Draft Environmental Assessment for the Proposed Rule—Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors
Docket No. NRC-2019-0062

U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards

<<MONTH YEAR**>>**

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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

10 CFR	Title 10 of the *Code of Federal Regulations*
ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Documents Access and Management System
AERI	alternative evaluation for risk insights
EA	environmental assessment
FFD	fitness-for-duty
FR	*Federal Register*
LWR	light-water reactor
NEIMA	Nuclear Energy Innovation and Modernization Act
NRC	U.S. Nuclear Regulatory Commission
PRA	probabilistic risk assessment
SECY	Commission paper
SRM	staff requirements memorandum
SSC	structure, system, and component

1 INTRODUCTION

As announced in the *Federal Register* (FR) (85 FR 71002), the U.S. Nuclear Regulatory Commission (NRC) is developing new requirements for licensing and regulating advanced nuclear reactors. The new regulations would adopt technology-inclusive approaches, and include the appropriate use of risk-informed and performance-based techniques to provide the necessary flexibility for licensing and regulating a variety of nuclear reactor technologies and designs as commercial nuclear plants. This present rulemaking is required by the Nuclear Energy Innovation and Modernization Act (NEIMA), which directs the NRC to "complete a rulemaking to establish a technology-inclusive, regulatory framework for optional use by commercial advanced nuclear reactor applicants for new reactor license applications" by December 31, 2027.

This proposed rulemaking would establish alternative regulatory requirements that may be used by applicants for licenses, certifications, or approvals from the NRC. The regulatory requirements that may be developed by this rulemaking would use risk-informed and performance-based methods that are flexible and practicable for adaptation to a variety of nuclear reactor technologies, including non-light-water reactors (non-LWRs) and small modular reactors.

The NRC has prepared this environmental assessment (EA) in compliance with the agency's environmental review requirements in Title 10 of the *Code of Federal Regulations* (10 CFR or Title 10) Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," which implement the National Environmental Policy Act of 1969, as amended. This EA evaluates and documents the potential environmental impacts resulting from the proposed rulemaking related to amending the regulations by creating an alternative regulatory framework for licensing commercial nuclear plants.

1.1 Background

The NRC has long been aware that nuclear technologies change, requiring the development of new policies and guidance. The NRC published its first policy statement on the regulation of advanced nuclear reactors in the FR on July 8, 1986 (51 FR 24643), with the objective of providing all interested parties, including the public, with the Commission's views concerning the desired characteristics of advanced nuclear reactor designs. At that time, the term "advanced nuclear reactor" meant a reactor design that is significantly different from the current generation of light-water reactors (LWRs) under construction or in operation in 1986. Such advanced reactors included certain high-temperature gas-cooled reactors, liquid metal reactors, and LWRs of innovative design (51 FR 24643). Other designs commonly referred to as advanced reactors include molten salt reactors and microreactors. The NRC acknowledged in its "Report to Congress: Advanced Reactor Licensing" (NRC 2012) that, while the safety philosophy inherent in current regulations applies to all reactor technologies, the specific and prescriptive aspects of those regulations clearly focus on the current fleet of large LWRs.

To respond to increasing stakeholder interest in reactors that differ significantly from the existing U.S. fleet of LWRs, the NRC developed its "NRC Vision and Strategy: Safely Achieving Effective and Efficient Non-Light Water Reactor Mission Readiness," dated December 2, 2016 (NRC 2016) (NRC Vision and Strategy report). This report identified a wide range of planned activities to be completed in the short, medium, and long terms, including a potential long-term rulemaking to establish a new regulatory framework for non-LWR licensing that would be risk-informed, performance-based, and technology-inclusive. At the same time, Congress began

considering legislation related to advanced nuclear reactors. Signed into law in January 2019, NEIMA requires the NRC to "complete a rulemaking to establish a technology-inclusive, regulatory framework for optional use by commercial advanced nuclear reactor applicants for new reactor license applications" by December 31, 2027. The staff subsequently developed a rulemaking plan and requested Commission approval to conduct such a rulemaking in SECY-20-0032, "Rulemaking Plan on 'Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors (RIN-3150-AK31; NRC-2019-0062),'" dated April 13, 2020 (NRC 2020a). In Staff Requirements Memorandum (SRM)-SECY-20-0032, dated October 2, 2020 (NRC 2020b), the Commission approved the staff's approach for the proposed rulemaking.

Current regulations for nuclear reactor licensing are found in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." The proposed rulemaking is expected to create an alternate set of regulations in 10 CFR Part 53, "Risk-Informed, Technology-Inclusive Regulatory Framework for Commercial Nuclear Plants" (Part 53), building on the NRC Vision and Strategy report and the statutory provisions in NEIMA section 103(a)(4).

Because NEIMA gives the NRC discretion regarding the content and scope of the rule, the staff solicited ideas from a variety of stakeholders on possible approaches to establishing a technology-inclusive framework and the challenges associated with licensing and regulating new technologies for commercial nuclear plants. As announced in the November 6, 2020, FR notice (85 FR 71002) and which was extended on December 10, 2021 (86 FR 70423), the NRC staff released for public comment preliminary proposed rule language. The staff accepted comments on the preliminary proposed rule language through August 31, 2022. As the NRC staff revised the rule in response to public comments, it expanded the Part 53 scope to include not only non-LWRs but also other reactor designs, including light-water designs, because the technology-neutral methodology in Part 53 was sufficiently robust to accommodate any design.

As stated in NEIMA, the purpose of the statute is, in part, to provide "a program to develop the expertise and regulatory processes necessary to allow innovation and the commercialization of advanced nuclear reactors."

1.2 Proposed Action

The proposed action is a rulemaking that would adopt technology-inclusive approaches and include the appropriate use of risk-informed and performance-based techniques to provide the necessary flexibility for licensing and regulating a variety of commercial nuclear plant technologies and designs. Through this rulemaking, the NRC is proposing to amend the regulations by creating two alternative regulatory frameworks, both within Part 53, for licensing reviews of nuclear reactors and for regulating them through their operating lives and to the point of decommissioning. As part of the rulemaking effort, the NRC remained engaged with the industry, Federal agencies, and public stakeholders to identify and develop the necessary technical bases and regulatory guidance to support the rulemaking.

1.3 Purpose of and Need for Proposed Action

Current regulations were written to address the licensing challenges related to large LWRs licensed under 10 CFR Part 50 and 10 CFR Part 52, but they do not reflect advances in nuclear fuel designs or passive engineered safety features, nor the use of high-assay low-enriched uranium that may be used in new reactor designs. The NRC is proposing to add a new, alternative part to its regulations that would set out risk-informed, performance-based, and

technology-inclusive frameworks for licensing and regulating commercial nuclear plants, including but not limited to non-LWR designs.

