MODERNIZATION OF NUCLEAR REACTOR ENVIRONMENTAL REVIEWS

A Report for the
U.S. Senate Committee on Environment and Public Works and the
U.S. House of Representatives Committee on Energy and Commerce

U.S. Nuclear Regulatory Commission
January 2025

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INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) developed this report as required by Section 506 of the Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy Act of 2024 (ADVANCE Act) (Ref. 1). Specifically, Section 506(a) of the ADVANCE Act requires the NRC to "submit to the appropriate committees of Congress a report on the efforts of the Commission to facilitate efficient, timely, and predictable environmental reviews of nuclear reactor applications for a license under section 103 of the Atomic Energy Act of 1954." Section 506(b) directs specific content for this report; the NRC has addressed each of these.

Implementing the ADVANCE Act is a key priority for the agency, and the NRC is continuing to work to enhance efficiency in all processes, including its licensing and environmental reviews. In developing this report, the NRC considered actions it has taken to address the topics specified in Section 506. The report highlights the NRC's completed or ongoing actions, as well as potential future actions to facilitate efficient, timely, and predictable environmental reviews of nuclear reactor license applications under Section 103 of the Atomic Energy Act. Enclosure 1 includes summary tables of the actions discussed in this report.

The NRC values public input and feedback on its implementation of the ADVANCE Act. As part of its efforts to respond to Section 506 of the ADVANCE Act, the NRC held a public meeting on September 25, 2024, to seek input from the public. The NRC also received correspondence related to Section 506 of the ADVANCE Act. Enclosure 2 contains details of the meeting and a list of the incoming correspondence. The NRC considered the feedback received when preparing this report.

FISCAL RESPONSIBILITY ACT AMENDMENTS TO THE NATIONAL ENVIRONMENTAL POLICY ACT (SECTION 506(b)(1) OF THE ADVANCE ACT)

The NRC has implemented changes to its environmental review processes pursuant to the Fiscal Responsibility Act (FRA) (Ref. 2), in which Congress amended the National Environmental Policy Act (NEPA) (Ref. 3). The NRC staff is also continuing to identify efficiencies and apply lessons learned as part of its implementation of the FRA NEPA amendments. The following changes have been implemented or will be implemented by January 2026, and the NRC will monitor the efficiencies that are realized by these actions:

- Setting schedules that comply with the FRA NEPA amendment deadlines and communicating with applicants and other external stakeholders about extensions, as needed.
- Adhering to page limits for environmental documents and implementing additional efforts to reduce page counts, such as greater reliance on incorporation by reference, and focusing reviews on new and significant information. (See the section below on "Use of Prior Studies and Analyses Prepared by the NRC and Other Agencies," for more information.)
- Engaging external stakeholders through pre-application meetings and periodic routine industry interactions to provide awareness of the FRA NEPA amendments and how the changes may further impact the NRC's environmental reviews.
- Developing approaches to the NRC staff's review of environmental resource areas to ensure the level of review is commensurate with the level of potential environmental impact.

- Developing procedures and guidance to facilitate timely completion of consultations and interagency coordination when they are conducted in parallel with the NRC's NEPA reviews. (See the section below on "Coordination and Consultation with Other Agencies," for more information.)
- Providing training for and coordination among NRC staff to ensure understanding and consistent implementation of the FRA NEPA amendments.
- Implementing agile project management tools to improve workload planning and support nimble deployment of staff to high-priority environmental reviews.
- Increasing the use of technology to make environmental audits more efficient and effective.
- Using improved technology to increase the efficiency of processing and responding to public comments.
- Streamlining the NRC's administrative processes related to publishing environmental documents.

While the NRC is in compliance with the requirements of the FRA NEPA amendments, the NRC staff has identified further potential opportunities to enhance clarity, reliability, efficiency, and transparency in its regulations and procedures to streamline environmental reviews while balancing meaningful public engagement. The staff's recommendations concerning those opportunities were provided to the Commission on May 30, 2024, and publicly released on June 13, 2024—less than a month before the ADVANCE Act was signed into law—in SECY-24-0046, "Implementation of the Fiscal Responsibility Act of 2023 National Environmental Policy Act Amendments" (Ref. 4). SECY-24-0046 is currently before the Commission for its consideration. In SECY-24-0046, the NRC staff provided options to revise the NRC's NEPA implementing regulations in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and update relevant NRC guidance and policies.[1] The NRC staff's rulemaking recommendations in SECY-24-0046 would change how the NRC conducts its NEPA reviews, such as how the NRC evaluates alternatives to the proposed agency action, allowing an applicant to prepare the draft NEPA document, and removing the NRC's generic requirement to prepare EISs for specific licensing actions. If rulemaking is approved by the Commission, the NRC staff will proceed in an efficient manner with the rulemaking and look to gain efficiencies during the rulemaking process, including considering on a case-by-case basis whether some changes can be implemented before a final rule is issued. If approved, this rulemaking is expected to be completed by January 2029.

USE OF PRIOR STUDIES AND ANALYSES PREPARED BY THE NRC AND OTHER ENTITIES (SECTIONS 506(b)(2)(A), (B), AND (D) OF THE ADVANCE ACT)

The NRC currently relies on prior EISs and EAs, as well as other available analyses, whenever feasible, whether prepared by the NRC, other Federal agencies, or other entities. The NRC uses two methods to formally leverage previous studies and environmental analyses prepared by other entities, namely "adoption" and "incorporation by reference." The NRC also has an established, effective practice of preparing generic studies of environmental effects specifically for the purpose of streamlining future environmental reviews and reducing the length of future environmental documents. Applicants can also realize efficiency gains from these practices through not having to recreate or reproduce existing information, as well as benefiting from a shorter environmental review timeline. The NRC remains committed to exploring new ways to

[1] A list of some of the guidance documents and internal procedures recommended for revision as part of the proposed rulemaking can be found in SECY-24-0046, Enclosure 7: Rulemaking Plan.

enhance the use of available references and analyses to further improve the efficiency, timeliness, and predictability of environmental reviews.

