

U.S. Nuclear Industry Council Discussion of Policy Issues and Results of USNIC 2020 Advanced Nuclear Survey

The Honorable Jeffrey S. Merrifield
Chairman, U.S. Nuclear Industry Council Advanced Nuclear Task Force
& NRC Commissioner, 1998-2007

2 April 2020

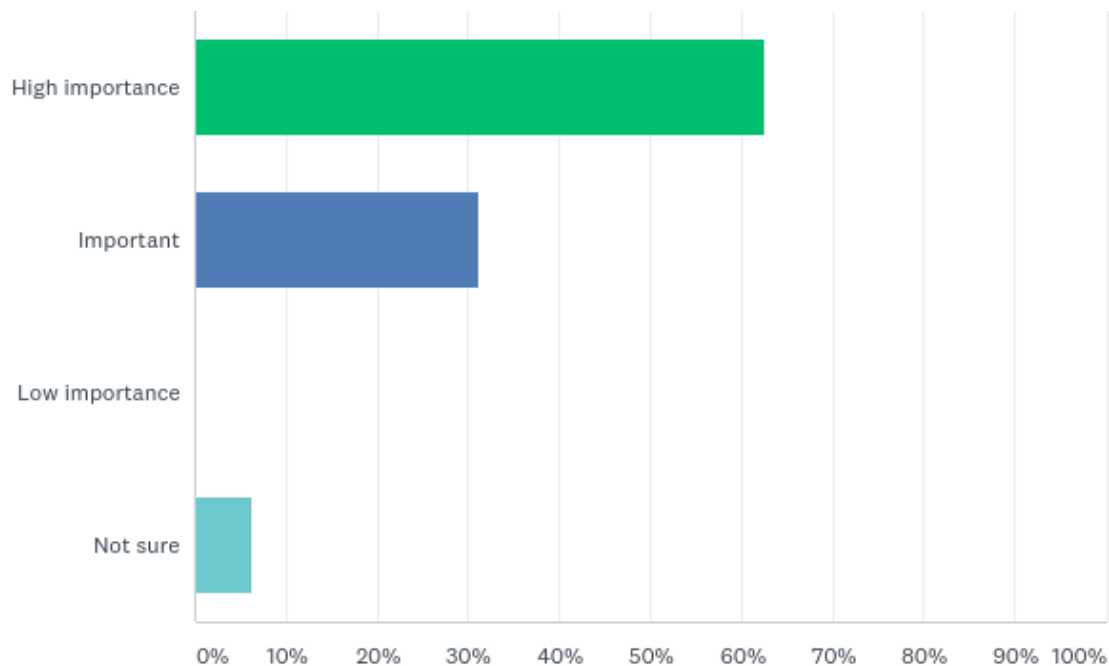


Overview

- **This presentation provides results of USNIC survey of Advanced Nuclear Developers conducted in March 2020; and was presented 2 April 2020 at the NRC Advanced Reactor Stakeholder meeting.**



Q: How important is the NRC resolution of outstanding generic advanced nuclear licensing “policy issues” to your company?



Q: Of the Policy Issues listed below, please rank their individual importance:

| | | High Importance | Important | Low Importance | Weighted Average |
|----|---|--------------------|-----------|-------------------|---------------------|
| 1 | Appropriate Source Term, Dose Calculations, and Siting | 69% | 31% | 0% | 2.69 |
| 2 | Fuel Qualification | 63% | 31% | 6% | 2.56 |
| 3 | Use of Probabilistic Risk Assessment in the Licensing Process | 63% | 25% | 13% | 2.5 |
| 4 | Fuel Cycle Facilities, Higher Enrichments, Transportation | 63% | 25% | 13% | 2.5 |
| 5 | Functional Containment Performance Criteria | 56% | 31% | 13% | 2.44 |
| 6 | Offsite Emergency Planning (EP) Requirements | 63% | 13% | 25% | 2.38 |
| 7 | Advanced Reactor Licensing NRC Framework | 44% | 38% | 19% | 2.25 |
| 8 | Security and Safeguards Requirements | 38% | 50% | 13% | 2.25 |
| 9 | Licensing Basis Event Selection | 38% | 44% | 19% | 2.19 |
| 10 | Operator Staffing for Small or Multi-Modular Facilities | 25% | 50% | 25% | 2 |
| 11 | Manufacturing License Requirements | 19% | 63% | 19% | 2 |
| 12 | Materials Qualification | 38% | 13% | 50% | 1.88 |
| 13 | Industrial Facilities Using Nuclear-Generated Process Heat | 19% | 38% | 44% | 1.75 |
| 14 | Insurance and Liability | 13% | 38% | 50% | 1.63 |

Blue for Policy Issues with higher rank than last survey; Green with lower rank than last survey

Q: Additional Policy Issues

Endorsement of Codes & Methods for Advanced Reactors

Adoption of computer codes utilized for design and analysis

Accelerated Fuel Qualification using codes developed by the National Laboratories.