This new approach would (1) reduce requests for exemptions from the current requirements in 10 CFR Part 50 and 10 CFR Part 52, (2) continue to provide reasonable assurance of adequate protection of public health and safety and the common defense and security, (3) promote regulatory stability, predictability, and clarity, (4) establish new requirements to address non-LWR technologies, (5) recognize technological advancements in reactor design, and (6) credit the response of certain nuclear reactor designs to postulated accidents, including slower transient response times and the relatively small and slow release of fission products.

The proposed rulemaking would add Part 53 and a new technology-inclusive, risk-informed, and performance-based framework in 10 CFR Part 26, "Fitness for Duty [FFD] Programs," and 10 CFR Part 73, "Physical Protection of Plants and Materials," in keeping with the NRC Vision and Strategy report and NRC actions required to satisfy the statutory provisions in NEIMA section 103(a)(4). This rulemaking would also make conforming changes throughout 10 CFR by adding references to Part 53 where necessary.

The requirements in Part 53 would support the wide variety of potential nuclear reactor technologies and power levels that might be developed and deployed for electrical generation or for commercial purposes other than supplying electricity to the Nation's electrical grids. The proposed Part 53 regulations would provide options for the roles of several risk assessment techniques and design approaches through two frameworks. A regulatory framework that uses probabilistic risk assessments (PRAs) to assess risks, help establish technical requirements, and manage operations would be referred to as "Framework A," which would be established primarily in Subparts B through K. An alternative framework, referred to as "Framework B," would include deterministic and risk-informed acceptance criteria similar to those in 10 CFR Part 50 and 10 CFR Part 52 but revised to better address a variety of commercial reactor technologies that may be licensed following this rulemaking. Framework B would be primarily established in Subparts N through U.

1.4 Structure of Part 53

Framework A

Subparts B through K of Part 53 would define "Framework A" and would provide high-level performance criteria and relevant requirements throughout major stages of the life cycle of commercial nuclear plants. This framework would support a systems engineering approach to the design, licensing, operation, and ultimate decommissioning of future commercial nuclear plants. The requirements in Framework A would also support performance-based approaches, in which programs and monitoring during each phase could be used to confirm predictions and possibly compensate for uncertainties associated with reactor technologies, materials, and other innovations that currently lack operating experience. The performance-based proposal in Framework A of Part 53 would also include a flexible and graded approach to regulatory controls based on the role of a particular structure, system, and component (SSC), human action, or program in (1) limiting the risk of an immediate threat to public health and safety or the environment, or (2) maintaining the overall risks to the public below accepted standards through balanced measures to prevent and mitigate possible events.

Framework B

Subparts N through U of Part 53 would define “Framework B” and would provide technology-inclusive regulations similar to the traditional requirements in 10 CFR Part 50 and 10 CFR Part 52 that were developed primarily for LWR designs. Framework B would maintain the traditional role of specific design rules, including use of the single failure criterion as a tool in the reactor safety review process and deterministic approaches to define licensing-basis events and performance requirements for SSCs. Principal design criteria would be established in the initial stages of design, and licensing and subsequent design activities would ensure that these criteria are met. Framework B would also provide for the optional use of an alternate evaluation for risk insights (AERI) approach for applications that meet certain entry criteria by demonstrating that the bounding accident of such a facility would be of very low consequence. Pursuit of the AERI approach would allow an applicant to consider risk without performing a plant-specific PRA.

Other Considerations

The Part 53 rulemaking also makes changes to existing parts of Title 10 that would be required for facility construction, operation, and decommissioning. One example is the fitness-for-duty requirements in 10 CFR Part 26. Entities using Part 53 would implement a new Subpart M, “Fitness for Duty Programs for Facilities Licensed Under Part 53,” of 10 CFR Part 26 that would establish a risk-informed, performance-based FFD framework that is technology-inclusive of various drug and alcohol screening methods and affords flexibility in the use of biological specimens. The staff based Subpart M on the objective-based FFD requirements in 10 CFR Part 26 and Subpart K, “FFD Programs for Construction,” of 10 CFR Part 26. Proposed Subpart M was also supplemented by existing 10 CFR Part 26 requirements in Subparts A through I, N, and O to help ensure program effectiveness, maintain worker protections, and align with FFD program implementation by licensees under 10 CFR Part 50; 10 CFR Part 52; and 10 CFR Part 70, “Domestic Licensing of Special Nuclear Material.”

Some proposed revisions to 10 CFR Part 73 would establish a new technology-inclusive, consequence based approach for a range of security areas, including physical security, cybersecurity, and access authorization for commercial nuclear reactors. The NRC applied operating experience to improve regulatory flexibility for a licensee’s implementation of security requirements. The proposed 10 CFR 73.100 would provide a performance-based regulatory framework for the design, implementation, and maintenance of a physical protection program and security organization for certain commercial nuclear plants licensed under Part 53. The proposed 10 CFR 73.110 for protection of digital computer and communication systems and networks would require licensees to demonstrate reasonable assurance of protection against cyberattacks in a manner that is commensurate with the potential consequences from those attacks. The proposed 10 CFR 73.120 would provide an alternate approach to the existing framework for access authorization under 10 CFR 73.55, “Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage”; 10 CFR 73.56, “Personnel access authorization requirements for nuclear power plants”; and 10 CFR 73.57, “Requirements for criminal history records checks of individuals granted unescorted access to a nuclear power facility, a non-power reactor, or access to Safeguards Information,” commensurate with risk and consequences to public health and safety.

1.5 Conforming Changes

The rulemaking would make conforming changes throughout Title 10. Table 1.5-1 lists parts under Title 10 with conforming changes. Most of these changes would only insert the appropriate Part 53 cross-reference and are considered an administrative change.

However, the NRC would add text and directions to several regulations for clarification. A review of each of these conforming changes follows:

10 CFR 50.47 Emergency plans. This conforming change provides emergency planning requirements for early site permit applicants under Part 53.

10 CFR 72.218 Termination of licenses. Additional text would extend each regulation to a license under Part 53. Specifically, the conforming change would be: "…or a reactor operating or combined license under 10 CFR part 53 and submitted under § 53.1575 or 53.6075."

10 CFR 73.55 Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage. Additional text would extend the regulation to applicants for a license and holders of a license under Part 53.

10 CFR 171.15 Annual fees: Non-power production or utilization licenses, reactor licenses, and independent spent fuel storage licenses. The regulatory changes in this section would specify when annual fees begin for licensees under 10 CFR Part 50, 10 CFR Part 52, 10 CFR Part 53, or 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste," with respect to terminology under the associated parts (e.g., "startup testing," "power ascension testing," and "in decommissioning or possession only status").

