KATHY HOCHUL
Governor
RICHARD L. KAUFFMAN
Chair
DOREEN M. HARRIS
President and CEO

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U.S. Nuclear Regulatory Commission
Office of the Secretary
ATTN: Rulemakings and Adjudications Staff
Washington, DC 20555

Subject: Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors (NRC-2019-0062)

To all concerned:

The State of New York appreciates the opportunity to review the U.S. Nuclear Regulatory Commission's (NRC) proposed rulemaking "Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" (NRC-2019-0062) published in the Federal Register on October 31, 2024. If promulgated, the rulemaking would revise the NRC's regulations by adding a new Part 53 to the Title 10 Code of Federal Regulations in response to requirements in the Nuclear Energy Innovation and Modernization Act (NEIMA). As directed under NEIMA, the proposed Part 53 is intended to provide a risk-informed, performance-based, and technology-inclusive regulatory framework for future commercial nuclear plants. We understand that the proposed Part 53 framework is a voluntary alternative to the existing prescriptive Part 50 and Part 52 regulatory frameworks rather than a replacement, and that it is intended to offer future applicants flexibility for a variety of anticipated advanced reactor technologies and innovative designs.

The potential for well-designed and professionally operated advanced nuclear reactors to serve as a dispatchable, emissions-free resource is currently under consideration in New York as the State moves to a zero-emission electric grid. New York's Blueprint for Consideration of Advanced Nuclear Technologies was a first step in examining advanced nuclear's potential benefits to New York and sets out a scope of issues to be considered in the development of a New York Master Plan for Responsible Advanced Nuclear Development in New York (Master Plan). Development of the Master Plan will provide a framework for in-depth examination of key issues to develop recommendations for implementation of advanced nuclear technologies in New York State. This will include regulatory, safety, and siting concerns, as New York places a strong policy focus on nuclear safety, public health and the environment. It is critical for the success of the industry and the new reactor designs that the NRC maintain key and transparent regulatory licensing bases to protect public safety and to provide support for public acceptance of future projects.

New York State appreciates all opportunities to provide input to the NRC on initiatives affecting nuclear power plants in the state. Specifically, the New York State Energy Research and Development Authority (NYSERDA) and New York State Departments of Public Service (NYSDPS) and Health (NYSDOH) offer the following feedback.

**(1) Risk-Informed and Performance-Based Approach**

The NRC suggests that the proposed Part 53 regulations will streamline the process for both the NRC and companies seeking federal authorization to site, construct, and operate advanced reactors. The NRC describes the proposed Part 53 as risk informed and technology inclusive, allowing applicants greater flexibility in meeting safety requirements to accommodate a wider range of advanced reactor technologies and innovative designs and reduce or eliminate the need for exemptions.

The existing Parts 50 and 52 provide a prescriptive safety framework focused on traditional technology that has been in operation for decades, for which potential events are well established, and where the design criteria to respond to those event sequences are known. Under the proposed Part 53, a probabilistic risk assessment (PRA) must be performed to identify potential failures, susceptibility to internal and external hazards, and other contributing factors to determine event sequences that might challenge safety functions. This requires identification of all design basis accident (DBA) and licensing basis event (LBE) sequences, which can be challenging absent significant operational experience for the chosen reactor design.

We note that the NRC is pursuing a novel approach to an emerging industry, with little operational history from which to draw. While PRAs can be a valuable tool, they have inherent uncertainties, including incomplete or imperfect data, challenges in accurately modeling human behavior, and varying modeling techniques that could result in disparate outcomes. **The NRC should clarify how staff will maintain oversight of applicants' quality control for their individual Probabilistic Risk Assessment models and inputs, as well as consistency across different plants and applicants.**

We also note that the characterization of this framework as "performance based" is not consistent with NRC's standard use of the term "performance" as regarding nuclear facilities. See, e.g., NUREG-2150, Appendix D, which outlines NRC's risk-informed and performance-based defense-in-depth regulatory approach for reactors, materials, waste, fuel cycle, and transportation[1].

[1] "A performance-based regulatory approach is one that establishes performance and results as the primary basis for regulatory decision making, and incorporates the following attributes: 1. measurable (or calculable) parameters (i.e., direct measurement of the physical parameter of interest or of related parameters that can be used to calculate the parameter of interest) exist to monitor system, including facility and licensee, performance, 2. objective criteria to assess performance are established based on risk insights, deterministic analyses, and/or performance history, 3. licensees have flexibility to determine how to meet the established performance criteria in ways that will encourage and reward improved outcomes, and 4. a framework exists in which the failure to meet a performance criterion, while undesirable, will not in and of itself constitute or result in an immediate safety concern."

**(2) Open-ended Rulemaking Process / Transparency / Public Engagement / Public Trust**

The NRC states that it intends the new rulemaking to offer a transparent and efficient process for licensing of advanced nuclear reactors under the Atomic Energy Act. While the NRC's proposed rulemaking should aim to be both transparent and efficient, the flexibility in the proposed rule relies on the applicant to choose their own path of compliance and provide the bases and analysis for that choice as part of the licensing request.

However, the proposed Part 53 only requires applicants to provide a summary of the PRA and risk insights to support safety findings.[2] The analyses to determine applicable accidents and events are complex and typically designated as proprietary. While some applicants may make additional detail available for NRC staff review, proprietary information is unlikely to be provided to host states, municipalities, or other interested parties. As a result, the public will be precluded from reasonably evaluating the accuracy and thoroughness of the applicant's analysis of potential accidents or mitigating systems. This approach may also undermine public confidence in the safety of new designs, coupled with limited opportunity for public input as discussed below. This concern is especially important with advanced designs without relevant operating experience.