Adoption and Incorporation by Reference of Prior Studies and Analyses Prepared by Other Agencies

"Adoption" is a process under NEPA to allow one agency to make use of EIS, EA/finding of no significant impact (FONSI), or categorical exclusion (CE) determinations of another Federal agency in an appropriate and transparent manner. Adoption requires an independent review to determine that the EIS, EA, or CE determination meets basic standards. Historically, the NRC has typically taken the lead role in cooperating with other agencies to develop environmental documents for NRC licensing actions. However, the NRC has and will continue to evaluate on a case-by-case basis whether it can meet its NEPA requirements by adopting another agency's environmental document.

Additionally, the FRA NEPA amendments codified a process through which an agency can adopt a CE issued by another agency. The NRC's regulations do not specifically address the possibility, therefore, in SECY-24-0046 the NRC staff has proposed revising the agency's regulations to incorporate the process in NEPA Section 109, "Adoption of categorical exclusions." In the interim, if a suitable CE is identified, the NRC is prepared to use the process codified in NEPA in the absence of NRC-specific implementing regulations.

Incorporation by reference is a tool that allows agencies to make use of information outside the agencies' environmental documents in a concise and efficient manner. When using incorporation by reference, public accessibility and transparency through clear references are important factors for meeting the purposes of NEPA. The NRC frequently uses incorporation by reference as an important tool in meeting review schedules, eliminating duplication of effort, and reducing document length for environmental documents. The NRC has realized a 10 to 50 percent reduction in document length by incorporating by reference parts of relevant publicly available NEPA documents and prior studies and analyses into new EAs and EISs. The combination of these activities results in a more streamlined environmental review.

Recent examples of the NRC's use of incorporation by reference to realize efficiency gains include:

- The site-specific EISs developed to support the subsequent license renewals for Turkey Point Nuclear Generating Unit Nos. 3 and 4 (Ref. 5) and the North Anna Power Station, Units 1 and 2 (Ref. 6). In both cases, relying on previously published documents allowed the NRC to focus on new and potentially significant information identified since the publication of the earlier documents, as well as to reduce the length of each EIS and the time needed to draft it.

- The EA and FONSI for the construction permit for the Kairos Hermes 2 test reactors (Ref. 7). The Hermes 2 EA and FONSI incorporate by reference NEPA documents developed by both the NRC and other Federal agencies related to the scope of the Hermes 2 project, including the EIS for the first Kairos Hermes test reactor (Ref. 8) and the EIS for the Clinch River Nuclear Site early site permit (Ref. 9). The NRC's Hermes EIS was used to establish the baseline affected environment and inform environmental impact analyses of activities associated with the construction, operation, and decommissioning of the Hermes 2 test reactors. The NRC's Clinch River EIS informed

the Hermes 2 EA in areas such as ecological studies, transportation analyses, socioeconomic analyses, environmental justice population characteristics, cumulative impacts, and climate change. The NRC incorporated these documents by reference and summarized their important aspects, reducing expenditure of resources and document length. The NRC completed the EA within the time and page limits set by the FRA amendments to NEPA.

The NRC also regularly leverages prior studies or analyses prepared by Federal, State, and local governmental permitting agencies. For example, NRC environmental reviews may rely on site assessment reports, site surveys, air and water quality permits, and remediation action or environmental monitoring plans approved by a State or the U.S. Environmental Protection Agency. The NRC has also increasingly been using online technical databases to obtain baseline resource information such as land cover, habitats, floodplains, soils, species lists, and protected species, thereby reducing time needed for individualized research and field surveys. Use of these databases played a key role in the NRC's ability to meet the FRA-mandated schedule and page limit requirements for the Hermes EIS and Hermes 2 EA, saving the applicant costs and time. Current efforts for environmental reviews for the Palisades Nuclear Plant potential restart, TerraPower Kemmerer Power Station Unit 1 construction permit application, and operating reactor subsequent license renewal applications are actively using these online tools. The NRC expects that the use of these tools will reduce resource expenditures for these and future projects.

NRC Generic Environmental Impact Statements and Codified Environmental Information

The NRC prepares generic environmental impact statements (GEISs) documenting the agency's systematic analysis of environmental impacts from activities that have the same or similar characteristics (e.g., power reactor license renewal, licensing of in situ uranium recovery facilities, and decommissioning of power reactors). The NRC prepares GEISs to make NEPA reviews more efficient by focusing efforts on the most important issues; future applications can rely on GEISs and their findings to develop application-specific EISs and EAs that focus on the environmental impacts unique to that application. The NRC has codified in 10 CFR Part 51 the findings from two GEISs: (1) NUREG-1437, Revision 2, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," issued August 2024 (Ref. 10) (License Renewal GEIS), and (2) NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel," issued September 2014 (Ref. 11). Other NRC GEISs, such as NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," issued October 2002 (Ref. 12), have not been codified, but the NRC uses them to streamline project-specific NEPA reviews where applicable. Furthermore, the NRC relies upon other pieces of codified environmental information for project-specific NEPA reviews, including 10 CFR 51.51, "Uranium fuel cycle environmental data—Table S-3," and 10 CFR 51.52, "Environmental effects of transportation of fuel and waste—Table S-4."

Additionally, the NRC has recently published for public comment a proposed rule that would codify the findings of draft NUREG-2249, "Generic Environmental Impact Statement for Licensing of New Nuclear Reactors," issued September 2024 (Refs. 13, 14) (New Reactor GEIS). The NRC staff expects to provide the draft final rule to the Commission by January 2026. For the New Reactor GEIS, the NRC is proposing a technology-neutral approach that would streamline the environmental reviews for future new nuclear reactor applications by codifying generic environmental impact conclusions for projects that fit within the design and site

parameters. If the rule is finalized, new reactor license applications would supplement applicable generic environmental findings with evaluations of project-specific issues.

