in Artificial Intelligence," and 13960, "Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government." Moreover, the NRC must cultivate an AI-proficient workforce, keep pace with AI technological innovations, and ensure the safe and secure use of AI in NRC-regulated activities.

### ONGOING ACTIONS

To build an AI-skilled workforce, the NRC is developing qualifications and specific training in areas such as data analysis and visualization, and machine learning and natural language processing.

The NRC is developing evaluation methodologies to review licensee applications of AI and related new technologies.

The NRC continues to collaborate with other federal partners on AI applications in nuclear fields.

### COMPLETED ACTIONS

The NRC issued NUREG/CR-7294, "Exploring Advanced Computational Tools and Techniques with Artificial Intelligence and Machine Learning in Operating Nuclear Plants."

In May 2023, the NRC published NUREG-2261, "Artificial Intelligence Strategic Plan: Fiscal Years 2023-2027." The plan's purpose is to ensure the staff's readiness to review the use of AI in NRC-regulated activities.

## TO REPORT FRAUD, WASTE, OR ABUSE

**Please Contact:**

| | |
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| Online: | Online Form |
| Telephone: | 1.800.233.3497 |
| TTY/TDD: | 7-1-1, or 1.800.201.7165 |
| Address: | U.S. Nuclear Regulatory Commission<br>Office of the Inspector General<br>Hotline Program<br>Mail Stop O12-A12<br>11555 Rockville Pike<br>Rockville, Maryland 20852 |

## COMMENTS AND SUGGESTIONS

If you wish to provide comments on this report, please email the OIG using this link.

In addition, if you have suggestions for future OIG audits, please provide them using this link.

## NOTICE TO NON-GOVERNMENTAL ORGANIZATIONS AND BUSINESS ENTITIES SPECIFICALLY MENTIONED IN THIS REPORT

Section 5274 of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, Pub. L. No. 117-263, amended the Inspector General Act of 1978 to require OIGs to notify certain entities of OIG reports. In particular, section 5274 requires that, if an OIG specifically identifies any non-governmental organization (NGO) or business entity (BE) in an audit or other non-investigative report, the OIG must notify the NGO or BE that it has 30 days from the date of the report's publication to review the report and, if it chooses, submit a written response that clarifies or provides additional context for each instance within the report in which the NGO or BE is specifically identified.

If you are an NGO or BE that has been specifically identified in this report and you believe you have not been otherwise notified of the report's availability, please be aware that under section 5274 such an NGO or BE may provide a written response to this report no later than 30 days from the report's publication date. Any response you provide will be appended to the published report as it appears on our public website, assuming your response is within the scope of section 5274. Please note, however, that the OIG may decline to append to the report any response, or portion of a response, that goes beyond the scope of the response provided for by section 5274. Additionally, the OIG will review each response to determine whether it should be redacted in accordance with applicable laws, rules, and policies before we post the response to our public website. Please send any response via email using this link. Questions regarding the opportunity to respond should also be directed to this same address.