PRA analyses use sophisticated software-based methodologies with hundreds of assumptions that may not be identified by the applicant and available to stakeholders. In reviewing and approving applications under the proposed Part 53, the NRC therefore essentially asks for the public's blind trust. For states and the public, confirming measures that affect public safety through a PRA risk informed process would be nearly impossible. Thus, the proposed rule sets the stage for being opaque to anyone other than NRC employees and the proposing company once the licensing process begins. This is especially concerning given the expectation that new technologies, which the industry does not have decades of operating experience with, will be used to verify assumptions.

**To address these concerns, the NRC should provide the public with a detailed review of Probabilistic Risk Assessment and risk insights to facilitate public confidence regarding the safety of advanced reactor designs and other matters important to public safety, such as emergency planning, physical security, and fire protection.**

Similarly, proposed 10 C.F.R. section 53.240 requires applicants to identify their own licensing-basis events on a case-by-case basis. Proposed section 53.740 bases its staffing requirements on facility-specific, licensee-submitted staffing plans. Proposed section 53.440 defines its required design features in terms of "generally accepted consensus codes and standards," and proposed section 53.250 only vaguely defines the uncertainties that a licensee's defense-in-depth analysis must consider. Finally, proposed section 53.1720 allows licensees to base their minimum insurance coverage limits on plant-specific cost analyses, rather than establishing a firm floor as has been done in the past.

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[2] Commissioner Crowell Vote Sheet VR-SECY-23-0021 dated December 12, 2023, https://www.regulations.gov/document/NRC-2019-0062-0298, at 6.; Commissioner Hanson Notation Vote 2023-10-30, https://www.nrc.gov/docs/ML2336/ML23363A025.pdf at 4.

These provisions, and others like them, are ambiguous and will negatively impact state and public stakeholders and their ability to understand the current licensing basis (CLB) or participate in the 10 CFR § 2.206 process. From an accountability perspective, it will be difficult for NRC and other federal agencies to enforce such ambiguous provisions. In addition, the proposed process fails to allow transparency for the State public utility commissions, ratepayers, and other public stakeholders.

**The NRC's proposed rule should provide a more clear and structured process to allow for the involvement of State regulators and stakeholders in the entire licensing process for advanced reactors.**

Finally, should the NRC approve a standard reactor design before a site is chosen, the state and public may be foreclosed from arguing issues when an approved design is sited in its area. The NRC's approach for reactor design certification undermines meaningful public engagement by the state, local governments, and the public, as it is done without identifying an ultimate site. It is not reasonable to expect states to expend resources on every proposed reactor design if there is no expectation of that design being utilized within the state.

**As a remedy, the NRC should create a mechanism authorizing state and public comment on the suitability of all aspects of an approved design for the identified site(s) in a specific application. At a minimum, the NRC should expand the state consultation provisions contained in Part 50.91 to apply to all applications for new reactor construction, be they under Part 50, 52, or the proposed 53. Opportunity for both state and public comment on design aspects should be included in the review and comment period of the construction permit or Combined Operating License (particularly when state comment was not provided on the design certification).**

**(3) Regulatory Predictability**

The NRC understands that regulatory predictability is essential, and that significant variation in licensing basis from plant to plant could result in a weakened system of accountability and safety.[3] However, allowing applicants and licensees to justify an appropriate regulatory footprint unique to each design is likely to lead to substantial variation from plant to plant, and thus challenge numerous safety aspects.

Under the proposed Part 53, the applicant must evaluate the risk profile for a given reactor design, must identify the design basis accidents and licensing basis events which are credible for that specific facility and design, and then explain how the design mitigates those accidents and events to protect the health and safety of the public. Each applicant performing these complex analyses separately may lead to considerable variation in how applicants propose to mitigate events and thus a uniqueness in each potential application's demonstration of compliance with the proposed Part 53 requirements -- even when evaluating the same reactor design. Adding in the potential inconsistencies inherent in review of applications by different NRC staff, the lack of prescriptive rules can lead to the unintended effect of different rules being applied to different projects and perceptions of inconsistent application of the safety expectations by the NRC. Conversely, the NRC potentially applying the

[3] Commissioner Hanson Notation Vote 2023-10-30, https://www.nrc.gov/docs/ML2336/ML23363A025.pdf at 5.

most stringent analytical results from an approved project to a subsequent applicant even though a second applicant has provided ample analysis for their conclusions could lead to an unnecessary ratcheting effect.

**The NRC should provide an oversight review function that assures consistency in NRC reviews of all aspects of nuclear safety from plant to plant.**

Predictable review timelines are also essential. There is no published schedule for a Part 53 review. Part 50 and 52 have published review schedules for well-prepared applications.[4] As discussed previously, PRAs have inherent uncertainties that could extend review times and costs significantly. Thus, we note that the proposed Part 53 offers flexibility that may come at the price of timeline unpredictability.

**(4) Hearings**

10 CFR Part 2 sets forth the NRC's statutory obligations under the Atomic Energy Act (AEA) for new reactor applications. The hearing requirements in 10 CFR Part 2 ostensibly seek aim to balance public participation, regulatory oversight, and efficient decision-making in NRC licensing actions. Parts 50, 52 and the proposed 53 refer to Part 2 for mandatory and contested hearings. Such hearings can provide an opportunity to test NRC assumptions and lead to increased safety and mitigation measures at NRC licensed facilities, which, in turn, promotes the public safety for surrounding host communities and States.

