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ABSTRACT

The U.S. Nuclear Regulatory Commission (NRC or agency) is an independent agency established by the Energy Reorganization Act of 1974 that began operations in 1975 as a successor to the licensing and regulatory activities of the Atomic Energy Commission. The NRC's mission is to license and regulate 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. This strategic plan, covering the period Fiscal Years (FY) 2018–2022, describes how the NRC plans to achieve its two strategic goals: (1) ensure the safe use of radioactive materials, and (2) ensure the secure use of radioactive materials. The plan provides an overview of the NRC's responsibilities and lays out the objectives, strategies, and key activities that will be used to achieve the agency's strategic goals.

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INTRODUCTION

About the NRC

The U.S. Nuclear Regulatory Commission (NRC or agency), created by the Energy Reorganization Act of 1974, began operations in 1975. The NRC's mission is to license and regulate 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.

The NRC is headed by five Commissioners appointed by the President of the United States, and confirmed by the U.S. Senate, to serve staggered 5-year terms. The President designates one of the Commissioners to serve as Chairman. The Commission as a whole formulates policies and regulations governing the safety and security of nuclear facilities and radioactive materials, issues orders to licensees, and adjudicates legal matters brought before it.

The NRC's overall responsibility is to protect public health and safety in the civilian uses of radioactive materials. It has the following main regulatory functions:

- Establish standards and regulations.
- Issue licenses, certificates, and permits.
- Ensure compliance with established standards and regulations.
- Conducts research, adjudication, risk and performance assessments to support regulatory decisions.

The NRC carries out these regulatory functions to regulate nuclear power plants, fuel cycle facilities, and other civilian uses of radioactive materials, such as nuclear medicine programs at hospitals and academic activities at educational and research institutions. The NRC also uses these functions to regulate such industrial applications as gauges, irradiators, and other devices that contain radioactive material.

The NRC regulates 99 commercial nuclear power reactors operating in 30 States at 59 sites; 31 research and test reactors; about 4,600 licensed reactor operators; 20 nuclear reactors in various stages of decommissioning; 78 independent spent fuel storage installations; 13 licensed fuel cycle facilities; 11 uranium recovery sites; and approximately 2,600 research, medical, industrial, government, and academic materials licensees. The NRC also has issued 5 reactor early site permits, 5 reactor design certifications, and 12 combined licenses for new reactors. In addition, the NRC has agreements with 37 States, also referred to as Agreement States, under which these States have assumed regulatory responsibility for the use of certain radioactive materials. These Agreement States oversee approximately 17,000 materials licenses. The NRC works closely with these Agreement States to ensure that they maintain adequate and compatible regulatory programs.

As part of its licensing activities, the NRC complies with the National Environmental Policy Act and other environmental laws that require consideration of potential impacts to the environment. These considerations involve analyzing proposed NRC licensing and regulatory activities to assess their environmental impacts. Specific areas that the NRC staff considers include

potential human health and socioeconomic impacts and potential impacts to endangered species, air quality, water quality, and historic properties and Tribal cultural resources.

The NRC also licenses the import and export of radioactive materials and works closely with its international counterparts to enhance global nuclear safety and security.

Stakeholder Engagement

The NRC considers public engagement and communication to be an important aspect of effective regulation. The NRC recognizes the public's interest in the regulation of nuclear activities and provides opportunities for citizens to be heard. The NRC places a high priority on keeping the public informed of its work and encourages public participation and comments. The agency maintains a Web site (www.nrc.gov) with a wide variety of information for its stakeholders; operates the agency's Public Document Room at its headquarters in Rockville, MD; and holds public meetings throughout the country.

In keeping with the agency's commitment to openness, the NRC solicited stakeholder input to develop this strategic plan. In July and August 2016, representatives of various stakeholder groups (including licensees, public interest groups, State governments, Federal agencies, congressional staff, the general public, and NRC staff) participated in assessments of the agency's strengths, weaknesses, opportunities, and threats faced, as well as external factors that may impact the NRC during the upcoming planning period. The input that the NRC received highlighted many of the challenges the agency faces; this plan reflects strategies for addressing these challenges.

Organization of the Plan

This strategic plan presents the NRC's mission, vision, and values statements. It also describes the NRC's key strategic goals of safety and security—outcomes that the agency is striving to achieve. Each strategic goal has supporting objectives and strategies.

Objectives reflect the outcome the agency is trying to achieve and the NRC's role in achieving it. Strategic objectives also form the basis for a set of performance goals and indicators established to help the agency monitor and understand progress. This plan presents strategies to support each objective.

Figure 1 is a graphical depiction of how the NRC's mission, vision, strategic goals, objectives, and strategies are related.



Figure 1 Graphical depiction of strategic plan components

Appendix A covers key external factors that could affect the agency’s ability to effectively execute this plan.

Appendix B discusses the research and program evaluations used in developing this plan.

Appendix C provides the schedule of planned program evaluations that the agency will use to adjust and refine its performance.

Appendix D offers a glossary of terms used in this plan.

THE PLAN

Mission

The NRC licenses and regulates 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.

