From:	Cyril Draffin
To:	Reckley, William; Cubbage, Amy; Hoellman, Jordan; Segala, John
Cc:	Merrifield, Jeffrey S.; Bud Albright; Caleb Ward; Dave Jones; Cyril Draffin
Subject:	[External_Sender] USNIC Comments regarding Part 53
Date:	Tuesday, August 25, 2020 3:30:16 PM
Attachments:	USNIC Part 53 Detailed Comments 20200825.docx

Bill,

As promised, attached are detailed comments on Part 53 from the US Nuclear Industry Council.
If you have any questions, please let me know.
You are welcome to forward to others at NRC that may wish to review.

We look forward to joining you and the NRC staff, and other organizations, on 17 September 2020 for a more detailed discussion.
We would be happy to present and have a discussion of our ideas (provided in the attached document) at that meeting.

We appreciate you planning for this important NRC activity.

Cyril Draffin
Senior Fellow, Advanced Nuclear
United States Nuclear Industry Council (USNIC)
c: 301.233.4643

On Mon, Aug 24, 2020 at 8:04 AM Reckley, William <William.Reckley@nrc.gov> wrote:

> Thank you ..
>
> **From:** Cyril Draffin <cyril.draffin@usnic.org>
> **Sent:** Friday, August 21, 2020 11:24 AM
> **To:** Hoellman, Jordan <Jordan.Hoellman2@nrc.gov>; Reckley, William <William.Reckley@nrc.gov>
> **Subject:** [External_Sender] USNIC Part 53 input
>
> Jordan and Bill,
>
> In addition to the slides and verbal comments I presented yesterday on Part 53, we have more detailed written comments.
>
> I sent a draft to our USNIC developers yesterday, asking for any comments by Monday-- so I may not send comments to you until Tuesday Aug 25.

But that will still be plenty of time for you to consider before the Sept 17 meeting.

Cyril Draffin

Senior Fellow, Advanced Nuclear

United States Nuclear Industry Council (USNIC)

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U.S Nuclear Industry Council (USNIC)

Comments on NRC Plans for Part 53

(including issues discussed at 20 August 2020 NRC Stakeholders Meeting)

2020-08-25

The U.S. Nuclear Industry Council welcomes the opportunity to engage with the Nuclear Regulatory Commission (NRC) to develop a new Part 53, and will actively participate in the NRC Part 53 discussion in September 2020.

Below are ~50 bullets presenting USNIC's initial ideas regarding each of the 14 issues that the NRC raised in their July 2020 NRC Staff White Paper regarding "Questions Supporting ACRS and Public Interactions on Developing a Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" (NRC-2019-0062; RIN 3150-AK31). Some ideas were covered during the 20 August 2020 NRC Stakeholders meeting, some were not due to time allocations. We are providing these ideas so they can be discussed at the 17 September 2020 meeting.

The 14 issues NRC identified is a good start for Part 53 planning. Goal should be to craft a flexible Part 53 process that is so well defined, clear, and efficient-- and has enough benefits that developers want to use it over existing Parts 50 and 52. We support the NRC effort to make Part 53 technology inclusive and technology neutral.

1. **Regulatory Objectives:** Are the regulatory objectives, as articulated below, understandable and achievable? If not, why not? Should there be additional objectives? If so, please describe the additional objectives and explain the reasons for including them.

Regulatory Objective: The NRC is developing a proposed rule that would provide a technology-inclusive framework to support the licensing and regulation of advanced nuclear reactors. By issuing a technology-inclusive rule for the licensing and regulation of advanced nuclear reactors, the NRC would establish regulations to maintain safety and security at reactor sites while acknowledging advances in reactor technologies, scientific knowledge, and analytical capabilities. Specifically, the rulemaking has the following objectives:

1) Provide reasonable assurance of adequate protection of the public health and safety and common defense and security at reactor sites at which advanced nuclear reactor designs are deployed, to at least the same degree of protection as required for current-generation light water reactors;
2) Protect health and minimize danger to life or property to at least the same degree of protection as required for current-generation light water reactors;
3) Provide greater operational flexibilities where supported by enhanced margins of safety that may be provided in advanced nuclear reactor designs;
4) Ensure that the requirements for licensing and regulating advanced nuclear reactors are clear and appropriate; and
5) Identify, define, and resolve additional areas of concern related to the licensing and regulation of advanced nuclear reactors.