As such, the conforming text changes in the above sections are administrative actions with no physical environmental effect and provide for the appropriate administrative and regulatory framework for commercial nuclear reactors licensed under Part 53, including advanced nuclear reactors.

Table 1.5-1 10 CFR Parts with Conforming Changes

Part No.	Part Title
1	Statement of Organization and General Information
2	Agency Rules of Practice and Procedure
10	Criteria and Procedures for Determining Eligibility for Access to Restricted Data or National Security Information or an Employment Clearance
11	Criteria and Procedures for Determining Eligibility for Access to or Control over Special Nuclear Material
19	Notices, Instructions and Reports to Workers: Inspection and Investigations
20	Standards for Protection Against Radiation
21	Reporting of Defects and Noncompliance
25	Access Authorization
26	Fitness for Duty Programs
30	Rules of General Applicability to Domestic Licensing of Byproduct Material
40	Domestic Licensing of Source Material
50	Domestic Licensing of Production and Utilization Facilities

51	Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions
70	Domestic Licensing of Special Nuclear Material
72	Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste
73	Physical Protection of Plants and Materials
74	Material Control and Accounting of Special Nuclear Material
75	Safeguards on Nuclear Material—Implementation of Safeguards Agreements Between the United States and the International Atomic Energy Agency
95	Facility Security Clearance and Safeguarding of National Security Information and Restricted Data
140	Financial Protection Requirements and Indemnity Agreements
150	Exemptions and Continued Regulatory Authority in Agreement States and in Offshore Waters Under Section 274
170	Fees for Facilities, Materials, Import and Export Licenses, and Other Regulatory Services Under the Atomic Energy Act of 1954, as Amended
171	Annual Fees for Reactor Licenses and Fuel Cycle Licenses and Materials Licenses, Including Holders of Certificates of Compliance, Registrations, and Quality Assurance Program Approvals and Government Agencies Licensed by the NRC

2 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

This proposed rulemaking responds to NEIMA and amends various parts of Title 10, including creating Part 53 to provide an alternative regulatory framework for licensing future commercial nuclear plants. The new alternative requirements include the use of risk-informed and performance-based techniques to provide flexibility for licensing and regulating a variety of technologies and designs for commercial nuclear reactors, including advanced nuclear reactors. While providing additional flexibilities in plant design and operation, the proposed Part 53 would ensure that commercial nuclear plants licensed under this alternative are at least as safe as those previously licensed by the NRC.

This EA focuses on those aspects of the Part 53 rulemaking by which a licensee, following the proposed requirements, could affect the environment in a manner equivalent to a facility licensed under 10 CFR Part 50 or 10 CFR Part 52. Most environmental issues such as land use, aquatic impacts, or air quality would be the same for a given facility regardless of whether it is licensed under Part 53 or the current framework. However, Part 53 contains some safety requirements that differ from those under the existing framework. Therefore, the following analysis focuses on whether these different safety requirements would cause a facility licensed under Part 53 to have any different environmental impacts than one licensed under the current regulations.

Frameworks A and B provide a similar level of protection as the regulations in 10 CFR Part 50 and 10 CFR Part 52, but different sections of the rule do so in different ways. The requirements from a number of sections in Framework A and Framework B are based on existing regulations in 10 CFR Part 50 and 10 CFR Part 52, with minor modifications and changes to internal references. Examples include requirements related to decommissioning in Subpart G in Framework A and Subpart Q in Framework B, which would be based on 10 CFR 50.75, “Reporting and recordkeeping for decommissioning planning,” and 10 CFR 50.82, “Termination of license.” In addition, a number of sections in Framework B would not be substantially different from existing regulations, and would include modifications that adopt equivalent technical requirements. The staff has developed a table to assist stakeholders in understanding the derivation of key technical and programmatic requirements in Framework B (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22349A683), which is incorporated by reference in this document. Sections of Part 53 that are based on existing regulations would result in no new or additional physical environmental impacts than would occur under regulations in 10 CFR Part 50 or 10 CFR Part 52 or change their prior rulemaking evaluations under the National Environmental Policy Act of 1969, as amended. Other sections of Part 53 that include new requirements are evaluated below.

2.1 Subparts Common to Both Frameworks

Subpart A, “General Provisions,” would provide general provisions pertinent to all applicants and licensees under either Framework A or Framework B and would contain definitions common to both frameworks. Subpart A would address purpose, scope, definitions, written communications, employee protections, completeness and accuracy of information, exemptions, standards for review, jurisdictional limits, attacks and destructive acts, and information collection requirements. The requirements in Subpart A would be largely equivalent to the general requirements in 10 CFR Part 50 that pertain to all 10 CFR Part 50 applicants and licensees (e.g., 10 CFR 50.1 through 10 CFR 50.13) and would reference the corresponding regulations in Part 53 in place of references to 10 CFR Part 50. Therefore, since Subpart A would generally

address administrative processes equivalent to 10 CFR Part 50, there would be no significantly different environmental impacts for implementation of this rule.

2.2 Framework A Subparts with Related Framework B Subparts

Subparts B through K of Part 53 provide high-level performance criteria and requirements throughout major stages of the life cycle of commercial nuclear plants. The potential environmental impacts of these subparts are evaluated below. There are also Framework B subparts that parallel those in Framework A. The discussions below will evaluate both frameworks' subparts together when appropriate.

Subpart B—Technology-Inclusive Safety Requirements

Subpart B would provide technology-inclusive safety criteria that would serve as performance standards for the subsequent performance-based requirements used throughout Framework A. Subsequent subparts would define how specific activities during various stages of the life cycle of a commercial nuclear plant support meeting these high-level performance standards. The performance standards in Subpart B would also establish a means to determine appropriate regulatory controls for SSCs, human actions, and programs in the subsequent subparts in Framework A. Requirements related to non-safety-related SSCs warranting special treatment would be distinguished from safety-related SSCs throughout Framework A, with more flexibility afforded to applicants and licensees on how non-safety-related SSCs would be used in the design and maintained during plant operations. Applicants would identify safety functions and steps for meeting safety criteria specified in Subpart B; identify and address licensing-basis events, and provide defense in depth. Subpart B would also include requirements for normal operations, such as occupational doses and normal operation-related effluent controls. These requirements would provide a level of safety equivalent to current requirements in 10 CFR Part 20, "Standards for Protection Against Radiation"; 10 CFR Part 50; and 10 CFR Part 52. Therefore, there would be no significantly different environmental impacts when implementing Subpart B.