Vision

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

Principles of Good Regulation

In 1991, the Commission established the NRC’s Principles of Good Regulation to focus the agency on implementing our safety and security mission while appropriately considering the interests of the NRC’s stakeholders, including the public and licensees. The NRC adheres to the Principles of Good Regulation, as described below, to guide both the agency’s decisionmaking and staff behaviors.

Independence	Nothing but the highest possible standards of ethical performance and professionalism should influence regulation. However, independence does not imply isolation. All available facts and opinions must be sought openly from licensees and other interested members of the public. The many and possibly conflicting public interests involved must be considered. Final decisions must be based on objective, unbiased assessments of all information and must be documented with reasons explicitly stated.
Openness	Nuclear regulation is the public’s business, and it must be transacted publicly and candidly. The public must be informed about and have the opportunity to participate in the regulatory processes as required by law. Open channels of communication must be maintained with Congress, other government agencies, licensees, and the public, as well as with the international nuclear community.
Efficiency	The American taxpayer, the rate-paying consumer, and licensees are all entitled to the best possible management and administration of regulatory activities. The highest technical and managerial competence is required and must be a constant agency goal. The NRC must establish means to evaluate and continually upgrade its regulatory capabilities. Regulatory activities should be consistent with the degree of risk reduction they achieve. Where several effective alternatives are available, the option which minimizes the use of resources should be adopted. Regulatory decisions should be made without undue delay.
Clarity	Regulations should be coherent, logical, and practical. There should be a clear nexus between regulations and agency goals and objectives, whether explicitly or implicitly stated. Agency positions should be readily understood and easily applied.

Reliability	Regulations should be based on the best available knowledge from research and operational experience. Systems interactions, technological uncertainties, and the diversity of licensees and regulatory activities must all be taken into account so that risks are maintained at an acceptably low level. Once established, regulation should be perceived to be reliable and not unjustifiably in a state of transition. Regulatory actions should always be fully consistent with written regulations and should be promptly, fairly, and decisively administered so as to lend stability to the nuclear operational and planning processes.
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Strategic Goals, Objectives, and Strategies

The NRC has two strategic goals that represent the results the agency must achieve to carry out its mission successfully. These goals are the foundation for the organization of this plan:

Safety Strategic Goal: Ensure the Safe Use of Radioactive Materials.

Security Strategic Goal: Ensure the Secure Use of Radioactive Materials.

Each strategic goal has accompanying objectives:

Safety Objective 1: Prevent, Mitigate, and Respond to Accidents and Ensure Radiation Safety.

Security Objective 1: Ensure Protection of Nuclear Facilities and Radioactive Materials.

Security Objective 2: Ensure Protection of Classified and Controlled Unclassified Information.

As described in the following sections, the NRC has identified supporting strategies and contributing activities related to each goal and objective. In implementing all of these strategies and activities, key corporate functions, such as financial management, human resources management, acquisition planning and execution, and information technology management, play a key role in the agency’s effective and efficient use of its resources to deliver mission value. In addition, the agency focuses on continuous improvement of its activities and processes and demonstrates a commitment to effectiveness, efficiency, and innovation in all its regulatory activities.

Safety Strategic Goal: Ensure the Safe Use of Radioactive Materials.

For this goal, a successful outcome is one in which the Nation can continue to use radioactive materials for civilian purposes while avoiding radiation exposures and releases of radioactive materials that harm people or the environment. The Atomic Energy Act of 1954, as amended (AEA), is the fundamental U.S. law on both the civilian and the military uses of nuclear materials. On the civilian side, it provides for both the development and the regulation of the uses of nuclear materials and facilities in the United States.

The AEA generally requires a license for civilian uses of nuclear materials and facilities, and it empowers the NRC to establish by rule or order, and to enforce, such standards to govern

these uses as “the Commission may deem necessary or desirable to promote the common defense and security or to protect health or to minimize danger to life or property....”

The licensees and certificate holders that are authorized to possess and use radioactive materials have primary responsibility for the safe use of radioactive material. The safety responsibility of licensees is defined through licensing and continuing regulatory oversight and enforcement throughout all stages in the lifetime of a facility. This approach is the means by which the NRC ensures the successful outcome of the safe use of radioactive materials.

Safety Objective 1: Prevent, Mitigate, and Respond to Accidents and Ensure Radiation Safety.

Minimizing the likelihood of accidents and reducing the consequences of an accident (should one occur) are the key elements for achieving the NRC’s safety goal. The NRC employs defense-in-depth approaches to ensure that multiple layers of defense protect against accidents and their effects to ensure that the risk to the public is acceptably low. In this approach, the agency does not rely solely on preventing accidents but also recognizes that provisions are needed to mitigate the effects of accidents that may occur. The agency must ensure that effective preparedness and response programs are in place if an accident were to occur.

Safety Strategy 1: Maintain and enhance the NRC’s regulatory programs, using information gained from domestic and international operating experience, lessons learned, and advances in science and technology.

CONTRIBUTING ACTIVITIES

- Maintain effective, stable, and predictable regulatory programs and policies.
- Evaluate domestic and international operating events and trends and advances in science and technology for safety implications and enhance the regulatory framework as warranted.
- Apply lessons learned from license reviews and construction of new reactors and fuel cycle facilities to enhance the effectiveness and efficiency of subsequent reviews and construction oversight.