Applicability to NRC Licenses, Certifications and Approvals: The NRC would apply these new requirements to applicants for licenses, certificates, or approvals associated with advanced nuclear reactors and subsequently to the holders of such licenses, certificates or approvals under a proposed a new part to Title 10 of the Code of Federal Regulations (10 CFR). The proposed new Part 53, "Licensing and Regulation of Advanced Nuclear Reactors" would be an alternative to the

current application and licensing requirements developed for large light-water and non-power reactors, as outlined in 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” and 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants.”

USNIC comments on Regulatory Objectives:

- NRC regulatory objectives are generally OK, if they are augmented to provide clearly defined outcomes that result in substantial improvements in the regulatory process, rather than incremental improvements.
- As part the objective setting process, NRC may want to develop metrics for success.
- Objectives should indicate they are technology inclusive, risk-informed, and performance-based.
- Objectives should include applying lessons-learned from 50 years of light water reactor regulatory experience to make the licensing process as efficient and streamlined as possible, and focused on protection of public health and safety.
- For the fourth regulatory objective, consider adding “focused on the protection of public health and safety”: Ensure that the requirements for licensing and regulating advanced nuclear reactors are clear, appropriate, and focused on the protection of public health and safety. Want regulations to be clear, flexible, efficient and appropriate.
- Avoid regulations not needed to provide reasonable assurance of adequate protection of health and safety. Eliminating or streamlining requirements that are overly prescriptive or not relevant will reduce the need for future exemptions.
- Part 53 should recognize that the reduced source term for advanced reactors and high level performance-based requirements bring significant opportunities to reduce unnecessary requirements in line with providing adequate protection.
- Part 53 licensing framework should recognize that advanced nuclear reactors may be used for other applications than power generation, and needs to be built to be more flexible and efficient than Parts 50 or 52.
- Utilize a rulemaking process that includes only the necessary legal and statuary requirements (e.g. from the Atomic Energy Act) as a “blank sheet” approach, and does not incorporate regulations not necessary for adequate protection of health and safety. We recognize that a “clean slate” approach may take for effort than relying on prior regulatory approaches—but should result in better outcome.

Other consideration in developing objectives:

- Timely development and implementation of Part 53 is crucial in providing greater certainty for future advanced reactor applicants.
- Current regulatory approval process should continue, including appropriate licensing modernization efforts, so no momentum is lost.
- Part 53 development should not interfere with ongoing reviews by establishing new requirements that applications under review would not meet – recognizing the years it will take to implement the rule.
- Every element of the licensing process, including technical, administrative and procedural requirements (including the role of Advisory Committee on Reactor Safeguards (ACRS) and Atomic Safety and Licensing Board (ASLB)) should be subject to a fresh look.
- Consider role of state and local permits and meeting safety requirements—which would be screens to limit project to those with small environmental impacts
- Consideration of international regulatory agency approaches so Part 53 enables efficient international licensing of NRC approved designs

- Where innovative approaches to licensing cannot be achieved under existing statutory authority, we would encourage the Commission and its staff to seek legislative changes that make sense and are consistent with achieving adequate protection.

2. **Scope and Types of Advanced Nuclear Reactors:** Should the scope of the rulemaking be limited to advanced nuclear reactors as defined in NEIMA or should the scope include all future applications for licenses, certifications, or approvals for 5 commercial nuclear reactors regardless of design?

USNIC comments:

- Scope should be inclusive of all future applications and technologies. Do not want segmentation into subsets or categories (which was the old way). To the extent technology-specific information is needed, it should be provided in guidance, not in the regulations themselves. Should allow construction permit and operations approval in one step similar to a Part 52 combined license.
- Scope should be a graded approach to facilitate First-Of-A-Kind (FOAK) reviews but being flexible enough to be able to accelerate "nth" of a kind reviews due to the finality from previous reviews.
- Part 53 should allow a one-step construction permit and operating license approach without the need for an initial Design Certification Application (DCA) for a FOAK deployment, and should "adopt" the FOAK findings to address subsequent combined operating license applications for nth of a kind.
- Part 53 should be available to all Advanced Reactors technologies, but Advanced Reactor developers should not be compelled to use-- and could use Part 50 or Part 52 if they wished. The use of Part 53 should be a desirable choice, not a requirement.

3. **Technical Requirements versus Licensing Process:** Should the framework focus only on those regulations related to technical standards (i.e., design, operational and programmatic requirements) and rely on the existing licensing processes in Parts 50 (e.g., construction permit and operating license) and 52 (e.g., early site permit, combined license, etc.) or should the framework develop a new alternative licensing process that looks different than the existing processes? If the latter, what should this new licensing process look like? Should this new process be "self-contained," such that it would provide its own licensing, procedural, administrative, and reporting requirements?

