NAVIGATING NUCLEAR: WHAT PART 53 PREVIEWS FOR FUTURE RULEMAKINGS

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On 25 March 2026, the Nuclear Regulatory Commission (NRC) affirmed its final rule adding 10 C.F.R. part 53, "Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors," to its regulatory framework.[1] Part 53 is a voluntary, risk-informed, performance-based alternative licensing pathway for commercial nuclear reactors.[2] This final rule was issued in the midst of the NRC's "wholesale revision" of its regulations, which the NRC was directed to undertake in Executive Order 14300, *Ordering the Reform of the Nuclear Regulatory Commission*.[3] While it is not possible to predict precisely the content of these rules, a few insights gleaned from the final part 53 rule are highlighted below.

AS LOW AS REASONABLY ACHIEVABLE (ALARA)

EO 14300 directed the NRC to reconsider the use of ALARA and the linear-no-threshold model in the agency's radiation protection standards.[4] In response to comments on the proposed rule for part 53, the final rule does not use the term ALARA.[5] For example, § 53.850(b) in the proposed rule would have required, among other things, the holder of an operating license or combined license to develop, implement, and maintain a program for keeping the doses to members of the public from radioactive effluents as low as is reasonably achievable. The final rule does not include this requirement and requires the holder of an operating license or combined license to develop, implement, and maintain a program for the control of radioactive effluents and for environmental monitoring. In its response to public comments related to ALARA, the NRC stated that "referring to 10 CFR Part 20 is sufficient to address radiation protection standards."[6] This could signal the NRC's approach to ALARA more broadly.

EXPANDED USE OF PROBABILISTIC RISK ASSESSMENT (PRA)

Different from parts 50 or 52, part 53 expands and elevates the use of PRA. Where PRA is largely complementary under parts 50 or 52, PRA is central to safety classification, emergency planning, and security planning under part 53 and is expected to cover internal events; external hazards; multi-module effects; and risks from novel fuels, coolants, or configuration. Compared with the prescriptive requirements of parts 50 and 52, under part 53, applicants propose comprehensive risk metrics and associated risk performance objectives, appropriate systematic risk assessment techniques, and demonstrate how their design and associated programmatic controls protect public health and safety. Importantly, the NRC notes that the risk performance objectives "do not constitute a real-time requirement that must be continuously demonstrated by the licensee."[7]

While parts 50 and 52 will continue to be options for applicants that choose those licensing pathways, the NRC could choose to incorporate the PRA-based approach as an option for security planning under parts 50 and 52.

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The NRC has already provided such a pathway for emergency planning for non-power production or utilization facilities and small modular reactors as that term is defined in 10 C.F.R. § 50.2.[8]

FINANCIAL QUALIFICATIONS

Part 53 updates the requirements for financial qualifications to align with the "appears to be financially qualified" standard in 10 C.F.R. part 70. This contrasts with the financial qualification standards in 10 C.F.R. § 50.33(f) that require an applicant to demonstrate that it possesses or has reasonable assurance of obtaining the funds necessary for construction and operation. In 2022, the NRC was pursuing a similar change to the financial qualification standards for facilities licensed under 10 C.F.R. parts 50 or 52.[9] The Commission subsequently disapproved that rule and instead directed the staff to consider updates to financial qualification requirements during the development of part 53.[10] The Commission also directed the staff to solicit feedback on whether parts 50 and 52 should have the same financial qualification requirements as part 53.

The proposed rule for part 53 did not contain the "appears to be financially qualified" standard.[11] Instead, it solicited feedback from the public on whether the standard should be changed. Comments on the proposed rule stated that part 53 should use the "appears to be financially qualified standard" and that the financial qualification standards in 10 C.F.R. parts 50, 52, and 53 should be the same.[12] The NRC agreed with the commenter in part and revised part 53 to align with the financial qualification standards in 10 C.F.R. part 70. However, the NRC stated it "disagree[d] with making similar changes to the requirements in 10 CFR Parts 50 and 52 in this rulemaking" because it was outside the scope of the part 53 rulemaking.[13]

This change is important for nonutility applicants because the "appears to be" standard should, in practice, be easier to satisfy than the current standard in parts 50 and 52.[14]

FINALITY

In a different approach from 10 C.F.R. parts 50 or 52, 10 C.F.R. part 53 provides finality on NRC findings on a reactor design used in an operating license or combined license proceeding that is then in the subject of a subsequent design certification application. Such finality only binds the NRC staff and the Advisory Committee on Reactor Safeguards (ACRS), not members of the public or the NRC.[15] A similar approach could be provided in an update to parts 50 and 52 to allow finality for information in an operating license under part 50 or combined license under part 52 in a subsequent design certification application.