Safety Strategy 2: Further risk-inform the current regulatory framework in response to advances in science and technology, policy decisions, and other factors, including prioritizing efforts to focus on the most safety-significant issues.

CONTRIBUTING ACTIVITIES

- Use risk-informed and performance-based approaches to enhance the effectiveness and efficiency of the regulatory framework that appropriately consider defense-in-depth, risk insights, and margins of safety.
- Develop and implement, as necessary, a risk-informed regulatory infrastructure to conduct effective and efficient licensing activities for applicants developing new reactors, small modular reactors, advanced reactors, fuel cycle facilities, and domestic medical isotope production facilities.

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- Ensure that regulations are effective, efficient, and up-to-date by using established processes to build on a sound regulatory framework, incorporating risk assessments into regulatory decisionmaking as appropriate, providing opportunities for public participation, and addressing the cumulative effects of regulation.
- Conduct research activities to confirm the safety of operations and enhance the regulatory framework by addressing changes in technology, science, and policies.
- Improve the regulatory framework, analytical tools, and data needed to ensure the safe and secure storage, transportation, and disposal of spent nuclear fuel and high-level radioactive waste.
- Engage domestic and international partners in the development and evaluation of consensus standards and collaborate with research counterparts to respond to emerging technical issues, exchange information, and promote best practices.

Safety Strategy 3: Enhance the effectiveness and efficiency of licensing and certification activities to maintain both quality and timeliness of licensing and certification reviews.

CONTRIBUTING ACTIVITIES

- Perform high-quality, timely, and risk-informed reviews of requests for permits, licenses, design approvals, certifications, license amendments, license renewals, decommissioning activities, and license termination. Engage in pre-application activities with potential applicants to provide timely feedback and information.
- Improve the timeliness, predictability, and transparency of licensing and certification processes while reducing unnecessary regulatory burden.
- Ensure the availability of the regulatory and technical framework needed for the review of requests to operate for periods beyond 60 years.
- Conduct environmental reviews to ensure that the NRC's actions comply with all applicable laws, such as the National Environmental Policy Act.

Safety Strategy 4: Maintain effective and consistent oversight of licensee performance with a focus on the most safety-significant issues.

CONTRIBUTING ACTIVITIES

- Enhance and implement nuclear reactor, material, spent nuclear fuel storage, and radioactive waste oversight programs to ensure the timely identification of safety issues and that licensees take the actions necessary to maintain acceptable safety performance.
- Conduct effective and efficient inspections, as well as followup reviews, investigations, and enforcement as needed, to ensure that licensees meet the NRC's regulatory requirements.
- Ensure that licensees, certificate holders, and vendors take the actions necessary to prevent the presence of counterfeit, fraudulent, and suspect items in nuclear facilities

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and that defective and/or noncompliant items do not cause safety risks in the use of radioactive materials.

- Respond to alleged concerns to ensure safety issues are thoroughly and timely addressed and with appropriate confidentiality protections, fostering the willingness of concerned individuals to raise safety issues.
- Emphasize the importance of developing and maintaining an effective nuclear safety culture for all NRC-regulated activities.
- Ensure licensee readiness to respond to and recover from accidents, through the oversight of emergency preparedness and response programs and exercises.

Safety Strategy 5: Maintain material safety through the National Materials Program in partnership with Agreement States.

CONTRIBUTING ACTIVITIES

- Review NRC and Agreement State materials programs through the Integrated Materials Performance Evaluation Program, an oversight tool that provides the NRC and Agreement States with systematic and integrated evaluations of their respective materials programs.
- Work in partnership with Agreement States on the development and implementation of new and revised regulations, radiation standards, guidance, and policies to ensure the safe use of radioactive material on a nationwide basis.
- Provide a consistent training program for the National Materials Program to develop and maintain knowledgeable and well-trained staff who ensure the protection of public health and safety under their respective materials programs.
- Promote effective communications and working relationships between the NRC and Agreement States to foster coordination in ensuring the safe use of radioactive material under the National Materials Program.

Safety Strategy 6: Identify, assess, and resolve safety issues.

CONTRIBUTING ACTIVITIES

- Address internal and external hazards to nuclear facilities and radioactive materials users, such as seismic activity, flooding, and age-related degradation of plant components, through appropriate regulatory processes and programs.
- Resolve generic safety issues and ensure the implementation of appropriate actions within timeframes commensurate with their risk significance.
- Conduct confirmatory and anticipatory research to resolve safety issues and confirm the safety bases for the use of radioactive materials.

Safety Strategy 7: Ensure the NRC maintains its readiness to respond to incidents and emergencies involving NRC licensed facilities and radioactive materials and other events of domestic and international interest.

CONTRIBUTING ACTIVITIES

- Use lessons learned from exercises, operating experience, and international events to inform regulatory activities.
- Coordinate with Federal, State, local, and Tribal partners to strengthen national preparedness, response, and recovery capabilities.
- Coordinate with licensee and industry stakeholders (e.g., Institute of Nuclear Power Operations) to ensure incident response readiness and capabilities.
- Conduct outreach before, during, and after emergency preparedness exercises and increase collaboration and sharing of lessons learned from emergency preparedness exercises and incidents.