Clearer definition of advanced fuel qualification requirements and pathways.

Review times are too long for designs with only 3-4 safety systems

Remote monitoring and operations

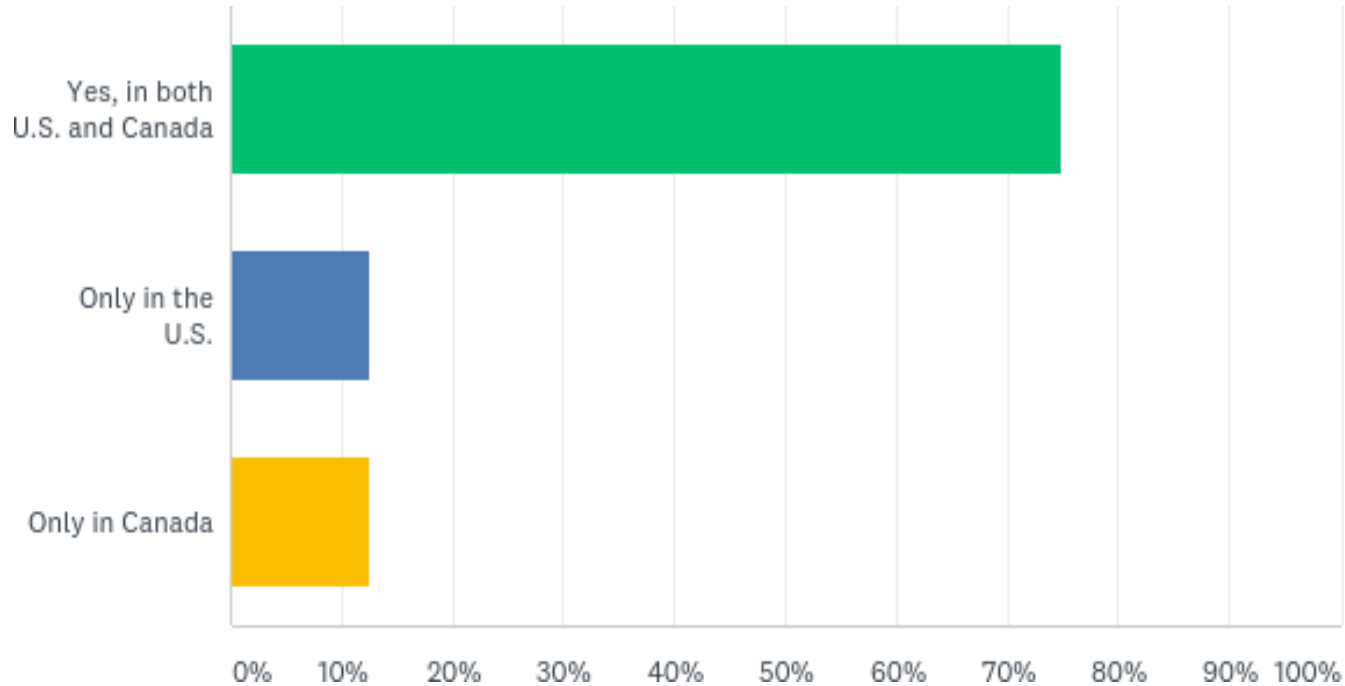
Import of licensing basis from other jurisdictions (such as making use of licensing progress in Canada)

Generic EIS

Consider licensing subcritical accelerator-driven power systems for construction and operation.