The NRC recently took steps to streamline hearing processes, shortening some of the hearing schedules.[5] Under the proposed Part 53, there is a provision for a "hearing" for each application but no contested hearing. For the mandatory hearing, stakeholders may submit written statements for Commission consideration, but without the possibility of a contested hearing, Commissioners and staff have little incentive to meaningfully review public feedback. While those actions are not unique to the proposed Part 53, the loss of meaningful public participation here is a substantial reduction in public input into Commission decisions. Over the last five decades, the State of New York has engaged in many and various types of "hearings" before NRC Commissioners, staff, and administrative law judges. Of the various different types of NRC "hearings," it is the State's experience that contested evidentiary hearings provide a meaningful and effective way to engage NRC staff and Commissioners. The public presentation of sworn testimony and live questioning of witness – and cross examination -- is a time-tested means to obtain facts and test assumptions and conclusions. States play a unique role in the system of cooperative federalism. If a host state determines that a contested hearing on a topic is in the interests of the state and its residents, that state should be permitted to request and also fully engage and participate in such a contested evidentiary hearing process.

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[4] Generic Mileston Schedules of Requested Activities of the Commission, U.S. NRC, September 10, 2021, https://www.nrc.gov/about-nrc/generic-schedules.html.

[5] NRC streamlines mandatory hearing process, Hogan Lovells, July 26, 2024, https://www.hoganlovells.com/en/publications/nrc-streamlines-mandatory-hearing-process.

**(5) Financial Assurance / Advanced Reactor Liability Protection**

Financial assurance for nuclear power plants is a complex system designed to ensure that funds are available for decommissioning and potential accidents. Key aspects of financial assurance are decommissioning funds and liability insurance. The proposed Part 53 provides a more adaptable framework for financial assurance compared to the more prescriptive structure found in Parts 50 and 52. We note that this could potentially allow for more tailored financial assurance approaches for advanced reactor designs, while still ensuring adequate funds are available for decommissioning. Under this umbrella of flexibility, the applicability of established liability insurance provisions warrants careful examination.

NRC proposes to require commercial nuclear plant licensees under the proposed Part 53 to satisfy the provisions of Part 140. For the proposed Part 53, NRC relies on, among other things, advanced reactors' "enhanced safety margins" to justify increased "operational flexibilities" for licensees (89 Fed. Reg. at 86920). Given these enhanced safety margins provided by advanced reactors, the liability limits established under the Price-Anderson Act and NRC's implementing regulations (10 CFR Part 140) should be revisited. Initiated in 1957, the Price Anderson framework was developed during the deployment of Generation I and Generation II reactor models.[6] An advanced reactor's enhanced safety margins will presumably translate into lower insurance premiums and allow its owner-licensee to obtain more private insurance coverage. Such facilities thus may not need Price-Anderson's overall liability protection, which, in turn, would lessen the costs on taxpayers for insurance support. It would also incentivize increased safety. See generally, The Next Generation of Nuclear Power, U.S. House of Representatives, Subcommittee on Energy and Resources, Committee on Government Reform, Washington, D.C. (June 29, 2005) at 47, 54 ("If we move into systems which are inherently safe, you don't need the protection that provides.").

According to the NRC, where proposed Part 53 differs from the current Part 50, these differences are intended to make the proposed requirements more technology inclusive. In adapting these regulations for new technologies, New York State urges the NRC to ensure that owners set aside adequate resources for the eventual decommissioning of these facilities. Host states, and especially host communities, are particularly vulnerable to the adverse consequences that accompany incomplete or delayed decommissioning processes. Ensuring that decommissioning cost estimates are thorough and that adequate financial resources are identified (and set aside) early in a facility's lifespan can avoid those outcomes, which is clearly in the public interest. Separate and apart from decommissioning funding requirements, provision should also be made to set aside sufficient funds for spent fuel management and storage.

[6] Examples of Generation I designs include Shippingport (PA) Atomic Power Station (1957) and Indian Point Unit 1 (1962); Generation II designs include the BWR and PWR designs in use today.

**(6) Staffing/Personnel**

The proposed Part 53 provides a performance-based approach for staffing requirements which could allow innovative staffing solutions without prescribing specific numbers of operators[7]. This has the potential to allow for reduced staffing levels for certain advanced reactor designs if safety objectives are met through other means such as inherent safety features or advanced control systems. In view of this potential for reduced staffing, staff qualification and oversight requirements within the proposed Part 53 deserve close inspection.

**(a) Generally Licensed Reactor Operator**

NRC proposes that a new class of operator be created and referred to as a Generally Licensed Reactor Operator (GLRO). A GLRO would work at a new class of nuclear facility called a self-reliant mitigation facility. The NRC defines a self-reliant mitigation facility by its ability to safely shutdown and protect the surrounding population without reliance on human action. This includes functionally showing that the plant does not require human action for safety. Instead, the facility must rely exclusively on safety features and characteristics that cannot be rendered unavailable by credible human errors and do not credibly require manual human operation in response to equipment failure. The NRC proposes that a GLRO be subject to similar training requirements of licensed operators and senior operators, but with some areas relaxed because they are not required for the safe shutdown of the facility. Furthermore, and importantly, a GLRO would not be required to hold a license with the NRC. This operator would also not be subject to the same medical requirements currently required for other NRC licensed operators.