Safety Strategy 8: Verify that nuclear facilities are constructed and operated in accordance with permits and licenses and that the environmental and safety regulatory infrastructure is adequate to support the issuance of new licenses.

CONTRIBUTING ACTIVITIES

- Inspect nuclear facilities under construction, including the associated vendors, in accordance with construction oversight programs.
- Enhance the effectiveness and efficiency of design certification and combined license reviews for new, advanced, and small modular reactors and implement lessons learned.
- Increase knowledge, skills, technical tools, and capacity to perform advanced reactor regulatory activities and develop the necessary regulatory infrastructure to support application reviews.
- Ensure regulatory guidance continues to reflect the lessons learned from construction, licensing, and research activities.
- Develop methodologies and tools to enhance site-specific safety and environmental reviews in support of regulatory needs.
- Conduct research, including collaboration with international, academic, industry, and other Federal agencies, and incorporate insights gained into the regulatory infrastructure.

Security Strategic Goal: Ensure the Secure Use of Radioactive Materials

For this goal, a successful outcome is to avoid instances in which radioactive materials are used in a hostile manner. The NRC, in carrying out its regulatory responsibilities, should act in a manner consistent with the AEA goals that the peaceful uses of nuclear energy “make the maximum contribution to the common defense and security and the national welfare.”

The terms *safeguards* and *security* are generally used to describe programs that promote the common defense and security and protect public health and safety by guarding against theft and sabotage. Licensee's security programs and contingency plans deal with threats, thefts, and sabotage relating to special nuclear material, high-level radioactive waste, nuclear facilities, and other radioactive materials and activities that the NRC regulates.

The NRC ensures a successful outcome for this strategic goal by regulating licensees' security programs, contingency plans, and accounting systems for certain materials.

Security Objective 1: Ensure Protection of Nuclear Facilities and Radioactive Materials.

Nuclear facilities and radioactive materials are protected against threats by two primary means: (1) control of access to facilities and materials, and (2) accountability controls for radioactive materials. These controls are intended to prevent threats from either damaging a nuclear facility in such a way that a significant release of radioactive material to the environment occurs, or obtaining enough radioactive material for malevolent use.

Security Strategy 1: Maintain and further risk inform the current regulatory framework for security using information gained from operating experience, lessons learned, external and internal assessments, technology advances, and changes in the threat environment.

CONTRIBUTING ACTIVITIES

- Maintain stable, effective, and predictable regulatory programs and policies.
- Use risk-informed and performance-based approaches to enhance the effectiveness and efficiency of the regulatory framework that appropriately consider defense-in-depth and risk insights.
- Ensure that regulations are effective, efficient, and up-to-date by using established processes to build a sound regulatory framework, incorporating risk assessments into regulatory decisionmaking as appropriate, providing opportunities for public participation, and addressing the cumulative effects of regulation.
- Evaluate domestic and international operating events and trends and technology advances for security implications, including the cybersecurity threat environment, and enhance the regulatory framework and guidance as warranted.
- Assess the threat environment to maintain an adequate regulatory framework through cooperation and liaison with the intelligence and law enforcement communities, as well as with international partners.
- Evaluate cybersecurity requirements for fuel cycle facilities, spent fuel storage facilities, nonpower reactors, medical isotope production facilities, nuclear facilities being decommissioned, and other materials licensees.

Security Strategy 2: Maintain effective, consistent, and risk-informed oversight of licensee performance with respect to meeting NRC security requirements.

CONTRIBUTING ACTIVITIES

- Conduct effective and efficient inspections, as well as followup reviews, investigations, and enforcement as needed, to ensure that licensees meet the NRC's regulatory requirements, including those for force-on-force exercises.
- Conduct security performance evaluations at each applicable nuclear facility to assess licensee's protective strategy capabilities and to evaluate support functions provided by Federal, State, local, and Tribal law enforcement.
- Coordinate with Federal, State, local, and Tribal partners on an integrated response so that responding agencies can coordinate effectively with licensees during an incident.
- Emphasize the importance of developing and maintaining an effective nuclear safety culture in security activities for all NRC-regulated programs.

Security Strategy 3: Maintain material security through the National Materials Program in partnership with the safety programs administered by the Agreement States.

CONTRIBUTING ACTIVITIES

- Manage the use of information technology tools as part of the National Materials Program to improve the security and control of licensed and registered radioactive materials.
- Lead the interagency Radiation Source Protection and Security Task Force, mandated by the Energy Policy Act of 2005, to evaluate and provide recommendations relating to the security of radiation sources in the United States from potential terrorist threats, including acts of sabotage, theft, or use of a radiation source in a radiological dispersal device.
- Cooperate with Agreement States in the development and implementation of new and revised regulations, standards, guidance, and policies to ensure the secure use of radioactive material on a nationwide basis.
- Promote effective communications and working relationships between the NRC and Agreement States to foster coordination in ensuring the secure use of radioactive material under the National Materials Program.