Although the NRC's conclusions in the New Reactor GEIS are not legally binding until a final rule is published and effective, the NRC is ready to leverage the bounding parameters and supporting technical analyses in the draft New Reactor GEIS in performing site-specific environmental reviews for new reactors. The draft New Reactor GEIS generically analyzes many environmental issues. If the rule and draft GEIS are finalized, when a license application fits the design and site parameters for a generically resolved issue, that issue would not need to be revisited, and the analysis in the New Reactor GEIS could be incorporated by reference in both the applicant's environmental report and the NRC's supplemental EIS. In that case, the applicant and the NRC would focus the environmental review on the significant environmental issues specific to that site and reactor design. This process is expected to result in a reduction in both time and resources for the NRC's environmental reviews associated with new reactor license applications, benefitting both the NRC and applicants.

The NRC will continue to use GEISs and similar pieces of codified information, update them as necessary, and consider developing additional classes of GEISs, where appropriate, if it is determined that they contribute to efficiencies.

EXPANDING THE USE OF ENVIRONMENTAL ASSESSMENTS (SECTION 506(b)(2)(C) AND (I) OF THE ADVANCE ACT)

The regulations at 10 CFR 51.20, "Criteria for and identification of licensing and regulatory actions requiring environmental impact statements," include a list of actions for which the NRC must prepare an EIS or a supplement to an EIS. At present, for any action listed under 10 CFR 51.20(b), beginning with preparing an EA—instead of an EIS—requires an exemption from the current NRC regulations. NEPA Section 106, "Procedures for determination of level of review," clarifies the requirements for determining whether to prepare an environmental document and for establishing the appropriate level of NEPA review. As described in SECY-24-0046, the NRC staff has provided to the Commission for its consideration a recommendation to undertake rulemaking to eliminate the list of actions under 10 CFR 51.20(b) and revise 10 CFR 51.20 to reflect NEPA Section 106(b), except where an EIS is required by statute. Such a rulemaking, if approved, would give the NRC greater flexibility to focus on the most important issues in environmental resource area reviews and implement streamlined environmental review processes, where appropriate, while still fulfilling NEPA requirements without the need for exemptions. Applicants would also realize efficiency gains from the streamlined processes. The NRC is also considering revising its regulations to facilitate the possible increased use of EAs.

The NRC is prepared to grant exemptions from 10 CFR 51.20(b), on a case-by-case basis, if they are authorized by law and otherwise determined to be in the public interest. For example, in August 2024, the NRC issued exemptions from 10 CFR 51.20(b)(1), 10 CFR 51.25, and 10 CFR 51.75(a), allowing the NRC to issue and rely on a final EA and FONSI to document its environmental review for the application for a construction permit for the Kairos Hermes 2 test reactors (Ref. 15). The Hermes 2 EA was completed in less than one year, about half the time of the Hermes EIS, and with 60 percent fewer pages and 40 percent less resources than the Hermes EIS.

Mitigated Findings of No Significant Impact

While NEPA allows agencies to reach FONSIs based on the beneficial effects of mitigation measures analyzed in EAs, these measures must be enforceable. As discussed above, while the NRC historically has prepared EISs for reactor applications under 10 CFR 51.20(b), the NRC may grant exemptions from this provision on a case-by-case basis. The rulemaking recommended in SECY-24-0046 would allow for the development of EAs for these applications without exemptions, consistent with NEPA. Under the NRC staff's recommended approach, the agency would apply standard NEPA procedures, including consideration of any available enforceable mitigation measures, in determining whether the proposed action has significant impacts. When applicable, the NRC and applicants could both realize efficiencies and benefit from the resulting streamlined environmental review process.

COORDINATION AND CONSULTATION WITH OTHER AGENCIES (SECTION 506(b)(2)(E) AND (F) OF THE ADVANCE ACT)

The NRC coordinates its environmental reviews with other Federal agencies through NEPA's cooperating agency framework to avoid duplication, make use of available technical expertise, and efficiently address intragovernmental issues. The regulations in 10 CFR Part 51 require that the NRC identify cooperating agencies as part of the scoping process associated with the development of an EIS. The NRC typically develops and executes a memorandum of understanding (MOU) to establish the respective roles and responsibilities of the lead agency and cooperating agencies, as well as a schedule and deliverables for the NEPA environmental review. Previous cooperating agencies in the NRC's NEPA environmental reviews have included Federal agencies, such as the U.S. Army Corps of Engineers (Ref. 16), National Park Service (Ref. 17), U.S. Department of Energy (Ref. 18), U.S. Air Force (Ref. 19), and U.S. Bureau of Land Management (Ref. 20); State agencies, such as the New Mexico Environment Department (Ref. 21); and Tribal governments, such as the Prairie Island Indian Community (Ref. 22). As a recent example, the NRC executed an addendum to an MOU between the U.S. Air Force and the NRC that addresses roles and responsibilities of each party and the coordination between them to conduct environmental reviews for a proposed microreactor at Eielson Air Force Base.

As described in SECY-24-0046, the NRC staff has provided to the Commission a recommendation to approve development of a new policy statement consistent with the NEPA amendments that would outline expectations for lead, participating, and cooperating agencies with the goal of clarifying and strengthening its commitment to coordination and cooperation with other Federal agencies.

In relation to consultations under Section 106 of the National Historic Preservation Act (NHPA) (Ref. 23), the NRC is optimizing internal processes to more effectively prioritize consultation activities and to better understand and address Tribal governments' concerns. The NRC has streamlined its consultation initiation process, increased pre-application and outreach meetings with Tribal governments, and continues to facilitate site visits for Tribal governments interested in the NRC's regulatory activities. These actions have strengthened working relationships between the NRC, Tribal governments, and applicants, resulting in earlier resolution of project concerns. For example, for the Clinch River EA, the NRC staff built upon the relationships forged with Tribal governments during previous environmental reviews in the same area and, which likely contributed to the fact that no major concerns, challenges, or delays were raised during the Tribal consultation. The NRC is also engaging the Advisory Council on Historic

Preservation to consider templates and other streamlining approaches for NRC Section 106 consultations.