Subpart C—Design and Analysis Requirements

Subpart C would address requirements for the design of commercial nuclear plants and the supporting analyses, including the analyses of licensing-basis events, to demonstrate that the performance standards in proposed Subpart B can be satisfied. This would include establishing design objectives, design features, and functional design criteria to ensure that individual doses to members of the public and plant workers would not exceed established regulatory limits and would be as low as reasonably achievable. Certain sections have provisions that would be similar to those in sections in 10 CFR Part 50. This subpart would also determine safety classifications, ensure sufficient safety margins to justify operational flexibility for application to other areas, and address quality assurance for design and analysis activities. Thus, Subpart C would be consistent with existing dose regulations, require the establishment of set safety criteria, and incorporate similar requirements from 10 CFR Part 50 to achieve a level of safety equivalent to the current regulations in 10 CFR Part 50 and 10 CFR Part 52. Therefore, implementation of Subpart C would impose no significantly different environmental impacts than 10 CFR Part 50 and 10 CFR Part 52.

Subparts D and N—Siting Requirements

Subparts D and N would state requirements for siting commercial nuclear plants and would serve the role provided by 10 CFR Part 100, "Reactor Site Criteria," for nuclear reactors

licensed under 10 CFR Part 50 and 10 CFR Part 52. Subparts D and N would include many requirements similar to those in 10 CFR Part 100. The general reason for establishing siting requirements would remain the same as it has been historically, which is to ensure that licensees and applicants assess the impact the site environs may have on a commercial nuclear plant (e.g., external hazards) and, conversely, the potential adverse health and safety impacts a commercial nuclear plant may have on nearby populations. Thus, by implementing Subparts D and N, there would be no significantly different environmental impacts than under the current regulatory framework.

Subparts E and O—Construction and Manufacturing Requirements

Subparts E and O would address requirements for the construction of commercial nuclear plants and the possible factory fabrication of reactors using a manufacturing license. The language for construction-related activities would reflect current requirements in 10 CFR Part 50 without any fundamental changes. The proposed language for requirements for manufacturing activities would largely mirror those for construction-related activities. However, the NRC has updated the proposed manufacturing requirements from the current requirements in Subpart F of 10 CFR Part 52 to better accommodate the possible factory fabrication of manufactured reactors. These subparts would not address the manufacturing of specific components outside the scope of a manufacturing license. Subparts E and O would refer to NRC regulations in 10 CFR Part 30, “Rules of General Applicability to Domestic Licensing of Byproduct Material”; 10 CFR Part 40, “Domestic Licensing of Source Material”; and 10 CFR Part 70 for the requirements on controlling radioactive materials. Because Subparts E and O would mirror existing construction regulations and would refer to specific regulations such as those in 10 CFR Part 30, 10 CFR Part 40, and 10 CFR Part 70, implementation of Subparts E and O would provide an equivalent level of safety as the current regulatory framework with no significantly different environmental impacts.

Subparts F and P—Requirements for Operation

Subparts F and P would define the requirements for the operations phase of a commercial nuclear plant to ensure that the safety criteria and other areas of Part 53 would continue to be satisfied throughout the plant’s lifetime. Subparts F and P would provide a framework to address requirements such as operational programs, staffing, training, personnel qualifications, and human factors engineering in a manner that is risk-informed, technology-inclusive, performance-based, and flexible in nature. The requirements for managing plant equipment during operations and the operational programs sections would be similar to the requirements in 10 CFR Part 50. The draft white paper “Risk-Informed and Performance-Based Human-System Considerations for Advanced Reactors,” issued March 2021 (NRC 2021), details the underlying approach for staffing-related requirements. Key considerations would include the recognition that staffing, operator qualifications, and human factors engineering each represent interconnected areas that must be approached in an integrated manner and, furthermore, that safety functions, including how they are fulfilled, provide an effective method for informing technology-inclusive requirements. The NRC will support the implementation of these requirements, in part, with guidance related to staffing, personnel qualifications, and human factors engineering reviews. Human factors engineering programs would need to demonstrate assurance that humans (e.g., operators, supervisors, technicians, and other appropriate personnel) are able not only to operate the plant but also to perform the full range of tasks necessary to ensure the continued availability of plant-specific safety functions in an effective manner. Thus, these advanced reactors would provide a level of safe operations equivalent to

the current regulatory framework with no significantly different environmental impacts from implementation of this rule.

Subparts G and Q—Decommissioning Requirements

Subpart G and Q requirements for decommissioning a commercial nuclear plant would be adopted from the current regulations in 10 CFR 50.75 and 10 CFR 50.82. Although the NRC has copied the requirements from those sections of 10 CFR Part 50 into proposed Subparts G and Q with relatively few changes, they are reorganized to fit within the Part 53 structure. The few changes were primarily to make the proposed requirements more technology inclusive by adding alternatives within sections, whereas the NRC developed some requirements in 10 CFR Part 50 specifically for LWRs. Since implementation of Subparts G and Q would address processes equivalent to those in 10 CFR Part 50, there would be no significantly different environmental impacts. It must be noted that Subparts G and Q would not address the final disposition of potential transportable reactors that could involve delivery of a fueled manufactured reactor module and the subsequent removal of that module to a center for refurbishment or waste disposal. If needed, the NRC will address the requirements for transportable reactors removed from commercial nuclear plant sites through existing regulations or a possible future rulemaking.

Subparts H and R—Licenses, Certifications, and Approvals

Subparts H and R would address requirements for applications for Part 53 licenses, certifications, or approvals for commercial nuclear plants. The proposed subparts would address general application requirements as well as specific regulations for limited work authorizations, early site permits, standard design approvals, standard design certifications, manufacturing licenses, construction permits, operating licenses, and combined licenses. Accordingly, the proposed requirements would cover all of the licensing, certification, and approval processes currently addressed under 10 CFR Part 50 and 10 CFR Part 52, with the exception of the process for early review of site suitability issues. Therefore, Subparts H and R would impose no new or additional environmental impacts.

Subparts I and S—Maintaining and Revising Licensing-Basis Information

Subparts I and S would define the requirements and processes for maintaining licensing-basis information by holders of early site permits, construction permits, operating licenses, and combined licenses. Subparts I and S would be closely tied to the requirements in Subparts H and R, which would provide the regulations for contents of applications for the various types of licenses issued under Framework A or Framework B. Subparts I and S would generally be organized into those sections dealing with (1) licensing-basis information that licensees are not authorized to change without NRC approval (e.g., licenses, regulations) and (2) licensing-basis documents that licensees may change if they satisfy specified criteria (e.g., final safety analysis reports, program descriptions). Licensing-basis information means the information contained in regulations, orders, licenses, certifications, or approvals issued by the NRC for a commercial nuclear plant licensed under Part 53 and that information submitted to the NRC by an applicant or licensee in a safety analysis report, program description, or other licensing-related document required under this part. Licensees would need to control and update licensing-basis documents at set times to obtain and maintain the license, with requirements as to the documented licensing-basis information required to obtain NRC approval. The overall process for maintaining and revising licensing-basis documents would have similar effects as under current 10 CFR Part 50 and 10 CFR Part 52. Therefore, implementation of Subparts I and S would have no significantly different environmental impacts than under the current regulatory framework.