- USNIC strongly believes Part 53 should focus not simply on technical requirements but should address, in a technology inclusive manner, the licensing, administrative, procedural, reporting and inspection matters for Advanced Reactor applications. The goal should be to meet adequate protection standards but do so in a way that focuses on public health and safety and avoids unnecessary burden.
- Although it is not necessary to incorporate Part 20, Part 10, Part 40, Part 70, and Part 100 in Part 53, there are potential efficiencies in those other Parts that could be achieved separately (e.g. addressing unnecessary constraints and aspects that are not working optimally to achieve needed benefits). For instance, Part 20 and 100 might be used for performance metrics.
- Framework should allow consideration of all technologies, reactor applications, use cases, and power levels.

4. **Performance Criteria:** NEIMA calls for a technology-inclusive framework for advanced nuclear reactors, which encompasses a wide range of reactor technologies and power levels. To what extent should the NRC try to define a single set of performance criteria for all technologies and

sizes (e.g., estimated offsite doses from postulated events), versus developing specific regulatory approaches for different categories of advanced nuclear reactors such as microreactors and fusion reactors?

- At the top level, high-level performance criteria should be consistent for all technologies, with guidance developed for different categories of advanced nuclear reactors if needed.
- The proposed rule should consider citing Parts 20 and 100 as potential performance metrics. The Agency should be open to other performance standards that may be developed.

5. **Risk Metrics:** In a risk-informed performance-based regulatory regime, should risk metrics be included in the regulations? Possible examples of risk metrics include the quantitative health objectives described in the NRC's Safety Goals for the Operation of Nuclear Power Plants Policy Statement (51 FR 28004, Aug. 4, 1986, as corrected and republished, 51 FR 30028, Aug. 21, 1986) and the frequency-consequence targets described in SECY-19-0117, "Technology-Inclusive, Risk-Informed, and Performance-Based Methodology to Inform the Licensing Basis and Content of Applications for Licenses, Certifications, and Approvals for Non-Light-Water Reactors."

- As an initial comment, we do wish to avoid Quantitative Health Objectives (QHOs) that change based on number of plants. The QHO system is unduly burdensome system and adds significant regulatory certainty that does not result in meaningful public health benefit. We believe QHOs should be replaced with requirements that establish a consistent probabilistic threshold for individual plants.
- Worth discussing pros and cons.

6. **Facility Life Cycle:** How could the new Part 53 licensing and regulatory framework align with the design, construction, operation, and decommissioning phases of an advanced nuclear reactor facility's life cycle?

- Part 53 should address, in a technology inclusive manner, the licensing, administrative, procedural, reporting and inspection matters for Advanced Reactor applications. Some advanced reactors plan for a 60+ year life cycle that needs to be considered by the licensing framework (and may require statutory changes). Further discussion is needed regarding how and when to include decommissioning and requirements.

7. **Definitions:** Should terms in the new Part 53 have identical definitions to terms in Parts 50 and 52? For example, SECY-19-0117 proposes to accept definitions for terms such as "safety related" and "design basis event" for non-light water reactors applications that differ from the definitions provided in 10 CFR Part 50. If possible, please provide alternative terminology for non-LWR technologies.

- As a general matter, there may be some consistency in definitions. However, consistent with the general approach to crafting Part 53, the NRC should be open to looking at all of these issues with a fresh eye.
- There is confusion with the term "important to safety" and may be appropriate not to use that term in Part 53.

8. **Performance-Based Regulation:** How should the requirements developed for this alternative regulatory framework incorporate performance-based concepts such as those described in NUREG/BR-0303, "Guidance for Performance-Based Regulation"?

- As a general matter, USNIC is supportive of meeting objectives through risk-informed or performance-based approaches, though this merits additional analysis.

9. **Identifying Levels of Protection:** Regulatory requirements in Parts 50 and 52 have been imposed as either needed to: 1) ensure a facility provides adequate protection to the health and safety of the public and is in accord with the common defense and security; or 2) provide a substantial increase in the overall protection of the public health and safety or the common defense in security when the costs of implementation are justified in view of the increased protection. Should specific requirements developed in this Part 53 rulemaking be identified as either needed to provide reasonable assurance of adequate protection or justified as cost-effective safety improvements?