For consultation under Section 7 of the Endangered Species Act of 1973 (ESA) (Ref. 24), the NRC is piloting an approach in which, consistent with the regulations of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS), the NRC can designate licensees and applicants to serve as non-Federal representatives in the consultation process. Under this approach, in lieu of NRC staff, the applicant or licensee designated as a non-Federal representative can conduct informal consultation with the NMFS or the FWS and obtain those agencies' concurrence when an action is not likely to adversely affect listed species or critical habitats. In cases where formal consultation is required, the non-Federal representative can prepare the biological assessment to support the initiation of consultation. While the NRC would remain ultimately responsible for compliance with the ESA and would continue to oversee the implementation of terms and conditions for any biological opinions that may result from consultation, in some cases this approach will significantly reduce NRC staff resource expenditures. Under this pilot, which began in the autumn of 2024, the NRC has designated two licensees as non-Federal representatives to prepare biological assessments in support of formal consultations: Florida Power & Light Co. for St. Lucie Plant, Unit Nos. 1 and 2 (Ref. 25), and Duke Energy Progress, LLC for Brunswick Steam Electric Plant, Units 1 and 2 (Ref. 26). Upon the completion of these consultations, the NRC will analyze time and resource savings. Other projected benefits of this approach include:

- increased efficiency and timeliness in conducting required ESA Section 7 consultations;
- early identification of potential issues through earlier initiation of consultation;
- leveraging of ecological expertise of licensees, applicants, and contractors with in-depth, species-specific knowledge; and
- increased engagement with licensees and applicants from the beginning of the consultation process.

Before an application is submitted, an applicant could also increase its role in the initial steps of gathering information under the NHPA and ESA, such as conducting outreach to Tribal governments and other Federal agencies or conducting needed surveys or studies. This increased role for the applicant is expected to allow the NRC to proceed more quickly with consultations after accepting an application and to conclude consultation activities in line with application review milestones. As described in SECY-24-0046, the NRC staff has proposed establishing acceptance review criteria for information needed to comply with other statutes. These activities will be implemented by January 2029, if approved by the Commission.

OPPORTUNITIES TO STREAMLINE ANALYSES OF ALTERNATIVES (SECTION 506(b)(2)(G) OF THE ADVANCE ACT)

The FRA added the word "agency" to the phrase "proposed action" and added the words "reasonable range of" to "alternatives to the proposed agency action that are technically and economically feasible and meet the purpose and need of the proposal" in NEPA Section 102(2)(C)(iii). NEPA Section 102(2)(C)(iii) also requires "an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative." As part of the existing regulatory framework and current process, the NRC evaluates all "reasonably foreseeable" alternatives in environmental reviews for nuclear reactor applications.

Presently, the NRC is focused on streamlining and increasing the efficiency of its alternatives analyses by leveraging prior experience and lessons learned on the viability of alternative energy generating sources and energy offsetting measures (e.g., purchased power/energy imports, delayed retirement, energy conservation, and demand side management). In addition, for operating reactor subsequent license renewal application reviews, the NRC has adopted the practice of incorporating by reference the alternatives analysis conducted for initial license renewal application reviews. Also, the NRC incorporates by reference the information in the recently updated License Renewal GEIS in individual operating reactor initial and subsequent license renewal reviews; this GEIS describes a range of replacement energy alternatives and the associated environmental impacts in each resource area. For advanced and new reactor applications, the NRC is implementing guidance to focus only on reasonable alternatives that consider the specific purpose and need of the proposed actions. For example, the NRC would not evaluate energy alternatives for an advanced or new test reactor targeting the development of a specific new technology. Although a site-specific alternatives analysis may be needed for new reactor license application reviews, the generic impact analyses outlined in the New Reactor GEIS (Ref. 14) are expected to facilitate a more efficient alternatives analysis.

The NRC staff has provided recommendations in SECY-24-0046 intended to further streamline its alternatives analyses, including its analysis of alternative sites and alternative energy sources, by limiting the analysis to regulatory and licensing decisions. In most cases, the reasonable range of alternatives to the regulatory or licensing decision would be defined as and limited to the no action alternative (i.e., not issuing the license) because not engaging in regulatory or licensing decisions is often the only reasonable alternative to the agency action. The NRC staff would analyze the reasonably foreseeable environmental effects of the no action alternative (including negative environmental impacts of not implementing the proposed agency action). The NRC staff would consider replacement energy options as reasonably foreseeable consequences of the no action alternative instead of as “alternatives to the proposed agency action.” However, the NRC generally would not consider alternatives to the proposed action that the agency does not have the authority to implement (e.g., siting and energy alternatives). The NRC staff has therefore recommended using the rulemaking process to evaluate whether its current approach to defining the purpose and need, as well as alternatives (especially for reactors), sufficiently accounts for the FRA NEPA amendments. This rulemaking, if approved by the Commission, to amend the regulations consistent with the FRA NEPA amendments, would be expected to improve NRC environmental review efficiency by reducing review scope and time for the NRC staff and applicants.

ESTABLISHING NEW CATEGORICAL EXCLUSIONS (SECTION 506(B)(2)(H) OF THE ADVANCE ACT)

The NRC is currently conducting a rulemaking to revise its existing CEs (89 FR 54727; July 2, 2024). Meaningful efficiencies are expected from this rulemaking for both the NRC and applicants if a final rule is issued. This rulemaking was in development before the FRA and the ADVANCE Act were enacted. The current CE rulemaking would not impose any new requirements on NRC applicants or licensees but would ensure that NRC actions (including decisions on licensing requests) are completed in a more consistent, efficient, and effective manner. The NRC staff expects to provide the draft final rule to the Commission by January 2026.