Subparts J and T—Reporting and Other Administrative Requirements

Subparts J and T would address reporting and other administrative requirements that would be largely equivalent to similar reporting and other administrative regulations in 10 CFR Part 50 (e.g., 10 CFR 50.33, 50.36, 50.71, 50.72. 50.73, 50.76). For example, these subparts would require each applicant or licensee under Part 53 to ensure NRC inspectors have unfettered access to sites and facilities and would require the maintenance of records and report-making to the NRC. They would require licensees to meet financial qualification reporting requirements and obtain and maintain required financial protections in case of an accident. Thus, implementation of Subparts J and T would provide an equivalent level of reporting and administrative requirements as the current regulatory framework with no significantly different environmental impacts.

Subparts K and U—Quality Assurance Criteria for Commercial Nuclear Plants

Subparts K and U would provide a consolidated set of quality assurance requirements for applicants and licensees implementing Framework A or Framework B. The two subparts would essentially be the same with some differences resulting from framework-specific approaches and terminology related to safety classification schemes and supporting safety analyses. Both proposed Subparts K and U would be equivalent to Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants,” to 10 CFR Part 50, with the only differences being those needed to reflect Part 53 terminology and safety classifications. For example, the term “commercial nuclear plant” is used throughout proposed Part 53 as a way to distinguish it from 10 CFR Part 50 and 10 CFR Part 52, which use terms such as “nuclear power plant,” and that difference would be reflected in proposed Subparts K and U. Since the quality assurance criteria would be equivalent to Appendix B to 10 CFR Part 50, implementation of Subparts K and U would result in no significantly different environmental impacts.

2.3 Framework B Subparts

The proposed requirements in Framework B can generally be divided into three categories. First, and as noted above in Section 1.4, many of the proposed regulations in Framework B would provide technology-inclusive requirements that are similar or identical to those found in 10 CFR Part 50 and 10 CFR Part 52. Accordingly, Framework B would address a variety of well-established safety requirements while offering more technology-inclusive approaches and additional flexibilities in plant design and operation. These established safety requirements include principal design criteria and the traditional use of risk insights in identifying severe accident vulnerabilities and evaluating defense-in-depth adequacy.

While Framework B shares many commonalities with 10 CFR Part 50 and 10 CFR Part 52, it also aligns with many of the provisions contained in Framework A; this is the second category of requirements that make up Framework B. Typically, the proposed requirements in Framework B that have copied (or cross-referenced) the analogous new or innovative requirements in Framework A address novel issues expected to arise in the licensing of new commercial nuclear plants. Examples of such proposed Framework B requirements that would be equivalent to those in Framework A include the following:

- Emergency preparedness requirements in 10 CFR 53.4320 would be equivalent to those in 10 CFR 53.855 in Framework A.

- Proposed requirements for security programs in 10 CFR 53.4330 would be equivalent to those in 10 CFR 53.860 in Framework A.

- Inservice inspection and inservice testing program requirements for non-light-water cooled commercial nuclear plants in 10 CFR 53.4360 would be equivalent to those in 10 CFR 53.880 in Framework A.

- Fire protection in 10 CFR 53.4350 would be equivalent to 10 CFR 53.875(a) in Framework A.

- The requirements for general staffing, training, personnel qualifications, and human factors engineering requirements for both frameworks are collocated in Subpart F (Framework A).

The third category of requirements that make up Framework B includes those that would be considered "new" in the sense that they are not derived from either 10 CFR Part 50 and 10 CFR Part 52 nor are they aligned with those in Framework A. This is the smallest of the three categories that would make up Framework B, as the great majority of requirements fit into the previous two categories. This third category includes new requirements that are necessary for licensing future commercial nuclear plants in the context of a traditional, bottom-up licensing and design construct. Further, the staff has developed this category to ensure that, while new, these regulations would provide an equivalent level of safety as the current requirements for licensing nuclear power plants. Examples of this third category include the following:

- 10 CFR 53.4730(a)(5) would establish requirements for accident analysis and evaluation for initiating events.

- 10 CFR 53.4730(a)(34)(ii) would establish an AERI methodology that would provide an alternative to a PRA. The criteria supporting the AERI methodology would also support decisions on allowing use of generally licensed reactor operators under proposed 10 CFR 53.800.

- 10 CFR 53.4730(a)(36)(ii) would add flexibility for non-LWR designs by providing proposed functional containment requirements in lieu of existing containment-related requirements.

- 10 CFR 53.4733 would provide an alternative approach to the seismic design of SSCs important to safety, if sufficient risk insights are available to allow grading of certain seismic design assumptions.

A comprehensive summary of the proposed regulatory requirements in Framework B in the "Summary of Framework B Requirements and Source" (ML22349A683) lists the source material for each requirement (if not new), along with any associated variances from the source material.

As outlined above, because the proposed requirements in Framework B would (1) draw upon a traditional approach to licensing (analogous to 10 CFR Part 50 and 10 CFR Part 52), (2) are aligned with Framework A in several areas, or (3) would demonstrate an equivalent level of safety with the new regulations, Framework B would provide a corresponding or equivalent level of assurance for adequate protection of public health and safety consistent with the current regulations used in the licensing of nuclear power plants. Therefore, implementation of Framework B regulations would result in no significantly different environmental impacts than would occur under Framework A and existing 10 CFR Part 50 and 10 CFR Part 52.

2.4 10 CFR Part 26: Fitness for Duty Programs

The NRC is proposing a technology-inclusive, risk-informed, and performance-based approach to the application of drug and alcohol testing and fatigue management requirements for facilities licensed under Part 53. The proposed requirements would be commensurate with the radiological risks presented by the facilities in question.[1] The proposed first-tier FFD program requirements would apply to Part 53 licensees and other entities for commercial nuclear plants under construction, as well as to manufacturing licensees that are assembling manufactured reactors. The proposed second tier would apply to licensees and other entities when operating their facilities and would consist of more comprehensive FFD program requirements that must be implemented before reactor power operation. The NRC used operating experience to provide regulatory flexibility in the proposed framework to help support a licensee's or other entity's response to changes in societal drug use, drug testing technologies and processes, and FFD program performance. The flexibility would also help in FFD program implementation because of the wide variety of staff sizes anticipated at different facilities licensed under Part 53 and the geographically remote locations in which utilization facilities may be sited. Therefore, an FFD program under Part 53 would be at a level equivalent to the current 10 CFR Part 26 regulatory framework and its implementation would have no significantly different environmental impacts.

