Results of
2022 Part 53 Industry Survey

For
NRC Advisory Committee on Reactor Safeguards
(Future Plant Designs – Part 53 Subcommittee)

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Q1: Companies Completing NEI/USNIC Part 53 Survey – April 2022

1. Alpha Tech
2. ARC Clean Energy
3. BWXT
4. Constellation
5. Energy Northwest
6. Framatome
7. GE-Hitachi Nuclear Energy
8. General Atomics
9. Holtec International
10. Kairos Power
11. Moltex Energy
12. NuScale Power
13. Oklo
14. Radiant Industries
15. Southern Company
16. TVA
17. TerraPower
18. UAMPS (Carbon Free Power Project)
19. Ultra Safe Nuclear Corp.
20. Westinghouse
21. X-energy
22. Xcel Energy

This comprehensive survey of Part 53 was sent to senior regulatory affairs personnel of companies that are potential applicants to the NRC.
Q2: What type of applicant to the NRC are you? (Select all that apply)

Answered: 22  Skipped: 0

- **12 Owner/Operator Responses**
  - 6 Owner/Operator Only
  - 6 Both Owner/Operator and Designer/Developer

- **10 Designer/Developer Only**

Owner/Operator (would apply for a construction permit, operating license, etc.)

Both Owner/Operator and Designer/Developer (would apply for a design approval or support an application for an operating license)
Concluding High Level Insights (1 of 2)

- Comprehensive survey
  - 12 owner/operator responses and 10 designer/developer only responses
  - Key active organizations provided responses--15 of 22 respondents have submitted application to NRC, are pre-app with NRC, or submitted RIS response to NRC
- Support for, and interest in using, Part 53 is directly related to perceptions of whether Part 53 will be more efficient than Parts 50 and 52 in achieving same level of safety
- NEI/USNIC comments supported some NRC approaches but presented significant concerns overall--strong support for NEI/USNIC comments
- Ten Part 53 items create significant concerns (e.g. expanding ALARA to be design requirement, proliferation of unnecessary programs, increased regulatory burden for non-safety SSCs, and safety objectives different than in AEA)
- Four Part 53 items have benefits (e.g. increased use of performance-based approaches for security, and technology-inclusive requirements)
Concluding High Level Insights (2 of 2)

• Innovations needed included streamlining of licensing reviews, regulatory approvals, and program requirements
• Input provided to assist NRC in determining what in Framework A should-- and should not-- be included in Framework B (Industry still prefers a single flexible framework)
  • Diversity in use of PRA and type of licensing approach to be used
• Most do not want QHOs in the rule (3 are likely to use and 4 may use Framework A)
  • Very few want QHOs in rule (1 likely to use Framework A and 1 undecided)
  • All plan to use PRA
• Many goals for Part 53 are not met by current language, but some goals are met
  • Not met: Improving regulatory efficiency, predictability, stability, clarity, and flexibility
• Part 53 development and review is time-consuming process, but only limited support for current language, and many areas where improvements needed to address concerns
  • Lukewarm satisfaction for NRC rationale for proposed approaches and receptivity to stakeholder response
  • High satisfaction with opportunity to comment, but low satisfaction on NRC’s feedback to industry
Appendix:
Selective Slides from 2022 Part 53
Industry Survey
Q5: To what degree do you support the following? (score 0 to 5, with 5 being the most agreement)

Answered: 21    Skipped: 1

High support

Score: 5

Score: 3

Score: 1

NRC Preliminary Rule Language from February 4, 2022 (ML22024A066)

Score: 5

Score: 3

Score: 1

NEI/USNIC Comments Submitted to the NRC on November 5, 2021 (ML21309A578)

Degree of Support\(^1,\,2\)

NRC Draft Rule Language:
- High Support (score 4 or 5) = 11% (2)
- Moderate Support (score 2 or 3) = 83% (15)
- Low Support (1) = 6% (1)

NEI/USNIC Comments:
- High Support (score 4 or 5) = 78% (14)
- Moderate Support (score 3, not 2) = 22% (4)
- Low Support (no 0 or 1) = 0% (0)

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1) Moderate support for NRC rule language is consistent with NEI/USNIC comments, in which NEI/USNIC support some of the NRC approaches, but have concerns in key areas.
2) Not shown are three “Don’t Know” responses. Percentages are of those providing responses other than “Don’t Know”/skip.
Q6: For applications submitted in 2025 and beyond, what is the likelihood that you will use the NRC Part 53 Framework A, if the Final Rule adopts the language and approaches in its current form? (Note that later questions will ask about Framework B, and the overall two-framework approach)