**The State disagrees with NRC's proposal and maintains that Generally Licensed Reactor Operators should be subject to similar medical evaluations and standards to other commercial nuclear licensed operators. Further, the NRC should maintain a similar type of license for this class of operators as they do with other licensed nuclear operators. The NRC should maintain full oversight of all operators at active nuclear sites. This is not overly burdensome for that operator or licensee and will provide reassurance to the public about who oversees those facilities and that they are being operated safely and attentively.**

**(b) Operator Fitness for Duty Testing**

Fitness For Duty (FFD) at nuclear power plants is a comprehensive program designed to ensure that workers at nuclear facilities are physically, mentally, and emotionally capable of performing their duties safely and competently. The primary goal of FFD programs is to maintain public health and safety by preventing accidents or security breaches that could result from impaired workers. Key components of the program are drug and alcohol testing, behavioral observation, fatigue management, and medical and psychological

[7] Developing a new regulatory framework for advanced reactors: Update on Part 53, NuclearNewswire, May 3, 2024, https://www.ans.org/news/article-6003/developing-a-new-regulatory-framework-for-advanced-reactors-update-on-part-53/.

evaluations. The proposed Part 53 incorporates FFD into the broader risk-informed framework,[8] taking a performance-based approach to FFD with requirements to be applied in a graded manner based on the risk profile of different advanced reactor designs and operational models. The proposed Part 53 would consolidate the applicable FFD requirements by placing in one subpart all proposed part 26 requirements -- either new requirements or cross references to existing part 26 requirements -- for part 53 licensees and other entities (FR 86955).

**We support the proposed consolidation of all proposed 26 requirements into one sub-section for easy reference and the NRC should consider similar consolidation in other sub-sections as well.**

However, we disagree with the NRC proposal to omit drug and alcohol testing for advanced reactor plant operators. The proposed changes to the Part 26 Fitness for Duty (FFD) program provide a potential option for licensees who meet the criteria set forth in proposed section 53.860(a)(2)(i) to not require drug and alcohol testing. As seen recently by the Hope Creek plant in New Jersey (Event Number: 57536, February 2025), even a non-licensed supervisor or operator can test positive on a random drug test. The remainder of the proposed program would still require a majority of the FFD requirements that currently exist at nuclear facilities (i.e. behavior observation programs, qualitative and quantitative monitoring, etc.).

**The State supports the continuation of a Fitness for Duty program similar to current requirements but disagrees with any option that would remove drug and alcohol testing for any nuclear facilities. Such an allowance could potentially erode public trust in the operators of nuclear facilities within their communities.**

**(7) Plant Systems, Safety, and Security**

**(a) Degradation Mechanisms**

The proposed Part 53 adds language about the degradation mechanisms of various components (such as Safety Related (SR) and non-safety-related but safety significant (NSRSS) structures, systems, and components (SSCs)). NRC proposes inclusion of requirements related to designing and monitoring for possible degradation mechanisms and states that this reflects important lessons learned from the history of light water reactors and the likely introduction of new design features and materials in future commercial nuclear plants.

**The State supports the addition of this language and requests that the degradation mechanisms of aging, fatigue, embrittlement, chemical interactions, operating temperatures, effects of irradiation, corrosion, and other environmental factors, and the collective and cumulative synergistic effects of such factors that may affect the performance of SR and NSRSS SSCs be specifically included in the final rule.**

[8] U.S. Nuclear Regulatory Commission Proposes New Licensing Framework for Advanced Reactors, SIDLEY, November 7, 2024, https://www.sidley.com/en/insights/newsupdates/2024/11/us-nuclear-regulatory-commission-proposes-new-licensing-framework-for-advanced-reactors.

**The State further requests that NRC continue to identify and incorporate lessons learned from the commercial industry to better equip the safe operation of advanced reactors. This proposal will allow advanced nuclear plants to have degradation and aging management programs and systems to provide necessary structure and processes to ensure long-term safe and reliable operations.**

**(b) Lack of Consideration for Climate Change**

Accurate risk modeling demands an accounting of the potential effects of climate change on advanced reactors. The world is seeing rapid changes in climate which has led to catastrophic floods, hurricanes, tornados, and wildfires. The increasing severity and frequency of these events may negatively impact nuclear plant infrastructure and resiliency. The NRC should prioritize including some type of mitigation against natural disasters that are becoming more prevalent each year. This is in line with similar and recent guidance from the Government Accountability office, which stated that the NRC should take action to fully consider the potential effects of climate change (GAO-24-106326).

**The NRC can aid nuclear industry developers as they guard against these impacts by requiring the incorporation of mitigation measures in the siting, construction, operation, and decommissioning of future nuclear plants.**

**(c) Facility Safety Program**

The proposed Part 53 includes a requirement for a facility safety program (FSP). The FSP would require licensees to routinely evaluate potential hazards, operating experience, and changes in risks to the public. We note that there is debate regarding the regulatory burden imposed by requiring an FSP. Indeed, previous direction has been provided by the Commissioners to remove this program.[9]

**The NRC should retain the Facility Safety Program as a vital vehicle for public information to provide the state and the public a summary source of information on safety oversight, and identification and evaluation of new risks.**

**(d) Fire Protection**

Fire protection in nuclear power plants is a comprehensive system designed to prevent, detect, control, and extinguish fires to ensure the safe operation of the facility and protect public health and safety. It consists of prevention, detection and alarms, suppression systems, containment and barriers, and emergency response. Current Parts 50 and 52 allow compliance with NFPA 805 as an alternative to prescriptive requirements.[10]

While the proposed Part 53 maintains the core principles of fire protection found in the prescriptive requirements of Parts 50 and 52, the proposed Part 53 may provide additional options for demonstrating fire

[9] Commissioner Hanson Notation Vote 2023-10-30, https://www.nrc.gov/docs/ML2336/ML23363A025.pdf at 8.
[10] 10 CFR 50.48 Fire Protection, https://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-0048.html.

protection adequacy based on risk informed methodologies.[11] Fire is addressed as a significant component in PRAs through a structured approach called Fire PRA. We note that this methodology raises similar concerns to broader PRAs surrounding transparency, quality control, and regulatory predictability, as discussed previously.