An applicant, licensee, or other entity could also decide whether to perform a documented evaluation to determine whether its facility and its operation meet or exceed the risk-informed criterion in 10 CFR 26.603(c), which would permit use of an alternate FFD program in 10 CFR 26.604, "FFD program requirements for facilities that satisfy the § 26.603(c) criterion." This FFD program would focus on the conduct of behavioral observation to provide reasonable assurance that individuals are fit for duty, trustworthy, and reliable. This program, while foregoing drug and alcohol testing, would require implementation of all other applicable FFD program elements, including fatigue management, the performance monitoring and review program, and a change control program, which are designed to help ensure that the FFD program remains effective. The FFD criterion would otherwise be the same as that used for the risk-informed, graded approach proposed for the physical protection, cybersecurity protection, and access authorization programs for Part 53 facilities. Therefore, an FFD program under Part 53 would be at a level equivalent to the current 10 CFR Part 26 regulatory framework and its implementation would have no significantly different environmental impacts.

2.5 10 CFR Part 73: Physical Protection of Plants and Materials

Changes to 10 CFR Part 73 would address the physical protection of commercial nuclear plants under Part 53. Proposed 10 CFR 73.100 would provide a performance-based regulatory framework for the design, implementation, and maintenance of a physical protection program and security organization for certain commercial nuclear plants licensed under Part 53. The current 10 CFR 73.55 physical security requirements for nuclear power reactors under 10 CFR Part 50 and 10 CFR Part 52 use a combination of performance criteria (e.g., 10 CFR 73.55(b)(1–3)) and numerous prescriptive requirements to achieve performance objectives (e.g., 10 CFR 73.55(k)(5)(ii)). By contrast, performance objectives and requirements would be the primary bases for regulatory decision-making for the proposed Part 53 performance-based approach to physical security, giving the licensee the flexibility to determine how to meet the established performance criteria for an effective physical protection program. This proposed program would offer an optional pathway for licensees that elect not to meet the

[1] The NRC uses the term "operation" in its 10 CFR Part 26 discussion to focus on human performance, namely the necessity of individuals to operate, maintain, surveil, and protect the facility and respond to operational transients and design basis events.

provisions in 10 CFR 73.55 and do not meet the criterion described in proposed 10 CFR 53.860(a)(2) or 10 CFR 53.4330(a)(2). But this proposed physical protection program would still provide reasonable assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to public health and safety. Thus, 10 CFR 73.100 would provide a similar level of security as the current regulations and its implementation would have no significantly different environmental impacts.

In 10 CFR 73.110, the NRC would establish requirements for the development and maintenance of a cybersecurity program for commercial nuclear plants licensed under Part 53, for either Framework A (i.e., 10 CFR 53.860(d)) or Framework B (i.e., 10 CFR 53.4330(d)). This proposed new section would use a graded approach to determine the level of cybersecurity protection required for digital computers, communication systems, and networks. It is informed by (1) the operating experience from power reactors and fuel cycle facilities and (2) the existing framework in 10 CFR 73.54, “Protection of digital computer and communication systems and networks,” which addresses some of the basic issues for cybersecurity regardless of the type of reactor. Differences between the 10 CFR 73.54 requirements and those proposed in 10 CFR 73.110 primarily involve offering a consequence-based approach to cybersecurity to accommodate the wide range of reactor technologies the NRC would assess. A graded approach based on consequences is intended to account for the differing risk levels among reactor technologies. Specifically, the proposed new section would require licensees to demonstrate reasonable assurance of protection against cyberattacks in a manner that is commensurate with the potential consequences from those attacks. Thus, 10 CFR 73.110 would provide a similar level of protection from cyberattack as the current regulations and its implementation would have no significantly different environmental impacts.

In 10 CFR 73.120, the NRC would address access authorization for certain commercial nuclear plants licensed under Part 53. The existing regulatory framework for access authorization under 10 CFR 37.23, “Access authorization program requirements”; 10 CFR 73.55; 10 CFR 73.56; and 10 CFR 73.57 is sufficient to provide reasonable assurance that individuals subject to this program are trustworthy and reliable such that they do not constitute an unreasonable risk to public health and safety or the common defense and security, regardless of the reactor technology. The proposed language in 10 CFR 73.120 would offer an alternate approach to access authorization under the existing framework in 10 CFR 73.55, 10 CFR 73.56, and 10 CFR 73.57, commensurate with risk and consequences to public health and safety, for Part 53 applicants and licensees that demonstrate, in an analysis, that the offsite consequences of a design-basis event meet the criterion defined in 10 CFR 53.860(a)(2) or 10 CFR 53.4330(a)(2) (i.e., would not result in offsite doses exceeding the values in 10 CFR 53.210 or 10 CFR 53.4730(a)(1)(vi)). The proposed requirements in 10 CFR 73.120 would be similar to the existing access authorization programs for nonpower reactors and materials licensees under 10 CFR 73.56 or 10 CFR 37.21, “Personnel access authorization requirements for category 1 or category 2 quantities of radioactive material.” Applicants not satisfying the criterion would need to establish, implement, and maintain a full access authorization program, including an insider mitigation program, in accordance with 10 CFR 73.56. Thus, this 10 CFR Part 73 regulation would be consistent with the existing access authorization program requirements, would provide a similar level of protection from unauthorized access, and its implementation would have no significantly different environmental impacts.

2.6 Summary of the Environmental Impacts of the Proposed Action

With regard to potential environmental impacts, implementation of the proposed Part 53 rule under Frameworks A and B would not have a significant impact on the environment. Either the proposed requirements would be administrative in application, would be matters of procedure, or would provide an equivalent level of safety and security as the current regulations in 10 CFR Parts 26, 50, 52, and 73.

In addition, the requirements under the proposed Part 53 would not affect endangered or threatened species or any historic sites since no physical actions with direct environmental impacts are associated with this proposed rule.

Accordingly, the NRC finds that there would be no significant environmental impact associated with this rulemaking action.

3 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVE TO THE PROPOSED ACTION

Under the no-action alternative (i.e., the status quo), the regulations would not change. Licensees would continue to be required to meet current regulations (namely, 10 CFR Part 50 and 10 CFR Part 52) or seek relief using the existing regulatory framework. As stated in section 2 of this EA, the proposed rule would not result in a significant impact on the environment because plants licensed under Part 53 are expected to have a similar impact on the affected environment as plants licensed under the current regulations, and the proposed rule would offer an equivalent level of safety as provided by the current regulations. This rulemaking provides an additional option to existing processes to license a reactor and does not add any additional environmental requirements. Therefore, there would be no difference in environmental impacts between the no-action alternative and the proposed rule. The NRC would analyze the environmental impacts of a license application under existing regulations and guidance for the no-action alternative and would continue to analyze the environmental impacts of applications, exemptions, and license amendment requests on a case-by-case basis. The staff describes the costs and benefits of the no-action alternative and the proposed action in the regulatory analysis for the proposed rule (ML21165A112).