Answered: 21  Skipped: 1

- Framework A of Part 53 is the likely first choice (e.g., substantial benefits in comparison to Parts 50 and 52)
- Will likely use Framework A of Part 53, but not for the first application (e.g., requirements are not conducive to licensing a first-of-a-kind design)
- May use Framework A of Part 53, but need to see demonstrated benefits (e.g., current NRC proposal may provide advantages over Parts 50 and 52, but they must be demonstrated by other applicants first)
- Not likely to use Framework A of Part 53 (e.g., current NRC proposal does not appear to be better than Parts 50 and 52)
- Will not use Framework A of Part 53 (e.g., substantial increases in regulatory burden over Parts 50 and 52, with minimal if any benefits)

Likely to use = 24%
Have not seen benefits of Framework A = 38%
Not Likely to use = 38%
Q7: Which of the following areas of the current NRC preliminary language and approaches in Part 53 provide significant benefits over Parts 50 and 52? (score 0 to 5, with 5 being the most beneficial)

Answered: 20  Skipped: 2

<table>
<thead>
<tr>
<th>Part 53 Content</th>
<th>Most (4 or 5)</th>
<th>Least (0 or 1)</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased use of performance-based approach for Security</td>
<td>80% (16)</td>
<td>0% (0)</td>
<td>10% (2)</td>
</tr>
<tr>
<td>Technology-inclusive requirements (e.g., safety functions, design criteria, design features)</td>
<td>75% (15)</td>
<td>5% (1)</td>
<td>10% (2)</td>
</tr>
<tr>
<td>Increased use of performance-based approach for Operators (e.g., certified operator option)</td>
<td>60% (12)</td>
<td>5% (1)</td>
<td>15% (3)</td>
</tr>
<tr>
<td>Increased use of performance-based approach for Fitness for Duty</td>
<td>55% (11)</td>
<td>5% (1)</td>
<td>15% (3)</td>
</tr>
<tr>
<td>Fewer exemptions will be required</td>
<td>42% (8)</td>
<td>5% (1)</td>
<td>42% (8)</td>
</tr>
<tr>
<td>Increased functionality for Manufacturing Licenses</td>
<td>32% (6)</td>
<td>0% (0)</td>
<td>21% (4)</td>
</tr>
<tr>
<td>Organization and structure of the rule (e.g., separation of design, analysis, operations, etc.)</td>
<td>30% (6)</td>
<td>0% (0)</td>
<td>20% (4)</td>
</tr>
<tr>
<td>Two frameworks (A and B) in rule based on role of PRA</td>
<td>26% (5)</td>
<td>16% (3)</td>
<td>21% (4)</td>
</tr>
<tr>
<td>Inclusion of Quantified Health Objectives in the Rule, rather than keeping as a Policy</td>
<td>21% (4)</td>
<td>47% (9)</td>
<td>11% (2)</td>
</tr>
<tr>
<td>Facility Safety Program</td>
<td>5% (1)</td>
<td>32% (6)</td>
<td>26% (5)</td>
</tr>
</tbody>
</table>
Q7: Which of the following areas of the current NRC preliminary language and approaches in Part 53 provide significant benefits over Parts 50 and 52?

Key Insights from Comments

1. Two-Frameworks (A and B)
   a) Some believe multiple frameworks make little sense, and a single framework that utilizes guidance for details for different approaches would be more appropriate.
   b) Some are in favor of using Framework B instead of Framework A, but not as written (likely referring to Part 5X that is expected to be basis for Framework B).

2. Facility Safety Program
   a) This program is untested so it is tough to know what the burden or value will be.
   b) Some believe licensee-led, industry-overseen framework for oversight of facility programmatic matters has some potential benefits in reducing regulatory burden without impacting safety; however, it is not clear that current NRC language will actually achieve greater efficiency.

3. Exemptions - Some believe what may be required to meet Part 53 is uncertain, and there was suggestion to leverage the Technology Inclusive Risk-Informed Configuration Evaluation (TIRICE) effort to develop 50.59-like process with clear performance criteria (53.895 was viewed as never-ending risk reduction measures).
Q8: How concerned are you about the following areas of the current NRC preliminary language and approaches in Part 53? (score 0 to 5, with 5 being the most concerned)