**(e) Security**

Physical security for a nuclear power plant must protect the facility from unauthorized access, theft, sabotage, and other malicious acts. This multi-layered approach ensures the safety of nuclear materials, critical equipment, and personnel. Key components of the program are physical barriers, detection systems, access control, security personnel, lighting and electronic monitoring measures.

The current Parts 50 and 52 provide prescriptive requirements for vital areas, physical barriers, isolation zones, access control points, and security organizations, including detailed requirements for security personnel, training and qualification.[12] The proposed Part 53 allows applicants to propose alternative approaches, including alternative barrier designs and configurations, to meet safety goals, provided they can demonstrate adequate protection.

As discussed in the State's October 23, 2024 comments on NRC's Proposed Rulemaking Alternative Physical Security Requirements for Advanced Reactors (NRC-2017-0227), site security plans submitted to the NRC by an applicant or licensee are considered Safeguards Information and the State is not afforded the opportunity to review that information during the application process. Thus, it is unclear how the state will be afforded meaningful, site-specific engagement on an applicant's proposed alternative approaches. **The Commission should require applicants to provide host states with access to all Safeguards Information, subject to lawful nondisclosure agreements by the states, pertinent to development and implementation of site security plans.**

**(8) Emergency Preparedness and Response**

Emergency preparedness for nuclear power plants is a comprehensive system that involves coordination between nuclear plant operators, government agencies, and local communities. Unlike the specific requirements for emergency response organizations, notification procedures, and protective measures[13] in Parts 50 and 52, the proposed Part 53 allows flexibility in developing emergency plans advanced reactors of varying

[11] Regulatory Guide RG 1.189, Revision 4, Fire Protection for Nuclear Power Plants, U.S. NRC, May, 2021, https://downloads.regulations.gov/NRC-2020-0230-0008/content.pdf.
[12] 10 CFR Part 73.55, Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage, U.S. NRC, https://www.nrc.gov/reading-rm/doc-collections/cfr/part073/part073-0055.html.
[13] Appendix E to Part 50 - Emergency Planning and Preparedness for Production and Utilization Facilities, U.S. NRC, December 28, 2023, https://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-appe.html.

designs and size. [14] This may present challenges to state and local governments whose responsibility it is to plan for and respond to radiological emergencies.

Under Parts 50 and 52, nuclear power plants have two types of emergency planning zones (EPZs); a 10-mile plume exposure pathway radius around the plant for immediate protective actions and a 50-mile ingestion pathway radius to prevent contamination of food and water supplies; and require extensive offsite emergency planning and coordination with state and local authorities.[15]

In contrast, the proposed Part 53 allows for scalable EPZs that can be smaller for advanced reactors with lower risk profiles. This will lead to reduced offsite emergency planning requirements for certain advanced reactors, based on their risk profile and safety features. We understand that many advanced nuclear developers may seek to have the EPZs for new designs limited to the site property boundary. We further understand that many advanced nuclear developers may assert that there is no need for police, fire, and emergency management communication from a nuclear safety and radiological perspective. This situation is further exacerbated by new designs that propose limited on-site staff and remote monitoring of operations.[16] There will be no mechanisms to ensure that off-site personnel will have sufficient knowledge and training to support activities on site when needed (such as responding to a fire or security incident).

The emergency plan references in the proposed Part 53 (89 Fed. Reg. 87117) indicate that the NRC won't require FEMA radiological emergency preparedness exercises if an advanced reactor doesn't have an off-site EPZ or if prompt protective actions aren't required. Similarly, many of the planning and response capabilities may not be required for this type of reactor under the proposed performance-based approach. The NRC states that typical emergency response functions from offsite response organizations (ORO) will fulfill many of the licensing requirements for new types of reactors, citing examples of food embargoes/quarantines performed without the use of pre-established emergency planning zones in non-radiological incident response. But using historical, non-radiological emergency protective actions as precursors to predict response readiness can be problematic. A response agency's responsibilities and authority change depending on the location and scenario. For example, is the state home rule or Dillon rule? Is it an Agreement State? Is there a different lead agency for local/state officials for different types of emergencies? Would the radiation control authority be involved? These questions need answers for advanced reactors regardless of the size of the radiological footprint of a modeled accident scenario.

While anticipated off-site dose projections would be expected to be much lower than traditional nuclear power plant accident scenarios, there remains a need to maintain working relationships between the utility and off-site

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[14] Towards Risk-Informed Perfromance-Based Emergency Planning, Review of Regulation, Guidance, and Methods, Argonne National Laboratory, ANL/NSE-24/4, January, 2024, https://publications.anl.gov/anlpubs/2024/04/188366.pdf.

[15] Towards Risk-Informed Perfromance-Based Emergency Planning, Review of Regulation, Guidance, and Methods, Argonne National Laboratory, ANL/NSE-24/4, January, 2024, https://publications.anl.gov/anlpubs/2024/04/188366.pdf.
Appendix E to Part 50 - Emergency Planning and Preparedness for Production and Utilization Facilities, U.S. NRC, December 28, 2023, https://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-appe.html.

[16] See, for example, the eVinci™ microreactor design, https://www.nrc.gov/docs/ML2410/ML24103A037.pdf.

response organizations. NRC should not assume that responders and decision makers will be prepared to enact protective actions without significant prior coordination and training of staff.

It is also worth noting that Three Mile Island did not have significant off-site radiological releases (from an environmental and public health standpoint), yet it continues to be remembered as one of the biggest failures of the nuclear energy industry. With public acceptance of advanced nuclear remaining largely uncertain, there is substantial value in having offsite training, education, and collaboration independent of whether the site EPZ extends beyond the site boundary.