Security Strategy 4: Proactively identify, assess, and address threats, vulnerabilities, and security risks.

CONTRIBUTING ACTIVITIES

- Evaluate and apply, as appropriate, insights from operational experience reviews, international incidents, and lessons-learned programs in a timely manner.

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- Address internal and external hazards to nuclear facilities and radioactive materials users, such as insider threats, changes in the design-basis threat, and cyberthreats, through appropriate regulatory processes and programs.
- Resolve generic security issues and ensure the implementation of appropriate actions within timeframes commensurate with their risk significance.
- Conduct threat assessments, determine the consequences of a range of threats, and protect nuclear facilities and radioactive materials consistent with safety, safeguards, and security requirements while using established protocols for sharing results.
- Enhance communication tools and key information technology investments for the dissemination of sensitive security information.
- Assess the threat environment and systems in place to appropriately inform the regulated community of emergent threats through cooperation and liaison with the intelligence and law enforcement communities, as well as with international partners.
- Conduct anticipatory research to resolve security issues and confirm the security bases for the use of radioactive materials.

Security Strategy 5: Support U.S. national security interests and nuclear nonproliferation policy objectives consistent with the NRC's statutory mandate through cooperation with domestic and international partners.

CONTRIBUTING ACTIVITIES

- Support and participate in international security activities, including International Atomic Energy Agency nonproliferation and guidance development initiatives, as well as bilateral physical security initiatives undertaken with countries that receive special nuclear material and equipment from the United States.
- Participate with Agreement States, the Conference of Radiation Control Program Directors, and the U.S. Department of Energy's National Nuclear Security Administration in identifying, locating, and recovering unwanted and uncontrolled radioactive materials.

Security Strategy 6: Ensure material control and accounting for special nuclear materials.

CONTRIBUTING ACTIVITIES

- Enhance material control and accounting regulations and guidance, as appropriate, to make them more risk-informed and performance-based.
- Develop and implement policies and programs for material control and accounting for NRC-regulated facilities.
- Conduct technical and regulatory reviews of the material control and accounting programs at NRC-regulated facilities.
- Apply International Atomic Energy Agency safeguards for NRC-regulated facilities.

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- Support U.S. Government goals to secure radioactive materials internationally through bilateral agreements related to material control and accounting programs.
- Provide oversight and management of the U.S. National Accounting System for tracking transfers and possession of special nuclear material.

Security Objective 2: Ensure Protection of Classified and Controlled Unclassified Information

The NRC must protect classified and sensitive unclassified information related to U.S. Government programs for the physical protection and safeguarding of nuclear materials or facilities to ensure that such information is protected against unauthorized disclosure.

Security Strategy 7: Ensure that programs for the handling and control of classified and Controlled Unclassified Information are effectively implemented at the NRC and at licensed facilities.

CONTRIBUTING ACTIVITIES

- Coordinate with licensees to reduce the risks from insiders with access to systems or information that could assist in malevolent activity.
- Train NRC staff on the appropriate handling of Classified Information and Controlled Unclassified Information consistent with current national policy.
- Apply the inspection and enforcement programs for classified information security.

APPENDICES

Appendix A—External Factors

Many external factors influence the ability of the NRC to achieve its strategic goals and the associated strategic objectives. These factors include industry operating experience, national priorities, a significant incident at a domestic or non-U.S. nuclear facility, the security and threat environment, legislation, Federal court litigation, market forces, new technologies, and resource availability. This appendix discusses the most significant of these factors. The NRC will strengthen its ability to respond promptly to shifts in agency priorities necessitated by these factors. The agency will also make efforts to influence those factors that enable the achievement of its strategic objectives, where appropriate.

Market Forces

Many market forces affect the nuclear industry. These can affect the business operations of facility operators and license applicants subject to NRC jurisdiction. The NRC must be prepared with the regulatory infrastructure to continue to ensure the safety and security of operating facilities, support areas such as decommissioning of nuclear power plants, changes in exports and imports and licensing of new technologies and facilities.

Globalization and Development of Nuclear Technology

Technological changes may affect the development of advanced nuclear systems and support infrastructure, resulting in impacts to the industry activities subject to NRC jurisdiction. Increased globalization of nuclear technology, including small modular reactors and advanced reactor designs, could increase competition in the nuclear supply chain and; therefore, could affect industry operating costs and increase the complexity of regulatory oversight due to the need to encompass foreign vendors. In addition to operating and regulatory impacts on the domestic nuclear industry, globalization increases the value of NRC's enhanced cooperation with international organizations for licensing activities, training, development and implementation of codes and standards, and conventions and treaties to ensure safe and secure use of nuclear technology.

Incidents

The U.S. national security landscape will continue to be dynamic, encompassing a full range of threats and incidents, including the identification of and protection against, cyber and physical security threats. As a result, the regulatory approach needed to ensure the safety and security of nuclear materials and infrastructure may need to evolve in response to such incidents and threats.

A significant incident at a nuclear facility, whether caused by adversaries, natural disaster, or other factors, could prompt the agency to reassess its safety and security requirements and could impact the agency's focus. The NRC must anticipate and be prepared for an operational and regulatory response to threats and incidents involving nuclear infrastructure. An incident at a non-U.S. facility could also cause the NRC to reassess its safety and security requirements.