<table>
<thead>
<tr>
<th>Part 53 Content</th>
<th>Most (4 or 5)</th>
<th>Least (0 or 1)</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanding ALARA to be a design requirement</td>
<td>68% (13)</td>
<td>0% (0)</td>
<td>5% (1)</td>
</tr>
<tr>
<td>Proliferation of duplicative and unnecessary programs</td>
<td>68% (13)</td>
<td>0% (0)</td>
<td>5% (1)</td>
</tr>
<tr>
<td>Increased regulatory burden for non-safety SSCs</td>
<td>67% (12)</td>
<td>11% (2)</td>
<td>6% (1)</td>
</tr>
<tr>
<td>Safety objectives that are different than those in the Atomic Energy Act</td>
<td>63% (12)</td>
<td>0% (0)</td>
<td>11% (2)</td>
</tr>
<tr>
<td>Expansion of design basis to include Beyond Design Basis Events</td>
<td>61% (11)</td>
<td>11% (2)</td>
<td>6% (1)</td>
</tr>
<tr>
<td>Lack of clarity in the purpose and application of some requirements</td>
<td>58% (11)</td>
<td>0% (0)</td>
<td>5% (1)</td>
</tr>
<tr>
<td>Lack of clear measurable goals for regulatory efficiency</td>
<td>50% (10)</td>
<td>5% (1)</td>
<td>15% (3)</td>
</tr>
<tr>
<td>Missed opportunity to integrate safety, security, EP and siting</td>
<td>50% (10)</td>
<td>6% (1)</td>
<td>20% (4)</td>
</tr>
<tr>
<td>Facility safety program</td>
<td>50% (9)</td>
<td>0% (0)</td>
<td>17% (3)</td>
</tr>
<tr>
<td>Inclusion of QHOs in the Rule, rather than keeping as a Policy</td>
<td>50% (9)</td>
<td>11% (2)</td>
<td>6% (1)</td>
</tr>
<tr>
<td>Lack of consistency in use of regulatory terminology (e.g., PDC vs FDC)</td>
<td>44% (8)</td>
<td>5% (1)</td>
<td>17% (3)</td>
</tr>
<tr>
<td>Lack of clarity on the safety paradigm</td>
<td>39% (7)</td>
<td>0% (0)</td>
<td>28% (5)</td>
</tr>
<tr>
<td>Only allowing an enhanced/leading use of PRA licensing approach</td>
<td>28% (5)</td>
<td>17% (3)</td>
<td>17% (3)</td>
</tr>
<tr>
<td>Two distinct frameworks (A and B) in the rule based on role of PRA</td>
<td>28% (5)</td>
<td>22% (4)</td>
<td>17% (3)</td>
</tr>
</tbody>
</table>
Q9: Which of the following innovations that the NRC is not pursuing would greatly enhance the value of Part 53? (score 0 to 5, with 5 being the most beneficial)

<table>
<thead>
<tr>
<th>Part 53 Content</th>
<th>Most (4 or 5)</th>
<th>Least (0 or 1)</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streamlining of licensing reviews and regulatory approvals</td>
<td>79% (15)</td>
<td>0% (0)</td>
<td>5% (1)</td>
</tr>
<tr>
<td>Streamlining of program requirements</td>
<td>68% (13)</td>
<td>0% (0)</td>
<td>5% (1)</td>
</tr>
<tr>
<td>Treating ALARA as a Policy rather than requirements in the Rule</td>
<td>67% (14)</td>
<td>0% (0)</td>
<td>10% (2)</td>
</tr>
<tr>
<td>Streamlining of oversight and inspections</td>
<td>65% (13)</td>
<td>0% (0)</td>
<td>10% (2)</td>
</tr>
<tr>
<td>More performance-based and modern siting requirements</td>
<td>60% (12)</td>
<td>0% (0)</td>
<td>10% (2)</td>
</tr>
<tr>
<td>Integrating safety, security, emergency planning and siting</td>
<td>57% (12)</td>
<td>9% (2)</td>
<td>5% (1)</td>
</tr>
<tr>
<td>QA requirements that explicitly allow ISO-9001 for safety-related</td>
<td>52% (11)</td>
<td>0% (0)</td>
<td>10% (2)</td>
</tr>
</tbody>
</table>
Q11: If you use Part 53, which type of licensing approach would you most likely use?

Answered: 22  Skipped: 0

- Enhanced/leading Probabilistic Risk Assessment (e.g., Licensing Modernization Project)
- Traditional PRA (e.g., similar to use in Part 52)
- IAEA approach
- Maximum Credible Accident with a confirmatory PRA
- No PRA (e.g., Technology Inclusive Risk Informed Maximum Accident)

Notes
- If Part 53 used, 46% (10 of 22) of respondents plan to use what NRC defines as an enhanced role of the PRA
- 36% (3+1+4=8) of respondents plan to use PRA in a way not permissible by current Framework A rule text
- Of remaining 18% (4 of 22), two do not plan to use Part 53, one does not care which approach is used, and one did not identify which approach (though they did say they are using a PRA)

1) Four responses were “Other”, as described in side bar above.
Q13: How well do you think the NRC has met the following goals, so far, for the Part 53 rulemaking? (score 0 to 5, with 5 being the most fulfilled)