The rulemaking recommended in SECY-24-0046 also includes a revision of 10 CFR Part 51 to reflect NEPA’s revised definition of categorical exclusion and an examination of expanding the

list of actions eligible for CEs. If the NRC pursues that rulemaking, it expects substantial public engagement, including discussion of CEs for new reactor applications. The NRC will continue to periodically review its CEs and EAs to identify new categories or actions that may be eligible for CE.

APPLICANT PREPARATION OF ENVIRONMENTAL DOCUMENTS (SECTION 506(b)(2)(J) OF THE ADVANCE ACT)

As discussed in SECY-24-0046, the NRC staff provided a recommendation to undertake rulemaking to develop new 10 CFR Part 51 regulations prescribing procedures that would allow for applicants to prepare draft environmental documents under appropriate NRC supervision. Such a rulemaking, if approved, may include consideration of how and when the NRC supervises the applicant's preparation of the environmental documents (e.g., prior to an application and after submittal).

LEVERAGING ONLINE AND DIGITAL TECHNOLOGIES (SECTION 506(b)(2)(K) OF THE ADVANCE ACT)

The NRC staff is developing options for an online portal that would support a digital submission process for environmental information. This is intended to aid the conduct of reviews and prepare for the rapid deployment of factory-fabricated microreactors. The NRC's primary goal is to establish an online and digital process that allows for full, complete, and timely submittals and that also improves communications between all the organizations involved in the NRC's NEPA process for microreactor license application reviews. If deployed for microreactors, this online process is expected to allow for agile and timely disclosures to the public while ensuring secure access to the applicant, cooperating agencies, and other Federal, State, and Tribal organizations involved in NEPA-related consultations (e.g., endangered species and Tribal consultations).

POTENTIAL REVISIONS TO 10 CFR PART 51 AND RULEMAKING SCHEDULE (SECTION 506(b)(2)(L) AND (b)(3) OF THE ADVANCE ACT)

As detailed in SECY-24-0046, the NRC staff has proposed different options to revise NRC's NEPA-implementing regulations in 10 CFR Part 51 and to update environmental review guidance and policies. As discussed throughout this report, potential revisions include the following:

- Proposed Agency Action and Reasonable Range of Alternatives: Revising 10 CFR Part 51 to limit the scope of its NEPA review to addressing only the reasonably foreseeable environmental effects of the proposed agency action and the no-action alternative, rather than alternatives to the applicant's proposed action to construct or operate a reactor.

- Procedure for Determination of Level of Review: Revising 10 CFR Part 51 to better reflect NEPA Section 106(b). This rulemaking would examine the possibility of eliminating the provision in 10 CFR 51.20(b), which requires an EIS for listed licensing actions, and revising it to expressly reflect the new procedures in NEPA Section 106 for determining the level of NEPA review except where an EIS is required by statute. The rulemaking would also consider (during the regulatory basis stage) other relevant recent updates. Finally, the NRC is considering revising the definition of CE in 10 CFR 51.14(a)

to align with the definition in NEPA Section 111(1) and is exploring whether any additional actions are eligible for CE.

- Project Sponsor Preparation of Environmental Documents: Revising 10 CFR Part 51 to address applicant preparation of draft EAs and draft EISs rather than environmental reports. The NRC anticipates a range of possibilities that will be informed by engagement with the public.

The NRC staff's recommendations in SECY-24-0046 also identify actions that would not require rulemaking. For example, the NRC staff requested Commission approval to develop a new policy statement that would outline expectations for lead, cooperating, and participating agencies, and would reflect the responsibilities outlined in the new NEPA Section 107(a). The NRC staff also recommended either updating existing guidance or creating new guidance to standardize the process for reevaluating GEISs, and other environmental information, to ensure that the analyses in these documents remain valid.

Potential Rulemaking Schedule

Given the scope of the potential rulemaking, the wide range of entities affected (e.g., applicants, the public, Tribes, other Federal agencies, State agencies, the industry, and nongovernmental organizations), and the high level of expected interest, the NRC would anticipate conducting extensive outreach and public meetings throughout the rulemaking process. While seeking ways to expedite the rulemaking schedule, the NRC would need to balance efficiency with openness. Public participation is a cornerstone of Federal rulemaking and vital to ensuring that new regulations are clear and effective. Given these considerations, if rulemaking is approved by the Commission, the tentative rulemaking schedule milestones outlined in SECY-24-0046 are as follows:

(1) Deliver the draft regulatory basis to the Commission: 12 months following Commission direction on SECY-24-0046.

(2) Deliver the draft proposed rule to the Commission: 16 months after the regulatory basis comment period closes.

(3) Deliver the draft final rule to the Commission: 16 months after the proposed rule comment period closes.

CONCLUSION

The NRC continues to focus on efficiency, timeliness, and predictability to drive changes in agency operations consistent with the ADVANCE Act. In recent years, the NRC has undertaken efforts to streamline its environmental reviews and processes, while recognizing the need for continued innovation in how it accomplishes its work. While the Commission is considering a number of staff recommendations, including rulemaking to make changes to its NEPA-implementing regulations, the NRC continues its work on guidance and outreach activities. Further, the NRC staff is using existing processes to implement actions on a case-by-case basis—for example, issuing exemptions to allow the use of an EA and FONSI for a reactor application rather than an EIS, where applicable. As the NRC strives to continually improve its environmental review program, the NRC will continue to apply a risk-informed approach in its decision-making and to facilitate efficient, timely, and predictable environmental reviews.

ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ADVANCE Act	Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy Act of 2024
CE	categorical exclusion
CFR	*Code of Federal Regulations*
EA	environmental assessment
EIS	environmental impact statement
ESA	Endangered Species Act of 1973
FONSI	finding of no significant impact
FRA	Fiscal Responsibility Act of 2023
FWS	U.S. Fish and Wildlife Service
GEIS	generic environmental impact statement
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRC	U.S. Nuclear Regulatory Commission

REFERENCES

1. Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy Act of 2024, Pub. L. No. 118-67, div. B, § 506, 138 Stat. 1447, __ (2024).