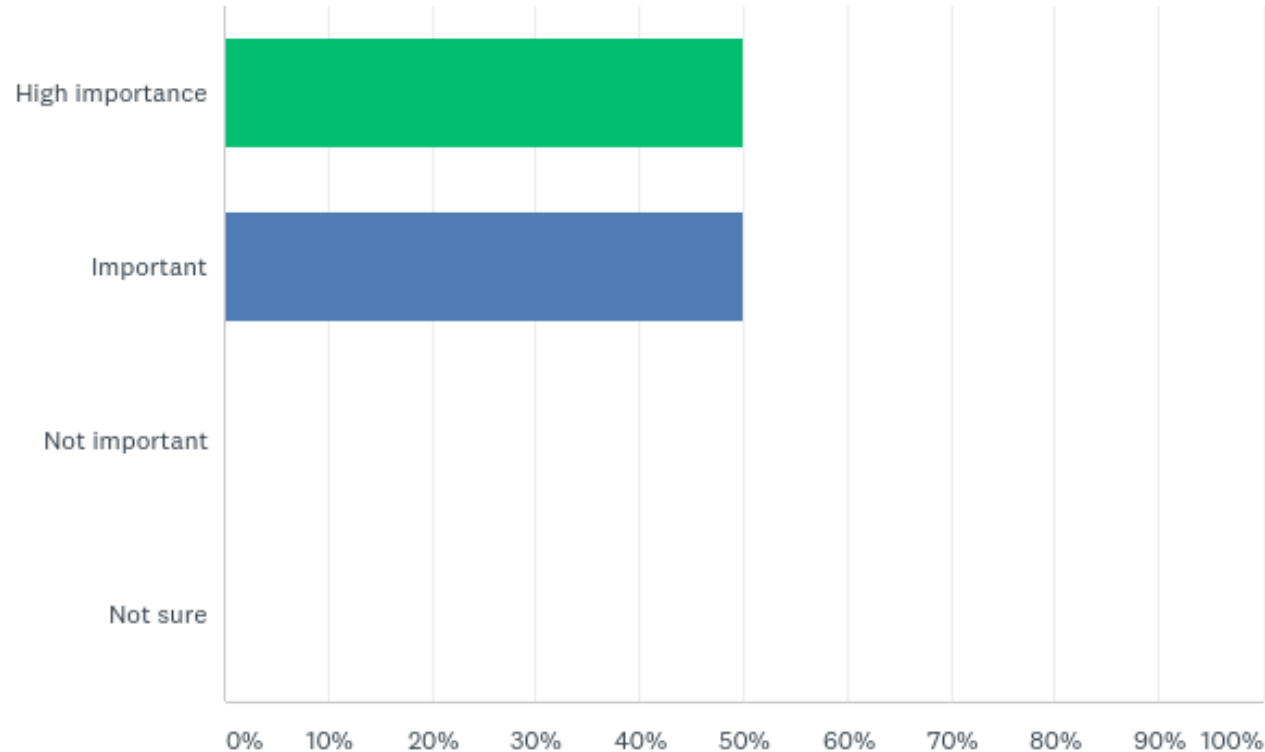
Is real-time reactivity measurement important?

Q: Does your company intend to pursue licensing in both the United States and Canada?

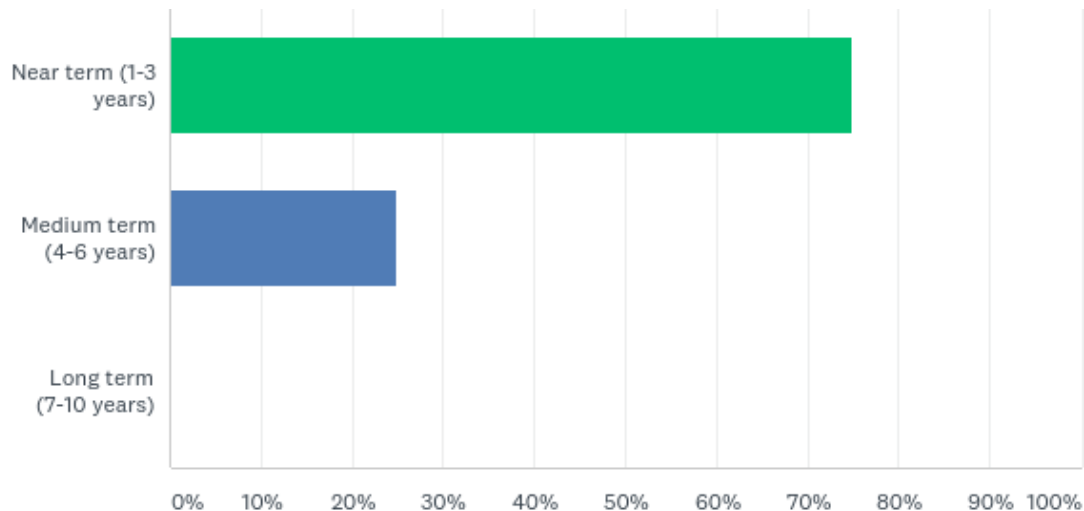


Other countries: Japan, UK, Jordan, Eastern Europe (Poland, Czech Republic, Ukraine) UAE, India, Korea, Indonesia, Ghana