REFERRAL TO ACRS

Part 53 removes the requirement to refer design certification renewals or manufacturing license renewals to the ACRS, consistent with current agency practice regarding operating license renewals, which requires associated exemptions.[16] This approach aligns with EO 14300, which ordered that ACRS functions and personnel be "reduced to the minimum necessary to fulfill ACRS's statutory obligations," and that only "novel or noteworthy" issues should merit ACRS review.[17] A future update to parts 52 and 54 could remove the requirement to refer renewals of design certifications, manufacturing licenses, early site permits, and operating licenses to the ACRS to align with part 53 and current agency practice.[18]

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LICENSED OPERATORS

The NRC has been considering approaches to operator staffing for small or multi-module facilities licensed under parts 50 or 52 for some time.[19] Such previously considered approaches would require exemptions for facilities licensed under parts 50 or 52. Part 53 provides a pathway to customize licensed operator staffing requirements based on analyses.[20] Part 53 also introduces the concept of generally licensed reactor operators for self-reliant mitigation facilities.[21]

LOAD FOLLOWING

Load following is defined as "a commercial nuclear plant automatically changing its output to match expected demand in response to externally originated instructions or signals."[22] It is not currently allowed under § 50.54. However, part 53 recognized that new technological considerations and concepts of operation may justify load following under certain circumstances.[23] As such, load following is permitted under part 53, provided that appropriate measures are in place to provide assurance that plant output considerations are not permitted to lead to challenges to safe reactor operations.[24] The NRC previously "identified the development of guidance for load following as a potential future action to provide additional clarity on flexibility for applicants and licensees under 10 CFR Parts 50 and 52."[25]

MANUFACTURING LICENSES (MLS)

The final rule provides increased flexibility for MLs issued under part 53. The major change from existing regulations is the allowance to load fuel into manufactured reactors at the factory provided that features are in place to prevent criticality during transport.[26] Additional flexibilities include that departures for MLs under part 53 do not require special circumstances that outweigh any decrease in safety that may result from the reduction in standardization from the departure[27] and licensees in timely renewal under part 53 are not prohibited from beginning the manufacture of a reactor less than three years before the expiration of the ML.[28]

FITNESS FOR DUTY

Subpart M of part 26, added to address part 53 applicants and licensees, allows "the use of a variety of biological specimens for drug testing as well as innovative technologies for drug and alcohol screening and testing" that are not described or provided for, except in limited circumstances, under subparts A-K, N, and O of part 26. A future update to part 26 could align these subparts with subpart M to allow for the use of other biological specimens for drug testing and innovative technologies for drug and alcohol testing.

DEPARTMENT OF ENERGY (DOE)/DEPARTMENT OF WAR (DOW)'S NEW ROLE IN TESTING REACTORS

On 2 April 2026, the NRC released its proposed rule on referencing and leveraging prior DOE or DOW authorizations in the NRC licensing process.[29] The proposed rule provides an explicit pathway under 10 C.F.R. § 50.43 for streamlined reviews for licensing commercial reactor designs that have received a prior authorization from DOE or DOW and have been tested and demonstrated the ability to function safely, aligning regulation with

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presidential directive and building off NRC's December 2025 staff guidance for interagency coordination.[30] Part 53 contains a similar provision in § 53.440. In order to leverage a prior DOE or DOW authorization, an applicant for an NRC license "would be required to identify how aspects of the prior authorization satisfy NRC regulations" and "address how any changes to the design, its functionality, associated hazards, siting information, or underlying safety assumptions from those considered in prior authorization reviews meet NRC requirements."[31] This approach aligns with the NRC's Principles of Good Regulation and recent statements from the NRC's chairman that the NRC is committed to independence but not isolation.[32]

FOOTNOTES

[1] Staff Requirements Memorandum, "Affirmation Session, 3:30 P.M., Wednesday, March 25, 2026, Via Teleconference (Open to Public Attendance)" (Mar. 25, 2026), https://www.nrc.gov/docs/ML2608/ML26084A479.html (SRM). The final rule also includes revisions for parts 26, 50, and 73 and conforming changes throughout 10 C.F.R. chapter I.

[2] Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors; Final rule, 91 Fed. Reg. 15696 (Mar. 30, 2026).

[3] Executive Order 14300, "Ordering the Reform of the Nuclear Regulatory Commission" (May 23, 2025); 90 Fed. Reg. 22587 (May 29, 2025) (EO 14300).

[4] *See* EO 14300 § 5(b).

[5] *See e.g.*, NRC Response to Public Comments, Volume 1, at 61 (Mar. 2026), https://www.nrc.gov/docs/ML2604/ML26042A229.pdf.

[6] NRC Response to Public Comments, Volume 1, at 61, 69, 227 (Mar. 2026), https://www.nrc.gov/docs/ML2604/ML26042A229.pdf. The Commission directed the NRC staff to revise the discussion of the removal of specific references to ALARA in the comment response document associated with the final rule to rely on the "more direct and current reference to Part 20 as sufficient for this purpose." SRM at 2 (unnumbered).