Legislative and Executive Branch Actions

Congressional or Executive Branch actions may affect the NRC's regulatory responsibilities and strategies to comply with new direction would need to be developed.

International Treaties and Conventions

The ratification by the U.S. of international instruments related to the safety of nuclear facilities or radioactive materials could potentially impose binding provisions on the Nation that can affect responsible governmental agencies, such as the NRC. Strategies to comply with new provisions would need to be developed.

Workforce Dynamics

The agency's most valuable resource is its staff, and its ability to recruit, hire, train, motivate, and retain qualified staff in a competitive job market is critical to meeting its strategic goals. The agency must also maintain a high-performing, diverse, engaged, and flexible workforce supported by a healthy organizational culture with a focus on safety, security, and continuous improvement to meet mission needs. This will require the NRC to better understand and meet the needs of its employees and become a more flexible and agile organization.

Information Technology Advances

Information technology developments in an increasingly mobile society will impact the agency's operations. NRC will need to take advantage of technology to enable an effective and efficient work environment. It is essential to maintain a reasonable balance between the need to maximize technological innovation to perform our mission and the secure use and protection of sensitive and proprietary information. The NRC needs to be aware of the heightened risk that sensitive information held by the agency or its licensees could be lost, misplaced, or intercepted and obtained by unauthorized users. The agency will need to develop and maintain a knowledgeable workforce capable of addressing both these technology and security challenges.

Appendix B—Evaluations and Research

In developing this strategic plan, the NRC used the following information from research and program evaluations to assess the efficacy of existing programs and to help shape the agency's objectives and strategies:

- The annual Abnormal Occurrence Report for Congress¹ documents unscheduled incidents or events, across all activities regulated by the NRC and by the Agreement States that the NRC determines to be significant from the standpoint of public health or safety and of significant stakeholder interest.
- The Reactor Oversight Process (ROP)² is a risk-informed, tiered approach for ensuring the safety of nuclear power plants. It includes inspecting licensee performance, assessing the safety significance of identified performance deficiencies, taking appropriate actions, and ensuring that licensees correct deficiencies. The NRC uses the ROP Self-Assessment Program to evaluate the overall effectiveness of the ROP in meeting its pre-established goals and intended outcomes, in examining the efficacy of recent changes to the program, and by verifying agency adherence to program governance.
- The Accident Sequence Precursor (ASP) Program³ systematically evaluates U.S. nuclear plant operating experience to identify, document, and rank those operating events that were most significant in terms of the potential for inadequate core cooling and severe core damage. The results of the ASP Program are made publicly available as precursors are identified, and a summary report documents the results of the program on an annual basis.
- The Integrated Materials Performance Evaluation Program conducts periodic reviews of NRC regional offices and Agreement States⁴ by evaluating their performance in overseeing the safe and secure use of radioactive materials.

Review of this information confirmed that the NRC has a strong, solid, and mature regulatory program as evidenced by the achievement of the strategic outcomes in past strategic plans and historical licensee performance trends. The data demonstrate that licensees have made long-term improvements in nuclear safety and security. However, these reviews and significant external events revealed areas for continued improvement and regulatory vigilance.

Planned program evaluations for FYs 2018–2022 appear in Appendix C.

¹ The Abnormal Occurrence Reports are available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0090/>.

² Information about the ROP can be found at <https://www.nrc.gov/reactors/operating/oversight.html>.

³ Information about the ASP Program can be found at: <https://www.nrc.gov/docs/ML1715/ML17153A364.html>.

⁴ Information about the Integrated Materials Performance Evaluation Program and the associated reports are available at <https://scp.nrc.gov/impeptools.html>.

Appendix C—Planned Program Reviews

Abnormal Occurrence (AO) Report

Expected Completion Date: Annually.

Objective: To ensure that licensed activities are conducted safely, the AO Report summarizes the review of and response to industry operating experience.

Scope: The AO Report helps to identify safety and security deficiencies and ensure that corrective actions are taken to prevent recurrence. Through the assessment, the U.S. Nuclear Regulatory Commission (NRC) and industry review and evaluate operating experience to identify safety concerns, and the NRC responds to risk-significant issues through licensing reviews, inspections, and enhancements to its regulations.

Accident Sequence Precursor (ASP) Program

Expected Completion Date: Annually.

Objective: The ASP Program systematically evaluates U.S. nuclear power plant operating experience to identify and document the operating events that involve potential precursors to inadequate core cooling and severe core damage and to inform potential lessons learned for use by NRC licensing, oversight, and generic issues programs.

Scope: The annual assessment (1) provides a comprehensive, risk-informed view of nuclear power plant operational experience and a measure for trending core damage risk at nuclear power plants, (2) provides a partial check on dominant core damage scenarios predicted by probabilistic risk assessments, (3) provides feedback for regulatory activities, and (4) helps the agency monitor performance against the safety goal in the agency's strategic plan.

Agency Action Review Meeting (AARM)

Expected Completion Date: Annually.