Q: Does your company support the effort of the U.S. NRC and the Canadian CNSC to align their regulatory review processes?



Q: In what time frame do most of these policy issues need to be resolved by the U.S. NRC and CNSC?



Q: Are there additional actions that the NRC/CNSC and/or Industry can undertake to resolve these issues?

Ensure that the licensing process does not impose any additional burden on the applicants in the short term.

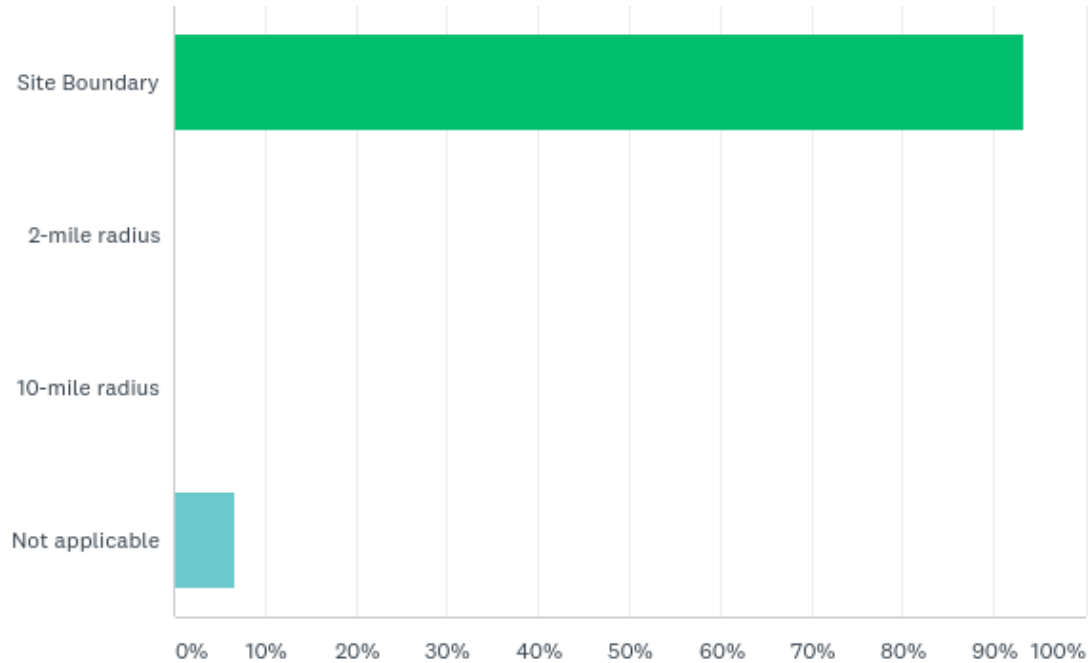
Any resolution of the policy issues within the NRC regulatory framework should be evaluated for potential synergies with CNSC and vice versa.

Licensing frameworks are quite different so helping vendors to map similar requirements would assist development of license applications that can be used in both countries