- Requirements should provide reasonable assurance of adequate protection
- We strongly believe that the NRC should not use the development of this rule to rachet up requirements. Indeed, as these Advanced Reactors are expected to incorporate more inherent protective features than their predecessors, maintaining consistency in the adequate protection standard should result in an appropriate alignment of requirements that, in some cases, will result in reduced regulatory requirements.
- May be helpful to identify what prior regulations have been "justified as cost-effective safety improvements" and if possible from whose perspective is this cost effective. Part 53 should not include extra regulations not required for adequate protection (e.g. "above and beyond" what is required for health and safety). We look forward to additional dialog on this subject on 17 September 2020.

10. **Integrated Approach to Rulemaking:** In developing the requirements for this alternative regulatory framework, how can an integrated approach be developed to address areas such as safety, security, emergency preparedness, and other means to prevent or mitigate the potential release of radionuclides from an advanced nuclear reactor?

- Desirable to apply risk informed approaches to safety, security and emergency preparedness (as the Commission has recently done for Emergency Planning Zones, and may do in Advanced Reactor Generic Environmental Impact Statement)
- Would be helpful to clarify what is meant by integrated approach, and if there is an intent to pull in other parts into Part 53 framework (and if so, what they would be)?

11. **Consistency with Historical Standards:** SECY-19-0117 describes a methodology that is meant to support the licensing process through identifying key safety functions, events that might challenge those functions, performance criteria for equipment and related programmatic controls, and defense in depth. The methodology uses risk-informed and performance-based criteria that are derived from existing regulations related to potential offsite doses and from the NRC's Safety Goal Policy Statement (51 FR 30028; dated August 21, 1986). Should this rulemaking use these existing criteria or should this opportunity be used to adopt or develop alternative criteria? If so, please describe possible alternatives and explain the reasons for using them within the regulatory framework being developed for advanced nuclear reactors.

- Need more time to evaluate; criteria proposed in NEI 18-04 and endorsed by the NRC in RG 1.233 are considered appropriate for application to advanced reactors.

12. **Quality Assurance:** Should quality assurance, as it is currently defined in Appendix B to Part 50, be a requirement in the new risk-informed, performance-based regulatory framework? Alternatively, should NRC regulations defer to internationally recognized, independent certification

schemes for assessing quality processes at commercial nuclear facilities and at suppliers of equipment and services?

- The preparation of Part 53 provides an opportunity for the Agency to take a fresh look at Appendix B and the NQA-1 Program, and not codify every item as a requirement. Significant time has passed since these programs were first put into place, and the level of quality of commercially available components meets and frequently exceeds prior "nuclear standards" without the need for the overly burdensome reporting requirements.
- Alternative approaches such as the ISO 9000 series and commercial dedication programs should be considered for adoption.
- Even if Part 53 doesn't cite Appendix B, there still needs to be guidance development to show that the ISO standards can meet whatever the requirements are in Part 53. This means that the review/endorsement of the ISO standards should happen concurrently with Part 53 development.

13. **Stakeholder Documents, Standards, Guidance:** The NRC encourages active stakeholder participation through development of proposed supporting documents, standards, and guidance. In such a process, the proposed documents, standards, and guidance would be submitted to and reviewed by NRC staff, and the NRC staff could endorse them, if appropriate. Is there any interest by stakeholders to develop proposed supporting documents, standards, or guidance?

- As described in our answer to issue 12, greater industry involvement in developing an alternative to the existing Appendix B NQA-1 standards that the NRC could potentially endorse (if appropriate) would be a fruitful effort.

14. **Other Issues**: Are there significant issues, possible approaches, or other topics related to the initial crafting of a regulatory framework for advanced nuclear reactors that are not addressed in the above questions? If so, please identify the subject areas and, if possible, provide a suggestion on how the new framework could resolve the issue or incorporate a proposed approach.

- We understand there is Congressional and other interest in moving more quickly to draft Part 53, especially because in the past NRC rulemakings have taken a long time. How the schedule could be compressed, industry input needed, and challenges a faster schedule would require merits consideration and discussion.
- When it is available, we look forward to understanding the phased timeline (including steps and scope, when public comments will be sought, and when the Commission would review and vote on the Part 53 SECY paper). Based on discussion at 20 August 2020 Stakeholders meeting this that might reflect a streamlined rulemaking process (including not needing a regulatory basis document), and would require substantial progress in 1st Quarter 2021.
- As a closing comment, we believe the white paper is the first step on what will be an interactive approach to developing an effective and useful Part 53. USNIC welcomes the opportunity to continue the dialog with the NRC staff to achieve a rule that is fully effective in meeting the Adequate Protection Standard, but does so in a way that allows Advanced Reactors to be developed, licensed, and deployed in a manner that avoid unnecessary burden-- and enables the deployment of these important contributors to avoiding carbon emissions.

For additional information, contact:

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