At 89 Fed. Reg. 86922, NRC states that "However, the Commission continues to expect (consistent with the 2008 Advanced Reactor Policy Statement), as a minimum, at least the same degree of protection of the public and the environment that is required for current-generation, light water reactors." Further, at 89 Fed. Reg. 86921, NRC states that the new approach would “continue to provide reasonable assurance of adequate protection of public health and safety and the common defense and security”.

Absent an EPZ that extends beyond the site boundaries, it is unclear how this will be accomplished. Will FEMA provide "reasonable assurance" through drill/exercise evaluations like it does for traditional nuclear power plants? We note that the FEMA REP Manual does not address program requirements for advanced reactors. Specific guidance needs to be developed for off-site response organizations to demonstrate readiness to respond.

**The NRC should provide clear guidance on how coordination with police, fire, state public health and environmental response agencies, and FEMA will be harmonized with shallow Emergency Planning Zone boundaries that do not extend beyond the site boundary. In addition, the NRC should ensure that local authorities are provided with sufficient site information to be able to effectively perform required duties.**

**(9) Manufacturing Licenses**

A Manufacturing License (ML) is a specialized type of license issued by the NRC that authorizes the manufacture of nuclear reactors. This licensing option is designed to streamline the process of producing standardized reactor designs for deployment at multiple sites. Key aspects of ML’s are authorization for factory fabrication however but not installation and operation which are addressed other regulations.

The proposed Part 53 introduces some changes aimed at streamlining the ML application process by allowing more flexible review schedules. [17] But the life cycle for deployment of designs with manufacturing licenses involves a flurry of other regulations, including management and transportation of new and used fuel, construction and operating licenses on specific sites, and decommissioning (Parts 30,40, 50, 70,71,73 and 74 and numerous Reg Guides) that have not been harmonized.

[17] U.S. Nuclear Regulatory Commission Proposes New Licensing Framework for Advanced Reactors, SIDLEY, November 7, 2024, https://www.sidley.com/en/insights/newsupdates/2024/11/us-nuclear-regulatory-commission-proposes-new-licensing-framework-for-advanced-reactors.

**The NRC should provide the scope and proposed schedule for resolution of the regulations affected and invoked by Part 53, particularly regarding the regulation related to manufacturing licenses.**

### (10) Multi-Unit Sites / Multiple Co-located Units

Developers have proposed new nuclear projects where multiple units on a site provide economic and operational flexibility benefits. Parts 50 & 52 require separate license applications for each nuclear unit and allow reference to previously approved licenses for identical designs with no explicit requirements for addressing cumulative site risk.

The proposed Part 53 allows applications for multiple units at a site using identical design, includes provisions for standardization of plant designs, and requires comprehensive PRA analysis to evaluate risks for sites with multiple reactors. The applicant is required to propose their comprehensive risk metrics for consideration of integrated risk at sites with only new reactors and at sites with both new and existing reactors.

However, there is no discussion of how the risk-informed performance-based processes for multi-unit sites will be performed under Part 53. This is a significant concern, particularly considering the potential presence of existing large reactors, potential deployment of extensive shared systems, response to external events, and potential reduced staffing that could affect multiple units. We are concerned about the potential cumulative impacts from multiple reactor modules being installed over time at the same site. It is not clear how the NRC would evaluate multi-module reactor designs where additional modules are added to the same site in the future. **The NRC should provide clarity on how and when the risk informed performance-based processes will evaluate multi-unit sites.**

### (11) Waste Management

Waste management for a nuclear power plant is a comprehensive process designed to safely handle, treat, store, and dispose of radioactive materials generated during nuclear power production. The proposed Part 53 is designed to be more adaptable to new technologies and reactor designs, which may include advanced waste management techniques. The proposed Part 53 does provide more specific requirements for waste management programs and documentation, such as an Offsite Dose Calculations Manual and a Process Control Program for solid waste.[18] However, we note that there is a dearth of true waste generation and management data available for advanced reactor designs due to the lack of operating experience.

A study published in the Proceedings of the National Academy of Sciences and co-authored by former NRC Commissioner MacFarlane, found that the spent nuclear fuel from small modular reactors will be generated in greater volumes per unit of energy extracted and that its composition can be far more complex than the spent

[18] U.S. Nuclear Regulatory Commission Proposes New Licensing Framework for Advanced Reactors, SIDLEY, November 7, 2024, https://www.sidley.com/en/insights/newsupdates/2024/11/us-nuclear-regulatory-commission-proposes-new-licensing-framework-for-advanced-reactors.

fuel resulting from existing power plants.[19] Since we do not know the universe of all technologies and potential waste streams, this may result in concerns in the future. We note that the NRC's proposed rulemaking "Generic Environmental Impact Statement for Licensing of New Nuclear Reactors" (NRC-2020-0101) failed to address this challenge and we have raised these concerns on that rulemaking as well in our December 18, 2024 comments.

**(12) Plain Writing**

At 89 Fed. Reg. 87008, XII. Plain Writing, the NRC states that "The Plain Writing Act of 2010 (Pub. L. 111–274) requires Federal agencies to write documents in a clear, concise, and well-organized manner." And the NRC has requested comment on this document with respect to the clarity and effectiveness of the language used.

We do not find this document to be clear or concise in its use of language. The reading level is set at too high of a bar and many sentences use unnecessarily complex words to describe the proposed rule's meaning. The document also refers the reader to other regulations, guidance, and documents, which can save space, but at the cost of cohesiveness and clarity as well as undue burden on the reader's resources. All information necessary to understand this regulatory change should be contained within the proposed regulation's public notice itself. We note that such unreadability can be an accessibility issue for those with learning and other disabilities. As a remedy, we suggest that NRC work to reduce and clarify language complexity in the proposed rule and consider outreach to disability groups in that process.