Objective: Through the AARM, senior agency management reviews the operational safety performance of reactor and materials licensees as part of the NRC's Reactor Oversight Process (ROP), the Construction Reactor Oversight Process (cROP), and the materials licensee oversight process.

Scope: The AARM is an integral part of the evaluative process used by the agency to ensure the operational safety performance of nuclear licensees. It includes informational and confirmatory discussions of those plants and licensees that have significant performance issues and safety or security concerns. During the AARM, senior managers evaluate the appropriateness of agency actions that have been taken. They also identify any additional actions as applicable for (1) plants with significant performance problems using data compiled during the end-of-cycle review and in the ROP Action Matrix, (2) plants under construction with significant performance issues using data compiled during the construction end-of-cycle review and in the cROP Action Matrix, and (3) nuclear materials licensees, including fuel cycle facilities, with significant safety or security issues.

Construction Reactor Oversight Process (cROP)

Expected Completion Date: Annually.

Objective: The annual cROP self-assessment has three objectives: (1) to determine whether the ongoing program is effective in supporting the achievement of the performance goals and the agency's strategic goals, (2) to provide timely, objective information to inform program planning and to develop recommended improvements to the cROP, and (3) to inform the Commission, NRC senior management, and the public of the results of the cROP self-assessment program, including any conclusions and resulting improvement actions.

Scope: The annual self-assessment includes (1) an evaluation of the construction inspection program; the construction significance determination process; the closure verification program for inspections, tests, analyses, and acceptance criteria (ITAAC); the construction enforcement program; and the construction assessment program, (2) discussions and assessments of cROP communications and cROP resource expenditures, and (3) updates on recent issues associated with ITAAC and recent domestic and international construction experience being incorporated in the NRC's programs.

Integrated Materials Performance Evaluation Program Reviews of NRC Regional Offices and Agreement States

Expected Completion Date: Each Agreement State and NRC regional review is usually conducted every 4 years.

Objective: Program evaluations determine whether the Agreement States and NRC regional offices are conducting programs that meet the objectives set out in Management Directive 5.6, "Integrated Materials Performance Evaluation Program (IMPEP)," dated February 26, 2004.

Scope: The evaluations include common criteria and criteria specific to the activities and responsibilities of the Agreement States and NRC regional offices. The staff factors any recommendations into future reviews of the materials programs.

Operator Licensing Program

Expected Completion Date: Annually.

Objective: The annual evaluation of the Operator Licensing Program ensures that the program is effective and consistently implements the requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 55, "Operators' Licenses"; the guidance in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11, issued February 2017; and other policy documents.

Scope: The annual evaluation of the Operator Licensing Program involves audits of one or two written examinations and operating tests in each NRC region to ensure consistent quality, level of difficulty, administration, and grading. The evaluation also includes a detailed review of the operator-licensing function of one regional office each year, so that each region is reviewed once every 4 years. During the other 3 years, the regions perform a similar self-assessment. The detailed reviews assess nine functional areas: (1) examination administrative requirements, (2) written examinations, (3) operating tests, (4) operator requalification program, (5) regional operations, (6) resource utilization, (7) regional and program office communications, (8) regional differences, and (9) cross-regional examination participation.

Performance Management Framework

Expected Completion Date: Quarterly and annually.

Objective: To ensure that NRC is meeting its performance measures and program goals.

Scope: Annually, the agency reviews and updates its performance goals and indicators to ensure alignment with applicable Federal performance management requirements and guidance. This includes both externally reported performance indicators (e.g., in the agency's Annual Performance Plan, Annual Performance Report, and Congressional Budget Justification). Additionally, each quarter, the agency conducts a review of performance data that span all areas of agency operations, to seek improvements in effectiveness and efficiency.

Reactor Oversight Process (ROP)

Expected Completion Date: Annually.

Objective: The annual ROP evaluation has two objectives: (1) to determine whether the ongoing program is effective in supporting the achievement of the performance goals and the

agency's strategic goals, and (2) to provide timely, objective information to inform program planning and improvements.

Scope: The evaluation includes (1) the efficiency of the agency's baseline inspection program, (2) the effectiveness of the significance determination process, (3) the usefulness of current performance indicators for enhancing agency planning and response, and (4) the effectiveness of the assessment program in prescribing appropriate regulatory oversight to those plants with performance deficiencies.

Support Service Evaluations

Expected Completion Date: Varies on a periodic basis (e.g., quarterly, annually, and biennially) by area.

Objective: Each evaluation will determine whether the NRC's support services (e.g., administrative services, human capital management, financial management, contract management, and information technology and information management) are being delivered in an effective and efficient manner and whether internal and external customer needs and requirements are met.

Scope: Various evaluation tools (e.g., surveys, questionnaires, and data analysis) will determine (1) whether the program area delivers the promised results, and (2) the level of customer satisfaction.

Appendix D—Glossary

Agreement State: A State that has signed an agreement with the U.S. Nuclear Regulatory Commission (NRC), or its predecessor the Atomic Energy Commission, pursuant to § 274b. of the Atomic Energy Act of 1954, as amended, which allows the State to regulate certain uses of radioactive materials within the State.