2. Fiscal Responsibility Act of 2023, Pub. L. No. 118-5, div. C, § 321, 137 Stat. 10, 38-46 (2023).

3. National Environmental Policy Act of 1969, 42 U.S.C. § 4321 et seq.

4. SECY-24-0046, "Implementation of the Fiscal Responsibility Act of 2023 National Environmental Policy Act Amendments," May 30, 2024 (Agencywide Documents Access and Management System Accession No. ML24078A013 (package)).

5. NUREG-1437, Supplement 5a, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, "Site-Specific Environmental Impact Statement for License Renewal of Nuclear Plants," March 2024 (ML24087A061).

6. NUREG-1437, Supplement 7a, Second Renewal, Regarding Subsequent License Renewal for North Anna Power Stations Units 1 and 2, "Site-Specific Environmental Impact Statement for License Renewal of Nuclear Plants," July 2024 (ML24204A104).

7. "Environmental Assessment and Finding of No Significant Impact for the Construction Permits and Environmental Review Exemptions for the Kairos Hermes 2 Test Reactors," August 2024 (ML24240A034).

8. NUREG-2263, "Environmental Impact Statement for the Construction Permit for the Kairos Hermes Test Reactor," August 2023 (ML23214A269).

9. NUREG-2226, Volumes 1 and 2, "Environmental Impact Statement for an Early Site Permit (ESP) at the Clinch River Nuclear Site," April 2019 (ML19073A099, ML19073A109).

10. NUREG-1437, Volumes 1-3, Revision 2, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants,” August 2024 (NRC’s Agencywide Documents Access and Management System (ADAMS) ML24087A133 (package)).

11. NUREG–2157, Volumes 1 and 2, “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel,” August 2014 (ML14198A440 (package)).

12. NUREG-0586, Supplement 1, Volumes 1 and 2, “Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, Supplement 1: Regarding the Decommissioning of Nuclear Power Reactors,” October 2002 (ML023470304, ML023470323, ML023500187, ML023500211, ML023500223).

13. “Generic Environmental Impact Statement for Licensing of New Nuclear Reactors, proposed rule, draft guidance, and draft generic environmental impact statement; request for comment,” *Federal Register*, Volume 89, No. 193, October 4, 2024, p. 80797.

14. NUREG-2249, “Generic Environmental Impact Statement for Licensing of New Nuclear Reactors, Draft Report for Comment,” September 2024 (ML24176A220).

15. “Kairos Power, LLC; Hermes 2; Environmental Assessment, Finding of No Significant Impact, and Exemptions, notice; issuance,” *Federal Register*, Volume 89, No. 172, September 5, 2024, p. 72433.

16. “Memorandum of Understanding Between U.S. Army Corps of Engineers and U.S. Nuclear Regulatory Commission on Environmental Reviews Related to the Issuance of Authorization to Construct and Operate Nuclear Power Plants,” September 12, 2008 (ML082540354).

17. “Memorandum of Understanding Between the U.S. Nuclear Regulatory Commission and the U.S. National Park Service, Southeast Region as a Cooperating Agency on the Environmental Review Related to the Operating License Renewal for Turkey Point Nuclear Generating Units 3 and 4,” November 30, 2018 (ML18355A847).

18. “Addendum No. 7 to the Memorandum of Understanding Between United States Department of Energy and Nuclear Regulatory Commission on Nuclear Energy Innovation,” July 29, 2023 (ML23213A147).

19. “Addendum 8 to Memorandum of Understanding Between U.S. Department of the Air Force (DAF) and U.S. Nuclear Regulatory Commission (NRC) on Environmental Reviews Related to the Issuance of Authorizations for the Proposed Construction and Operation of a Micro-Reactor on Eielson Air Force Base, Alaska,” August 20, 2024 (ML24235A211).

20. “Memorandum of Understanding Between the U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards, and the U.S. Department of the Interior, Bureau of Land Management, Carlsbad Field Office, on the National Environmental Policy Act Environmental Review Related to the Issuance of Authorizations to Build and Operate the Proposed Holtec International Consolidated Interim Storage Facility,” October 15, 2018 (ML18290A458).

21. “Memorandum of Understanding Between the U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards, and the New Mexico Environment Department on the Environmental Review Related to the Issuance of Authorizations to Build and Operate the

Proposed Holtec International Consolidated Interim Storage Facility," July 24, 2019 (ML19206A094).

22. "Memorandum of Understanding Between the U.S. Nuclear Regulatory Commission and the Prairie Island Indian Community as a Cooperating Agency," June 17, 2008 (ML081610273).

23. National Historic Preservation Act § 106, 54 U.S.C. § 306108.

24. Endangered Species Act § 7, 16 U.S.C. § 1536.

25. "Designation of Florida Power & Light Co. as the Non-Federal Representative for St. Lucie Plant, Unit Nos. 1 and 2 (Docket Numbers: 50-335 and 50-389)." September 6, 2024 (ML24228A296).

26. "Designation of Duke Energy Progress, LLC, as the Non-Federal Representative for Brunswick Steam Electric Plant, Units 1 and 2 (Docket Numbers: 50-325 and 50-324)." September 6, 2024 (ML24218A086).

ENCLOSURE 1

SUMMARY OF ACTIONS RELATED TO THE ACCELERATING DEPLOYMENT OF VERSATILE, ADVANCED NUCLEAR FOR CLEAN ENERGY ACT OF 2024 (ADVANCE ACT) SECTION 506

The tables below summarize the U.S. Nuclear Regulatory Commission (NRC) actions to improve the efficiency, timeliness, and predictability of the agency's environmental reviews, with a focus on nuclear reactor license applications under Section 103 of the Atomic Energy Act consistent with Section 506 of the ADVANCE Act. The tables provide status and timeframes for each of the actions. Table 1 includes activities the NRC has recently implemented related to Section 506 of the ADVANCE Act; this table is not exhaustive but highlights actions of particular relevance to this report. Table 2 includes new NRC program actions recently initiated related to Section 506. Table 3 includes future NRC program actions under consideration or still in development. The NRC will monitor the efficiencies that are realized by these actions.