4 AGENCIES AND PERSONS CONSULTED

The NRC developed the proposed rule and is requesting public comment on this draft EA. The NRC intends to hold a public meeting during the proposed rule comment period to allow stakeholders to ask questions about the proposed rule and this EA. The agency will consider comments received on the docket as it develops the final rule and the final EA. The NRC will issue the final EA when it publishes the final rule.

The proposed rule is one step in the rulemaking process. In SRM-SECY-20-0032, the Commission approved the NRC staff's request to not create a regulatory basis document along with foregoing the need for an advanced notice of proposed rulemaking.

During the development of this proposed rule, the NRC conducted numerous public meetings and other interactions with stakeholders related to the development of the Part 53 regulations. Table 6-1 in Section-6 of this EA provides details about stakeholder interactions.

The proposed rulemaking would provide an equivalent level of safety as the current regulations in 10 CFR Part 50 and 10 CFR Part 52 and would result in no significant impact on the environment. As such, the rulemaking would not result in impacts to endangered and threatened species or critical habitat; the NRC has determined that a section 7 consultation under the Endangered Species Act is not necessary. Likewise, the NRC has determined that the proposed rulemaking could not cause effects on or to historic properties. Therefore, the NRC has determined that no further consultation is required under section 106 of the National Historic Preservation Act.

5 PRELIMINARY CONCLUSION AND FINDING OF NO SIGNIFICANT IMPACT

The NRC's proposed action (rulemaking) would maintain safety and security at commercial power plants without the need to grant specific exemptions or license amendments in certain regulatory areas. Rulemaking would reduce the need for exemptions from existing regulations and license amendment requests and would support the principles of good regulation, including openness, clarity, and reliability. Therefore, the proposed rulemaking meets the need for the proposed action.

On the basis of the EA, the NRC staff finds that the proposed action would not have a significant effect on the quality of the human environment. Accordingly, the NRC staff is not required to prepare an environmental impact statement for the proposed action. Documents may be examined, and copied for a fee, at the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, 20852. Publicly available records will be accessible electronically from the ADAMS Public Electronic Reading Room on the NRC website at https://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents in ADAMS should contact the NRC PDR reference staff at (800) 397-4209 or (301) 415-4737 or send an email to pdr@nrc.gov.

6 STAKEHOLDER INTERACTIONS

The stakeholder interactions for Part 53 have been extensive. Table 6-1 lists interactions between the NRC and stakeholders during public meetings and communications on issues related to the Part 53 rulemaking. The NRC has received feedback from various stakeholders on Part 53 during or as a result of these interactions.

Table 6-1 NRC and Stakeholder Interactions

Meeting Title	Date	ADAMS Accession No.
ACRS Future Plant Designs Subcommittee Meeting—Introduction to 10 CFR Part 53, "Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors"	07/20/2020	ML20218A576
678th ACRS Meeting—Full Committee—Staff White Paper on 10 CFR Part 53 Advanced Notice of Proposed Rulemaking	09/10/2020	ML20261H932
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking White Paper	09/22/2020	ML20275A008
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Subpart B Preliminary Proposed Rule Language	11/18/2020	ML20336A180
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Subparts C and F Preliminary Proposed Rule Language	01/07/2021	ML21039A741
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: Subpart B— "Technology-Inclusive Safety Requirements," Subpart F— "Requirements for Operation" (Facility Safety Program Only)	01/14/2021	ML21055A558
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Subpart D —Preliminary Proposed Rule Language	02/04/2021	ML21062A112
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: Subpart C— "Design and Analysis Requirements," Subpart D— "Siting Requirements"	02/18/2021	ML21064A304
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: "General and Stakeholder Comment Discussions," "Key Guidance," Subpart E— "Construction and Manufacturing Requirements"	03/17/2021	ML21098A179
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—"Subpart E, Rule Language and Revised Preliminary Rule Language"	4/08/2021	ML21106A004
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: Subpart B—"Technology-Inclusive Safety Requirements" (2nd iteration), Subpart C—"Design and Analysis Requirements" (2nd iteration), Subpart E—"Construction and Manufacturing Requirements"	04/22/2021	ML21145A452

Meeting Title	Date	ADAMS Accession No.
685th ACRS Meeting—Full Committee—Interim letter report on 10 CFR Part 53 Rulemaking for Licensing of Advanced Reactors	05/05/2021	ML21153A446
685th ACRS Meeting—Full Committee—White Paper on Fusion	05/06/2021	ML21154A041
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—"Subparts A and F Rule Language"	05/06/2021	ML21140A390
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: Subpart A—"General Provisions," Subpart F—"Requirements for Operation"	05/20/2021	ML21154A051
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—"Subpart F and 10 CFR Part 73 Emergency Preparedness and Security Preliminary Proposed Rule Language"	06/10/2021	ML21166A233
ACRS Future Plant Designs Subcommittee Meeting — Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: Licensing Modernization Project Approach Refresher Discussion, Subpart F—"Requirements for Facility Operations: Emergency Preparedness"; "Status/Update on TICAP/ARCAP Guidance Document Development"	07/21/2021	ML21215A386
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Subpart I, "Maintaining and Revising Licensing Basis Information," Section 53.1322 and Other Topics Related to Part 53	09/15/2021	ML21273A105
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: Subpart B—"Technology-Inclusive Safety Requirements" (3rd Iteration), Subpart C—"Requirements for Design and Analysis" (3rd Iteration), Subpart H—"Licenses, Certifications, and Approvals," Subpart I—"Maintaining and Revising Licensing Basis Information," Subpart J—"Reporting and Other Administrative Requirements," Subpart F—"Requirements for Operations, Staffing, Training, Personnel, and Human Factors." Part 53—Additional Efforts	09/23/2021	ML21313A025
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Subpart F— "Staffing, Training, Personnel Qualifications, and Human Factors Requirements"	10/26/2021	ML21320A045
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Part 5X Supplement, "Technology-Inclusive Alternative Requirements for Commercial Nuclear Plants"	10/28/2021	ML21342A000