Byproduct Material: As defined by NRC regulations, includes any radioactive material (except enriched uranium or plutonium) produced by a nuclear reactor. It also includes the tailings or wastes produced by the extraction or concentration of uranium or thorium or the fabrication of fuel for nuclear reactors. Additionally, it is any material that has been made radioactive through the use of a particle accelerator or any discrete source of radium-226 used for a commercial, medical, or research activity. In addition, the NRC, in consultation with the U.S. Environmental Protection Agency, U.S. Department of Energy, U.S. Department of Homeland Security, and others, can designate as byproduct material any discrete source of naturally occurring radioactive material, other than source material, that it determines would pose a threat to public health and safety or the common defense and security of the United States.

Effectiveness: The degree to which the outcome of an activity, process, or program contributes to achieving the agency's strategic goals, objectives, or strategies.

Efficiency: The degree to which the resources needed to produce an outcome can be minimized without reducing the outcome's effectiveness.

High-Level Radioactive Waste (HLW): The highly radioactive material produced as byproducts of fuel reprocessing or of the reactions that occur inside nuclear reactors. HLW includes the following:

- irradiated spent nuclear fuel discharged from commercial nuclear power reactors
- the highly radioactive liquid and solid materials resulting from the reprocessing of spent nuclear fuel that contain fission products in sufficient concentrations (this includes some reprocessed HLW from defense activities and a small quantity of reprocessed commercial HLW)
- other highly radioactive materials that the Commission determines require permanent isolation

National Materials Program: The broad collective effort within which both the NRC and the Agreement States function in carrying out their respective regulatory programs for radioactive material.

Nuclear Safety Culture:⁵ As it applies to the regulated community, the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety and security over competing goals to ensure the protection of people and the environment.

⁵ The NRC's Safety Culture Policy Statement, published in Volume 76 of the *Federal Register*, page 34773 (76 FR 34773), on June 14, 2011, is available at <http://www.gpo.gov/fdsys/pkg/FR-2011-06-14/pdf/2011-14656.pdf>.

Performance-Based Regulation: A regulatory approach that focuses on desired, measurable outcomes rather than on prescriptive processes, techniques, or procedures.

Performance-based regulation leads to defined results without specific direction on how those results are to be obtained. At the NRC, performance-based regulatory actions focus on identifying performance measures that ensure an adequate safety margin and offer incentives for licensees to improve safety without formal regulatory intervention by the agency.

Radioactive Material: As used in this strategic plan, refers to any substance that produces ionizing radiation and is regulated by the NRC. The NRC regulates all civilian uses of material producing ionizing radiation, including the use of such substances for nuclear power generation, all aspects of the nuclear fuel cycle, medical and government uses, and research and industrial applications.

Regulatory Framework: The interrelated elements that form the basis for the NRC's oversight of the use of radioactive materials, including (1) the NRC's mandate from Congress in the form of enabling legislation, (2) the NRC's licenses, orders, and regulations in Title 10 of the *Code of Federal Regulations* (10 CFR), (3) regulatory guides, review plans, and other documents that clarify and guide the application of NRC requirements and amplify agency regulations, (4) the licensing and inspection procedures used by NRC employees, and (5) the agency's enforcement guidance.

Risk Assessment: A systematic method for addressing three questions as they relate to the performance of a particular system:

- (1) What can go wrong?
- (2) How likely is it?
- (3) What are the consequences?

Risk-Informed: An approach to decisionmaking that considers risk insights along with other factors such as engineering judgment, safety limits, and redundant or diverse safety systems. Such an approach is used to establish requirements that better focus licensee and regulatory attention on design and operational issues and ensure that such attention is commensurate with the importance of those issues to public health and safety.

Risk-Informed Decisionmaking: An approach to regulatory decisionmaking that considers insights from probabilistic risk assessment along with other engineering insights.

Risk-Informed Regulation: An approach to regulation taken by the NRC that incorporates an assessment of safety significance or relative risk. This approach ensures that the regulatory burden imposed by an individual regulation or process is appropriate to its importance in protecting public health and safety and the environment.

Risk Insights: The results and findings that come from risk assessments. They may include improved understanding of the likelihood of possible outcomes, sensitivity of the results to key assumptions, relative importance of the various system components and their potential interactions, and the areas and magnitude of the uncertainties.

Source Material: Uranium or thorium, or any combination thereof, in any physical or chemical form, or ores which contain by weight, 1/20 of 1 percent (0.05 percent) or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

Special Nuclear Material: Plutonium, uranium 233, or uranium enriched in the isotope uranium 233 or in the isotope uranium 235; any other material which the Commission, pursuant to the provisions of section 51 of the Atomic Energy Act of 1954, as amended, determines to be special nuclear material; or any material artificially enriched by any of the foregoing (but does not include source material).

Spent Nuclear Fuel: Nuclear reactor fuel that has been used to the extent that it can no longer effectively sustain a chain reaction.

Stakeholders: Members of the public; public interest groups, Federal, State, Tribal, and local agencies; non-governmental organizations; and license applicants and licensees with a specific interest in a given topic.

Standards: Technical requirements and recommended practices for any device, apparatus, system, or phenomenon associated with a specific field.