[7] 91 Fed. Reg. at 15703.

[8] *See* 10 C.F.R. § 50.160 (providing alternative emergency preparedness requirements that are performance-based, technology-inclusive, risk-informed, and consequence oriented for small modular reactors and other new technologies); *see also* Emergency Preparedness for Small Modular Reactors and Other New Technologies, 88 Fed. Reg. 80050 (Nov. 16, 2023).

[9] *See* SECY-18-0026, "Proposed Rule: Financial Qualifications Requirements for Reactor Licensing" (Feb. 26, 2018), https://www.nrc.gov/docs/ML1717/ML17172A536.html.

[10] *See* Staff Requirements Memorandum, "Staff Requirements – SECY-18-0026 – Proposed Rule: Financial Qualification Requirements for Reactor Licensing (RIN 3150-AJ43)" (July 14, 2022), https://www.nrc.gov/docs/ML2219/ML22195A097.pdf; Nuclear Regulatory Commission, Discontinuation of rulemaking activity, 87 Fed. Reg. 58459 (Sept. 7, 2022).

[11] *See* Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors; Proposed rule, 89

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Fed. Reg. 86918 (Oct. 31, 2024).

[12] *See* NRC Response to Public Comments, Volume 1, at 229-30 (Mar. 2026), https://www.nrc.gov/docs/ML2604/ML26042A229.pdf.

[13] *Id.* at 230.

[14] Utility applicants are exempt from financial qualification reviews because they are presumed to be financially qualified. *See* 10 C.F.R. §§ 53.1670, 50.33(f), and 52.77 (referencing § 50.33).

[15] Similar provisions are provided for standard design approval finality in 10 C.F.R. § 53.1221, which is largely consistent with § 52.145. Under 10 C.F.R. § 53.1221, an approved standard design that is incorporated into a design certification application or individual facility license application is binding on the NRC staff and ACRS, "unless there exists significant new information that substantially affects the earlier determination or other good cause."

[16] *See e.g.*, Vistra Operations Company, LLC; Perry Nuclear Power Plant, Unit No. 1; Exemption, 90 Fed. Reg. 34016 (July 18, 2025).

[17] *See* EO 14300 § 4(b).

[18] *See* ACRS Guidelines and Best Practices (June 2025), https://www.nrc.gov/docs/ML2419/ML24199A160.pdf.

[19] *See e.g.*, SECY-11-0098, "Operator Staffing for Small or Multi-Module Nuclear Power Plant Facilities" (July 22, 2011), https://www.nrc.gov/docs/ML1118/ML111870574.pdf.

[20] *See* 10 C.F.R. § 53.730.

[21] *See* 10 C.F.R. §§ 53.805-53.820.

[22] 10 C.F.R. § 53.725(c).

[23] 91 Fed. Reg. at 15715.

[24] *See* 10 C.F.R. § 53.740(f).

[25] NRC, "Licensing Considerations Relating to Use of Nuclear Energy for Nonelectric Applications," at 4 (Apr. 2025), https://www.nrc.gov/docs/ML2505/ML25055A251.pdf.

[26] *See* 10 C.F.R. § 53.620(d).

[27] *Compare* 10 C.F.R. § 53.1288(b) with 10 C.F.R. § 52.171(b)(2).

[28] *Compare* 10 C.F.R. § 53.1295(a)(3) with 10 C.F.R. § 52.177(c).

[29] NRC, "NRC Reviews of Reactor Designs Previously Authorized by U.S. Department of Energy or Department of War," 91 Fed. Reg. 16584 (Apr. 2, 2026).

[30] *See* Memorandum from J. Groom (NRC) to J. Grieves and M. Sampson (NRC), "Expectations for NRC Staff Involvement with Prospective NRC License Applicants Planning to Refer to DOE and DOW Authorization Processes" (Dec. 11, 2025), https://www.nrc.gov/docs/ML2532/ML25322A208.pdf. (While the NRC noted in its proposed rulemaking that it plans to provide guidance in the future applicable to the review of applications that reference a DOE or DOW authorization, it previously released its expectations for NRC staff involvement with prospective applicants planning to refer to DOE or DOW authorizations. In this document, the NRC encourages

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early engagement with the NRC staff and outlines the benefits of NRC staff observation activities).

[31] 91 Fed. Reg. at 16586.

[32] *See* NRC, "Principles of Good Regulation," https://www.nrc.gov/about-nrc/values#principles (last reviewed/updated Mar. 4, 2026) (stating in part, "independence does not imply isolation"); *see also* Ho Nieh, "The Nuclear Regulatory Commission's Defining Moment," https://www.realclearenergy.org/articles/2026/03/10/the_nuclear_regulatory_commissions_defining_moment_1169442.html (Mar. 10, 2026) (stating "NRC's independence does not mean isolation.").

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