Thank you for the opportunity to comment. If you have any questions or concerns, please contact me.

Sincerely,

Alyse Peterson, P.E.
State Liaison Officer - Designee
Senior Advisor for Nuclear Coordination & Radioactive Waste Policy

Attachment: New York State October 23, 2024 comments on NRC's Proposed Rulemaking Alternative Physical Security Requirements for Advanced Reactors (NRC-2017-0227)

cc: Doug Tifft, State Liaison Officer, NRC

[19]Krall, et al., *Nuclear waste from small modular reactors.* Proceedings of the National Academy of Sciences: Vol. 119, No.23 (June 7, 2022). Available at https://doi.org/10.1073/pnas.2111833119

October 23, 2024

U.S. Nuclear Regulatory Commission
Office of the Secretary
ATTN: Rulemakings and Adjudications Staff
Washington, DC 20555

Subject: Proposed Rulemaking Alternative Physical Security Requirements for Advanced Reactors (NRC-2017-0227)

To all concerned:

The New York State Energy Research and Development Authority (NYSERDA), the New York State Department of Public Service (DPS), and the New York State Department of Homeland Security and Emergency Services (DHSES) (the "New York agencies") have reviewed the U.S. Nuclear Regulatory Commission's (NRC or the Commission) proposed rulemaking "Alternative Physical Security for Advanced Reactors" (NRC-2017-0227) published for comment in the Federal Register on August 9, 2024 as shared with the State by the Notice of Request for Comment: Alternative Physical Security Requirements for Advanced Reactors – Proposed Rulemaking" (STC-24-045) published on August 12, 2024, which proposed rule would amend NRC's regulations to provide alternative, risk-informed, performance-based physical security requirements for advanced reactors licensed under 10 CFR Part 50 or 52 and bound by the physical security requirements in 10 CFR Part 73. We offer comments herein.

We note that the proposed rulemaking references concurrent issuance of a draft supporting regulatory guide "Guidance for Alternative Physical Security Requirements for Small Modular Reactors and Non-Light-Water Reactors" (DG-5072). However, that draft regulatory guide was not included in NRC's STC-24-045 request for comments to states and is not included in NRC's listing of draft regulatory guides for public comment https://www.nrc.gov/public-involve/doc-comment.html#rg. It is unclear when/whether the NRC will open a comment period on the draft supporting regulatory guide.

New York State Energy Research and Development Authority

Albany
17 Columbia Circle, Albany, NY 12203-6399
(P) 1-866-NYSERDA | (F) 518-862-1091
nyserda.ny.gov | info@nyserda.ny.gov

Buffalo
726 Exchange Street
Suite 821
Buffalo, NY
14210-1484
(P) 716-842-1522
(F) 716-842-0156

New York City
1359 Broadway
19th Floor
New York, NY
10018-7842
(P) 212-971-5342
(F) 518-862-1091

West Valley Site
Management Program
9030-B Route 219
West Valley, NY
14171-9500
(P) 716-942-9960
(F) 716-942-9961

The potential for nuclear energy to serve as a potential dispatchable emissions free resource is currently under consideration in New York as the State moves to a deeply renewable electric grid. NYSERDA's draft Blueprint for Consideration of Advanced Nuclear Technologies is a first step in examining advanced nuclear's potential benefits to New York. This initial outline profiles issues for New York to consider with regard to advanced nuclear energy, including technological readiness, disadvantaged community concerns, environmental justice, siting, costs and financing, waste profiles, as well as safety and security. New York places a strong focus on nuclear safety and security and appreciates all opportunities to provide input to the NRC on initiatives affecting nuclear power plants in the state.

Public Openness and Clarity

The NRC notes in the Federal Register notice (p. 65230) that the proposed rulemaking is being used to establish voluntary alternatives to some of the prescriptive requirements of Section 73.55, in part, to preclude the use of license exemptions. NRC further notes, correctly, that regulating by site-specific exemption provides less opportunity for public engagement and can lead to less regulatory certainty. However, it is unclear how the state will be afforded site-specific engagement on alternative requirements as presented in this proposed rulemaking.

Site security plans submitted to the NRC by an applicant or licensee are considered Safeguards Information and the State is not afforded the opportunity to review that information during the application process. Thus, the resulting process is no more open to state review than the license exemption process that the NRC professes to be inadequate as regards openness. **The Commission should require applicants to provide host states with access to all Safeguards Information pertinent to development and implementation of site security plans.**

It is unclear whether the use of alternative approaches is restricted to the initial application for a new reactor or can be applied after operations begin. The scenario of a new reactor application being granted with a full, traditional physical security plan in place that is then converted to an alternative approach is concerning. **The Commission should clarify that an applicant may not submit an initial combined operating license with full traditional physical security (that is, one subject to public review) and then later switch to alternative without public input using this alternative.**

It is also unclear how the identified alternatives for sites licensed under Part 50 or 52 will fit in with the Part 53 proposed rulemaking that is targeted specifically at licensing for advanced nuclear reactors. **The Commission should clarify whether alternatives incorporated into Part 50 and 52 become a part of the Part 53 rulemaking.**

In the Federal Register notice (p. 65229), NRC lists the public interaction in which it engaged during development of the proposed rule, including various public meetings and interaction with the Nuclear Energy Institute (NEI). **To the extent it did not already do so, and to the extent that the proposed rule offers licensees the option to rely on law enforcement agencies for armed security interdiction and neutralization functions, the New York agencies encourage the Commission to engage directly with law enforcement stakeholders prior to finalizing the rule.**

Functionality

In the proposed rule, 73.55(s)(1)(iii) requires demonstration of how the requirements of 73.55 will be met by the proposed alternative plan, but in 73.55(s)(1)(iv) NRC states that technical analyses would not be submitted to NRC for review and approval. This allows an applicant to employ the offered alternatives via broad description only, without submitting supporting analyses for NRC review and approval. Additionally, given the Safeguards nature of the Security Plan, it is unclear how the State will be informed of an applicant or licensee's election to employ alternative requirements.