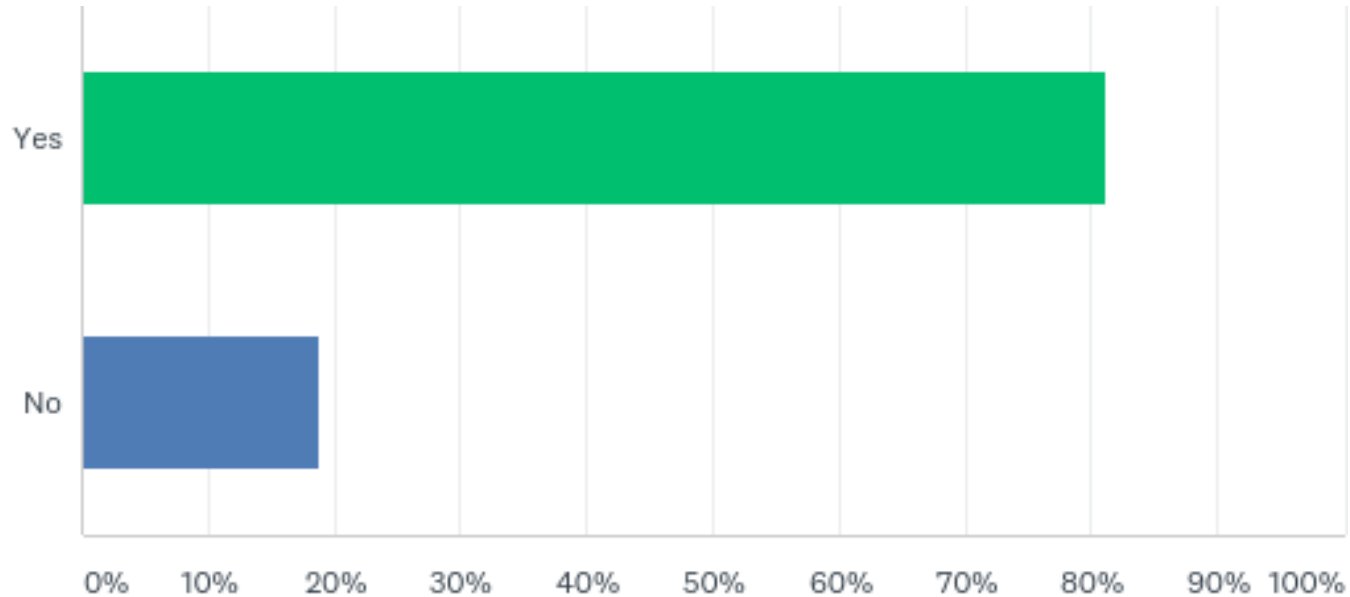
Cooperation on in-reactor testing criteria and/or regimes.

Focus on advanced reactor materials and acceptability including advanced manufacturing techniques.

Q: What is the appropriate Emergency Planning Zone for your technology?