Actions noted as "Implemented" have been fully implemented and the benefits are being realized for ongoing environmental reviews. Actions noted as "Ongoing" are in the process of being implemented by the NRC. Actions noted as "Under evaluation" are those recommended by the NRC staff for Commission consideration in SECY-24-0046, "Implementation of the Fiscal Responsibility Act of 2023 National Environmental Policy Act Amendments"[2] or those still under development by NRC staff.

The "short term" timeframe indicates that actions will be fully implemented by January 2026. The "medium term" timeframe indicates that actions are expected to be completed by January 2029 (if approved by the Commission). Two actions are noted as "long term," and while work in these areas has already begun, these actions would not be fully implemented until sufficient experience is gained.

[2] See SECY-24-0046, "Implementation of the Fiscal Responsibility Act of 2023 National Environmental Policy Act Amendments," May 30, 2024 (Agencywide Documents Access and Management System Accession No. ML24078A013 (package)).

Table 1 - Completed NRC Program Actions Related to ADVANCE Act Section 506

Action	Primary ADVANCE Act Section 506 Provision	Impact	Status/Timeframe
Setting schedules and page limits that comply with the Fiscal Responsibility Act (FRA) amendments to the National Environmental Policy Act (NEPA)	506(b)(1)	Yields substantial efficiency gains related to ensuring that NRC environmental reviews are completed in an efficient and effective manner and consistent with the FRA NEPA amendments.	Implemented
Engaging external stakeholders (e.g., through pre-application meetings and public meetings) to provide awareness of the FRA NEPA amendments and the impact on the NRC's environmental reviews until guidance is updated	506(b)(1)	Expected to yield moderate efficiency gains related to ensuring that NRC expectations are clear, and NRC environmental reviews are completed in an efficient and effective manner.	Implemented
Optimize internal processes to more effectively prioritize National Historic Preservation Act (NHPA) Section 106 consultation activities and to better understand and address Tribal governments' concerns	506(b)(2)(F)	Yields efficiency gains related to strengthening communication and coordination between the NRC, Tribal governments, and the applicant to facilitate earlier issue resolution and increased efficiency and timeliness in conducting NHPA Section 106 consultations.	Implemented with additional process improvements under development
Develop an approach in which licensees and applicants can opt to serve as non-Federal representatives in the Endangered Species Act (ESA) Section 7 consultation process	506(b)(2)(F)	Expected to yield efficiency gains related to reducing regulatory risk through earlier initiation of consultation, leveraging ecological expertise of applicants, increasing applicant engagement, and increased efficiency and timeliness in conducting ESA Section 7 consultations.	Pilot implemented, short term
Revise approach to scoping alternatives for new and advanced reactors based on the nature of the project	506(b)(2)(G)	Yields moderate efficiency gains related to eliminating duplication of effort, reducing unnecessary length in environmental documents, and focusing efforts on the most important issues.	Implemented

Action	Primary ADVANCE Act Section 506 Provision	Impact	Status/Timeframe
Use of exemptions to begin review of a reactor application with preparation of an Environmental Assessment (EA) on a case-by-case basis when circumstances warrant.	506(b)(2)(I)	Expected to yield efficiency gains related to focusing efforts on the most important issues and implementing streamlined environmental review processes where appropriate, while still fulfilling NEPA requirements.	Implemented

Table 2 – Ongoing NRC Program Actions Related to ADVANCE Act Section 506

Action	Primary ADVANCE Act Section 506 Provision	Impact	Status/Timeframe
Implementing agile project management tools to improve workload planning and support nimble deployment of staff to high-priority license reviews	506(a)	Expected to yield moderate efficiency gains related to ensuring that NRC actions are completed in an efficient and effective manner by focusing on administrative process improvements.	Ongoing, short term
Providing training and coordination to enhance understanding and consistent implementation related to the FRA NEPA amendments	506(b)(1)	Expected to yield moderate efficiency gains related to ensuring that NRC environmental reviews are consistent and are completed in an efficient and effective manner.	Ongoing, short term
Developing approaches to the NRC staff's review of environmental resource areas to ensure the level of review is commensurate with the level of potential environmental impact	506(a)	Expected to yield efficiency gains related to "focusing efforts on the most important issues and implementing streamlined environmental review processes where appropriate, while still fulfilling NEPA requirements.	Ongoing, short term
Increasing the use of technology to make environmental audits more efficient and effective (e.g., leveraging virtual meetings to minimize travel funds and staff hours spent on on-site audits)	506(a)	Expected to yield moderate efficiency gains related to ensuring that NRC actions are completed in an efficient and effective manner by focusing on administrative process improvements.	Ongoing, short term
Publishing final rule on a Generic Environmental Impact Statement (GEIS) for new nuclear reactors	506(b)(2)(B)	Expected to yield substantial efficiency gains related to eliminating duplication of effort and not having to recreate, reproduce, or provide previously existing information; facilitating shorter environmental review timeline; and developing application-specific Environmental Impact Statements (EISs) and EAs that focus on the environmental impacts unique to that application.	Reviewing comments on proposed rule, short term for draft final rule to be provided to the Commission

Action	Primary ADVANCE Act Section 506 Provision	Impact	Status/Timeframe
Publishing final rule to expand and update the NRC's list of actions eligible for Categorical Exclusions (CEs)	506(b)(2)(H)	Expected to yield substantial efficiency gains related to ensuring that NRC actions are completed in a more consistent, efficient, and effective manner.	Reviewing comments on proposed rule, short term for draft final rule to be provided to the Commission