Meeting Title	Date	ADAMS Accession No.
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: Part 5X Supplement, "Technology-Inclusive Alternative Requirements for Commercial Nuclear Plants"; Subpart F—"Requirements for Operations, Sections related to Staffing, Training, Personnel Qualifications, and Human Factors"; and Subpart H—"Licenses, Certifications, and Approvals, Sections Related to Manufacturing Licenses, Construction Permits, Operating Licenses, and Combined Licenses"	11/18/2021	ML21355A365
ACRS Future Plant Designs Subcommittee Meeting—Preliminary Rule 10 CFR Part 53, Licensing and Regulation of Advanced Nuclear Reactors: "The Role of the PRA (Subpart C—Requirements for Design and Analysis)"; "Staffing, Operator Certification, Simulators, etc. (Subpart F—Requirements for Operations)"; Update on TICAP/ARCAP Guidance Document Developments, and Presentations from NEI & USNIC	12/16/2021 12/17/2021	ML22024A447
Public Meeting— Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Part 26, "Fitness for Duty Programs"	01/06/2022	ML22012A104
692nd ACRS Meeting—Full Committee—Interim letter report on 10 CFR Part 53 Proposed Rule Language: "Subpart F - —Sections Related to Staffing, Personnel Qualifications, Training, and Human Factors"	02/02/2022	ML22060A129
Public Meeting—Public Meeting to Discuss the Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Nongovernmental organizations	02/08/2022	ML22049A080
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Discussion of Select Part 53 Topics	03/29/2022	ML2218A003
Public Meeting—Periodic Advanced Reactor Stakeholder Meeting—"Part 53 Framework B Development and Integration and Overview of Guidance Supporting Part 53"	5/11/2022	
ACRS Future Plant Designs Subcommittee Meeting—"10 CFR Part 53, Framework A Subparts"	5/19/2022	ML22172A092
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Part 53 Framework A and Related Changes to Part 26 and Part 73	5/25/2022	ML22195A007
Public Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Part 53—Framework B Subparts and Alternate Evaluation for Risk Insights (AERI) Approach	6/16/2022	ML22179A011
ACRS Regulatory Rulemaking, Policies and Practices: Part 53 Subcommittee Meeting—Part 53 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors Rulemaking—Discussion of Framework B—Preliminary Guidance Documents; Rule Language, including Alternate Evaluation for Risk Insights (AERI); Subpart F	06/23/2022 06/24/2022	ML22192A188 ML22192A198

Meeting Title	Date	ADAMS Accession No.
697th ACRS Meeting—Full Committee—Meeting on the Proposed Rule Language for 10 CFR Part 53 – Framework B and Framework A, Subpart F	7/6/2022	ML22216A159
Commission Briefing—10 CFR Part 53 Licensing and Regulation of Advanced Nuclear Reactors	7/21/2022	ML22207A590
Public Meeting—Opportunity for external stakeholders to exchange information development of the Part 53 preliminary proposed rule for commercial nuclear plants.	7/28/2022	
Public Meeting—Periodic Advanced Reactor Stakeholder Meeting—"Part 53 Update: Status and Path Forward, Part 53—Stakeholder Perspectives"	8/18/2022	ML22229A507
Public Meeting—Periodic Advanced Reactor Stakeholder Meeting—Part 53 updates, "Overview of the Part 53 Subpart F Interim Staff Guidance; Technology-Inclusive, Risk-Informed, and Performance-Based Methodology for Seismic Design of Commercial Nuclear Plants; and Seismically Isolated Nuclear Plants Guidance"	10/12/2022	ML22284A141
ACRS Regulatory Rulemaking, Policies and Practices: Part 53 Subcommittee Meeting—Part 53, "Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" Rulemaking	10/18/2022 10/19/2022	ML22299A184
700th ACRS Meeting—Full Committee—Meeting on the Part 53, "Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" Rulemaking, draft proposed rule	11/02/2022	ML22347A191

REFERENCES

10 CFR Part 21. *Code of Federal Regulations*, Title 10, *Energy*, Part 21, "Reporting of Defects and Non-Compliance." Washington, DC.

10 CFR Part 25. *Code of Federal Regulations*, Title 10, *Energy*, Part 25, "Access Authorization." Washington, DC.

10 CFR Part 26. *Code of Federal Regulations*, Title 10, *Energy*, Part 26, "Fitness for Duty Programs." Washington, DC.

10 CFR Part 50. *Code of Federal Regulations*, Title 10, *Energy*, Part 50, "Domestic Licensing of Production and Utilization Facilities." Washington, DC.

10 CFR Part 51. *Code of Federal Regulations*, Title 10, *Energy*, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." Washington, DC.

10 CFR Part 52. *Code of Federal Regulations*, Title 10, *Energy*, Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." Washington, DC.

10 CFR Part 72. *Code of Federal Regulations*, Title 10, *Energy*, Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste." Washington, DC.

10 CFR Part 73. *Code of Federal Regulations*, Title 10, *Energy*, Part 73, "Physical Protection of Plants and Materials." Washington, DC.

10 CFR Part 100. *Code of Federal Regulations*, Title 10, *Energy*, Part 100, "Reactor Site Criteria." Washington, DC.

10 CFR Part 171. *Code of Federal Regulations*, Title 10, *Energy*, Part 171, "Annual Fees for Reactor Licenses and Fuel Cycle Licenses and Materials Licenses, including Holders of Certificates of Compliance, Registrations, and Quality Assurance Program Approvals and Government Agencies Licensed by the NRC." Washington, DC.

Nuclear Energy Innovation and Modernization Act. 42 USC 2011 et seq.

National Environmental Policy Act of 1969, as amended. 42 USC 4321 et seq.

Endangered Species Act of 1973, as amended. 16 USC 1531 et seq.

National Historic Preservation Act of 1966, as amended. 16 USC 470 et seq.

U.S. Nuclear Regulatory Commission (NRC) 2016. "NRC Vision and Strategy: Safely Achieving Effective and Efficient Non-Light Water Reactor Mission Readiness." Washington, DC. December 2, 2016. Agencywide Documents Access and Management System (ADAMS) Accession No. ML16356A670.

NRC 2020a. "Rulemaking Plan on 'Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors (RIN-3150-AK31; NRC-2019-0062).'" SECY-20-0032. Washington, DC. April 13, 2020. ML19340A056

NRC 2020b. "Staff Requirements—SECY-20-0032—Rulemaking Plan on "Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors (RIN-3150-AK31; NRC-2019-0062).'" SRM-SECY-20-0032. Washington, DC. October 2, 2020. ML20276A293.

85 FR 71002. “Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors.” *Federal Register*, Volume 85, page 71002. November 6, 2020.

51 FR 24643. “Regulation of Advanced Nuclear Power Plants; Statement of Policy.” *Federal Register*, Volume 51, page 24643. July 8, 1986.

86 FR 70423. “Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors.” *Federal Register*, Volume 86, page 70423. December 10, 2021.