73.55(s)(1)(iv) would require the applicant to perform a technical analysis to evaluate offsite dose consequences from a postulated security event, but the NRC wouldn't require the technical analysis to be submitted for review and approval. The New York agencies submit that without the technical analyses being submitted for NRC review and approval, the NRC and the public cannot be certain of the validity of the licensee's technical analysis; similarly, we question whether the NRC could approve the use of alternative physical security requirements without first inspecting the technical analysis, which would be inappropriate. We support NRC review and approval of the technical analysis for these reasons. We question whether there are current examples in other regulations where the NRC already uses this approach, and what the outcomes of such an approach have been.

The proposed alternative in 73.55(s)(2)(i) provides relief from the required minimum number of armed responders and allows for the possibility of a site physical protection program with no armed responders onsite at all. Instead, a licensee may rely on local or state law enforcement for the interdiction and neutralization functions required by §73.55(b)(3)(i). Further, while the 73.55(b) requirements would continue to apply to the licensee, the NRC will have no regulatory jurisdiction over, or requirements for, law enforcement responders.

- A well-trained security staff is to perform as a countermeasure deterrence, detection, delay, deny, and assigned to diminish threats to facilities. On-site armed security officers strengthen response by immediately initiating response actions to interdict and neutralize threats. Reliance on law enforcement or offsite armed response only to interdict and neutralize a threat to nuclear assets will not afford a consistent and repeatable protective strategy.

- Proposed rule changes focus on the Design Basis Threat (DBT) of radiological sabotage for advanced reactors. **The Commission should clarify how other threats, such a theft of radiological material, are addressed and evaluated against the effectiveness of proposed alternative security measures.**

- **The New York agencies question how, if the licensee and the NRC have no dominion over the responders' training requirements, the NRC could conclude with reasonable confidence that there would be consistent performance by the responders.** Applicants and licensees relying on law enforcement responders would be relieved from the majority of the training and qualification requirements in appendix B, ''General Criteria for Security Personnel,'' to 10 CFR part 73, except for the performance evaluation program requirements in section VI.C.3. **We**

**suggest that the final rule clarify what the basis is for being able to accept (only) successful performance evaluation in accordance with 10 CFR 73 appendix B section VI.C.3, and how that differs with the basis of why current nuclear facilities are required to meet all the appendix B requirements.**

- The site security plan and, in particular, the number and location of armed responders, is considered Safeguards information. Absent a requirement in the rulemaking that applicants and licensees provide host states with access to the security plan, it is unclear how the State will be informed that the site is reliant on law enforcement for interdiction and neutralization functions.

The proposed rule does not require licensees to enter into a Memorandum of Understanding (MOU) or other agreement with law enforcement to provide the interdiction and neutralization services specified the proffered alterative. The guideline of an MOU is included the draft proposed Regulatory Guide 5.90 (section 6.5), but we note that Regulatory Guides represent guidance rather a than a firm, enforceable regulatory requirement. **The New York agencies submit that the Commission should add to the proposed rulemaking a requirement that all applicants seeking to rely on law enforcement services in lieu of onsite armed security:**

  - **Enter into and maintain agreements with law enforcement agencies willing and capable or providing armed response.**
  - **Submit those agreements to the NRC for review and approval prior to the site license being issued.**
  - **Identify contingencies for handling changes in the agreements and the law enforcement agencies involved.**

Unlike the current fleet of large nuclear power reactors, under the NRC's final rule for emergency preparedness for small modular reactors, microreactors, and other advanced technologies, those sites may not be required to have an Emergency Planning Zone (EPZ) or only have an EPZ that is very shallow. Thus, surrounding communities and local law enforcement (including law enforcement further from the site that are engaged for contingency mutual-aid) may not have the benefit of the significant ongoing information exchange, training, and drilling/exercising associated with an EPZ. And unlike dedicated onsite responders, law enforcement agencies may be simultaneously faced with multiple non-nuclear immediate events and ongoing responses (e.g., severe weather) that compete for their limited resources and attention.

- **The Commission should add to the proposed rulemaking a requirement that MOUs with law enforcement agencies include requirements for:**
  - **Training (radiological & non-radiological), planning, preparedness, and response activities**
  - **Resource requirements (staffing and equipment)**
  - **Mitigation of contingencies which might prevent law enforcement from providing the promised services (e.g., budgetary constraints, response to multiple events, potentially diversionary events by malevolent actors)**

Further, in the proposed rule, 73.55(s)(2)(ii)(A)(3) states licensees would "make available" periodic training to law enforcement but also that "neither the NRC nor the licensees can compel law enforcement to participate in training." **The New York agencies submit that it is unclear what evaluation of the law enforcement agenc(ies) capability, training, staffing, etc, would occur or who would do it, and suggest that the final rule make these elements of accountability clear.**

As stated above, New York places a strong focus on nuclear safety and security and appreciates all opportunities to provide input to the NRC on initiatives affecting nuclear power plants in the State. Thank you for the opportunity to comment. If you have any questions, please contact me.

Sincerely,

Alyse Peterson

Alyse Peterson, P.E.
State Liaison Officer - Designee
Senior Advisor for Nuclear Coordination & Radioactive Waste Policy

cc: Doug Tifft, State Liaison Officer, NRC