Table 3 – Potential Future NRC Program Actions Under Development Related to ADVANCE Act Section 506

Action	Primary ADVANCE Act Section 506 Provision	Impact	Status/Timeframe
Streamlining the administrative processes related to publishing environmental documents (e.g., not publishing EISs as NUREGs)	506(a)	Expected to yield moderate efficiency gains related to ensuring that NRC actions are completed in an efficient and effective manner by focusing on administrative process improvements.	Under development, short term
Using improved technology to increase the efficiency of processing and responding to public comments (e.g., using artificial intelligence technology to draft initial versions of comment summaries)	506(a)	Expected to yield moderate efficiency gains related to ensuring that NRC actions are completed in an efficient and effective manner by focusing on administrative process improvements.	Under development, short term
Establishing detailed acceptance review criteria for information needed to comply with statutes such as the NHPA and the ESA	506(b)(2)(F)	Expected to yield moderate efficiency gains related to proceeding more quickly with consultations after accepting an application and facilitating timeliness in consultation activities.	Under evaluation, medium term
Conducting rulemaking to further streamline alternatives analyses by addressing the scope of, the purpose and need for, and the evaluation of a reasonable range of alternatives to the proposed agency action	506(b)(2)(G)	Expected to yield efficiency gains related to eliminating duplication of effort, reducing unnecessary length in environmental documents, and focusing efforts the most important issues.	Under evaluation, medium term
Conducting rulemaking to revise the definition of CE to align with NEPA Section 111(1) and explore whether any additional actions are eligible for CE	506(b)(2)(H)	May yield substantial efficiency gains related to ensuring that NRC environmental reviews are completed in an efficient and effective manner if additional categories of actions are eligible for CE.	Under evaluation, medium term

Action	Primary ADVANCE Act Section 506 Provision	Impact	Status/Timeframe
Conducting rulemaking to eliminate the list of actions under 10 CFR 51.20(b) and revise 10 CFR 51.20 to reflect NEPA Section 106(b), except where an EIS is required by statute	506(b)(2)(I)	May yield substantial efficiency gains related to focusing on the most important issues and implementing streamlined environmental review processes where appropriate, while still fulfilling NEPA requirements.	Under evaluation, medium term
Conducting rulemaking to allow applicants to prepare environmental documents	506(b)(2)(J)	May yield efficiency gains related to ensuring that NRC environmental reviews are completed in an efficient and effective manner and eliminating duplication of effort.	Under evaluation, medium term
Developing an online portal that would support a digital process for applications and reviews, including environmental reviews, for the rapid deployment of factory-fabricated microreactors	506(b)(2)(K)	Expected to yield substantial efficiency gains related to ensuring that NRC actions are completed in an efficient and effective manner; streamlining environmental review processes; and facilitating timely coordination between the NRC, applicant, external participants, and the public.	Under evaluation, medium term
Developing additional classes of GEISs, where appropriate, if it is decided that they can contribute to efficiencies	506(b)(2)(B)	Would yield substantial efficiency gains related to eliminating duplication of effort and not having to recreate, reproduce, or provide previously existing information; facilitating shorter environmental review timeline; and developing application-specific EISs and EAs that focus on the environmental impacts unique to those applications.	Under evaluation, long term
Expanding use of the online portal for factory-fabricated microreactors to other licensing actions	506(b)(2)(K)	Expected to yield substantial efficiency gains related to ensuring that NRC actions are completed in an efficient and effective manner; streamlining environmental review processes; and facilitating timely coordination between the NRC, applicant, external participants, and the public.	Under evaluation, long term

ENCLOSURE 2

STAKEHOLDER ENGAGEMENT

Public Meeting

On September 25, 2024, the U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting to seek input from the public, related to Section 506 of the Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy Act of 2024 (ADVANCE Act). Approximately 70 people attended the meeting, not including the NRC staff in attendance. Details of that meeting can be found in the NRC's Agencywide Documents Access and Management System (ADAMS) ML24277A125.

Correspondence

The NRC received written input related to Section 506 of the ADVANCE Act from the following groups and individuals:

Incoming Correspondence	ADAMS Identifier
September 6, 2024, letter from Andrew Mauer, Sr. Director, Regulatory Affairs, Nuclear Energy Institute, to Mike King, Special Assistant for ADVANCE Act Implementation—"NEI Input on Efforts to Modernize and Optimize NRC Environmental Reviews"	ML24267A203
September 25, 2024, letter from Generation Atomic—"Efforts to Modernize NRC Environmental Reviews"	ML24270A248
September 26, 2024, email from Bill Dam, Independent Environmental Consultant—"Comments to Include for ADVANCE Act Report to Congress"	ML24270A255
October 4, 2024, email and letter from University of Illinois at Urbana-Champaign research team to Lance Rakovan—"Regulatory Comments on Implementing ADVANCE Act 506"	ML24281A069
Undated letter from Ernie Kee—"Comments on: Public Input on the Report to Congress on Efforts to Facilitate Efficient, Timely, and Predictable Environmental Reviews for Nuclear Reactor Applications"	ML24276A196
Supplemental letter from Ernie Kee	ML24295A085
October 11, 2024, letter from Nicholas McMurray, Managing Director, International and Nuclear Policy, ClearPath—"ClearPath Comments on the ADVANCE Act Report to Congress on Efforts to Facilitate Efficient, Timely, and Predictable Environmental Reviews for Nuclear Reactor Applications"	ML24289A052
October 14, 2024, email from Connie Kline—Feedback/Comments 9/25/24 ADVANCE Act Congressional Report on Environmental Review of Nuclear Reactors	ML24296A018
October 15, 2024, letter from Erik Funkhouser, Interim Executive Director, Good Energy Collective—Good Energy Collective Comments on the ADVANCE Act Report to Congress on Efforts to Facilitate Efficient, Timely, and Predictable Environmental Reviews for Nuclear Reactor Applications	ML24295A088