Answered: 18    Skipped: 4

Goals that are most met by current preliminary Part 53 rule language

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>Continue to provide reasonable assurance of adequate protection (SECY 20-0032)¹</td>
<td>78% (14)</td>
<td>0% (0)</td>
<td>11% (2)</td>
</tr>
<tr>
<td>Establish requirements that address non-LWRs (SECY 20-0032)</td>
<td>50% (9)</td>
<td>0% (0)</td>
<td>17% (3)</td>
</tr>
<tr>
<td>Safety Focused (industry goal)</td>
<td>44% (8)</td>
<td>0% (0)</td>
<td>17% (3)</td>
</tr>
<tr>
<td>Technology-inclusive (July 2021 Unified Industry Position letter)</td>
<td>44% (8)</td>
<td>0% (0)</td>
<td>17% (3)</td>
</tr>
<tr>
<td>Risk-informed (July 2021 Unified Industry Position letter)</td>
<td>33% (6)</td>
<td>6% (1)</td>
<td>22% (4)</td>
</tr>
<tr>
<td>Reduce requests for exemptions (SECY 20-0032)</td>
<td>33% (6)</td>
<td>17% (3)</td>
<td>28% (5)</td>
</tr>
<tr>
<td>Recognize technological advancements in reactor design (SECY 20-0032)</td>
<td>33% (6)</td>
<td>22% (4)</td>
<td>22% (4)</td>
</tr>
<tr>
<td>Credit the response of advanced reactors to postulated accidents (SECY 20-0032)</td>
<td>28% (5)</td>
<td>17% (3)</td>
<td>22% (4)</td>
</tr>
<tr>
<td>Flexible (industry goal)</td>
<td>22% (4)</td>
<td>11% (2)</td>
<td>17% (3)</td>
</tr>
</tbody>
</table>

Note: Many key goals (e.g. technology-inclusive, risk-informed & reduced exemption requests, flexible) received low scores (less than half 4 or 5) indicating key goals have not been demonstrated

1) Other comments expressed concern that the NRC has increased standards and regulations for public protection (e.g., Beyond Design Basis, ALARA, Programs) – see Q8.
Q13: How well do you think the NRC has met the following goals, so far, for the Part 53 rulemaking? (score 0 to 5, with 5 being the most fulfilled)

Answered: 18    Skipped: 4

Goals that are **least** met by current preliminary Part 53 rule language

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Efficiency</strong> (July 2021 Unified Industry Position letter)</td>
<td>11% (2)</td>
<td>39% (7)</td>
<td>22% (4)</td>
</tr>
<tr>
<td><strong>Promote regulatory stability, predictability and clarity</strong> (SECY 20-0032)</td>
<td>22% (4)</td>
<td>28% (5)</td>
<td>22% (4)</td>
</tr>
<tr>
<td><strong>Clear</strong> (industry goal)</td>
<td>5% (1)</td>
<td>22% (4)</td>
<td>11% (2)</td>
</tr>
<tr>
<td><strong>Usefulness</strong> (July 2021 Unified Industry Position letter)</td>
<td>11% (2)</td>
<td>22% (4)</td>
<td>22% (4)</td>
</tr>
<tr>
<td><strong>Recognize confidence in licensee controls</strong> (July 2021 Unified Industry Position letter)</td>
<td>0% (0)</td>
<td>17% (3)</td>
<td>28% (5)</td>
</tr>
<tr>
<td>Requirements at a high level with utilization of guidance to address details (SRM-SECY-20-0032-ML19340A056)</td>
<td>17% (3)</td>
<td>17% (3)</td>
<td>28% (5)</td>
</tr>
<tr>
<td>Regulatory framework using methods of evaluation that are flexible and practicable for application to a variety of technologies (NEIMA)</td>
<td>11% (2)</td>
<td>11% (2)</td>
<td>11% (2)</td>
</tr>
</tbody>
</table>

Note: Many key goals (e.g. clear, efficient, useful) received very low scores (less than 20% 4 or 5, and many 0 or 1) indicating key goals have not been demonstrated
Q14: How satisfied are you with the NRC engagement with stakeholders on Part 53? (score 0 to 5, with 5 being the most satisfied)

Answered: 21    Skipped: 1

NRC Engagement Satisfaction

1) Not shown are three “Don’t Know” responses. Percentages are of those providing responses other than “Don’t Know”/skip.

NRC Rationale for approaches
- High (score 4 or 5) = 5
- Moderate (2 or 3) = 12
- Low (0 or 1) = 2

Opportunities offered to inform/comment
- High (4 or 5) = 11
- Moderate (2 or 3) = 7
- Low (0 or 1) = 1

NRC Feedback on industry comments
- High (4 or 5) = 3
- Moderate (2 or 3) = 7
- Low (0 or 1) = 8

NRC Receptivity to Input
- High (4 or 5) = 3
- Moderate (2 or 3) = 11
- Low (0 or 1) = 5