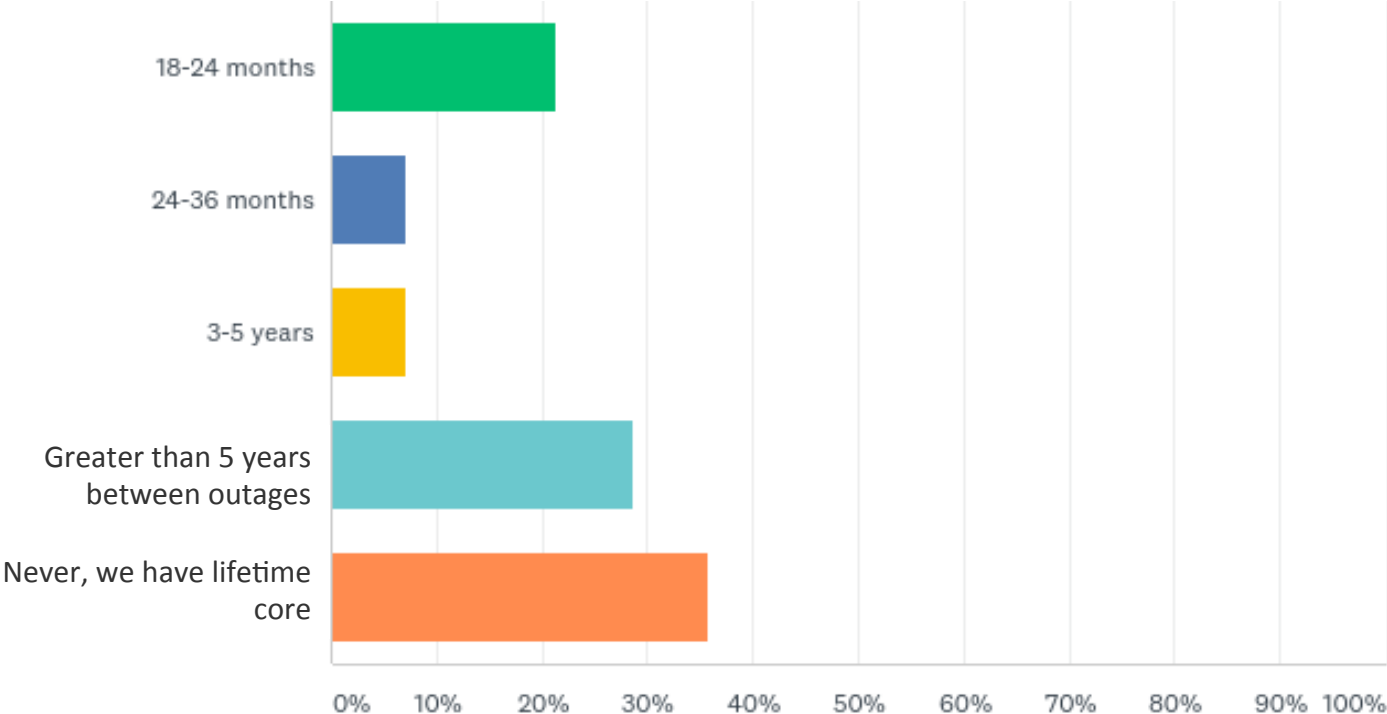


Q: Does your plant design require control room operators to operate the plant?

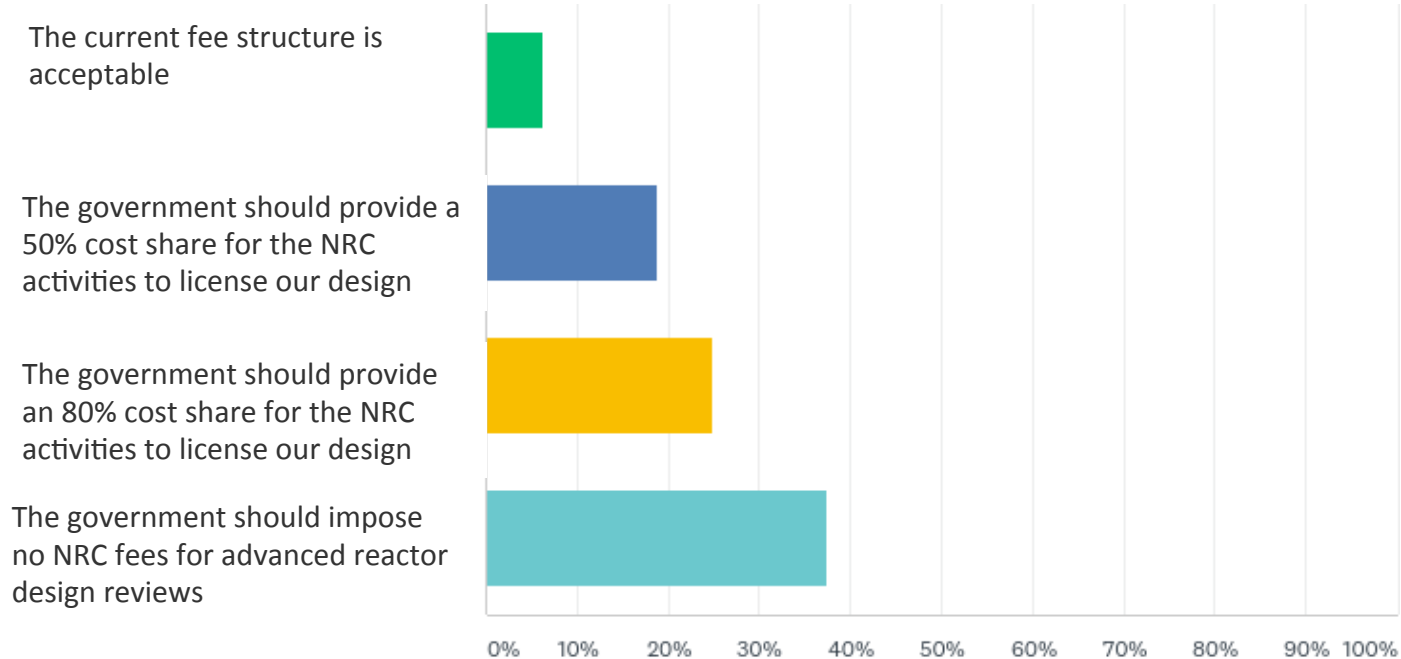


operators/shift (for companies giving details): 1-3 operators/shift

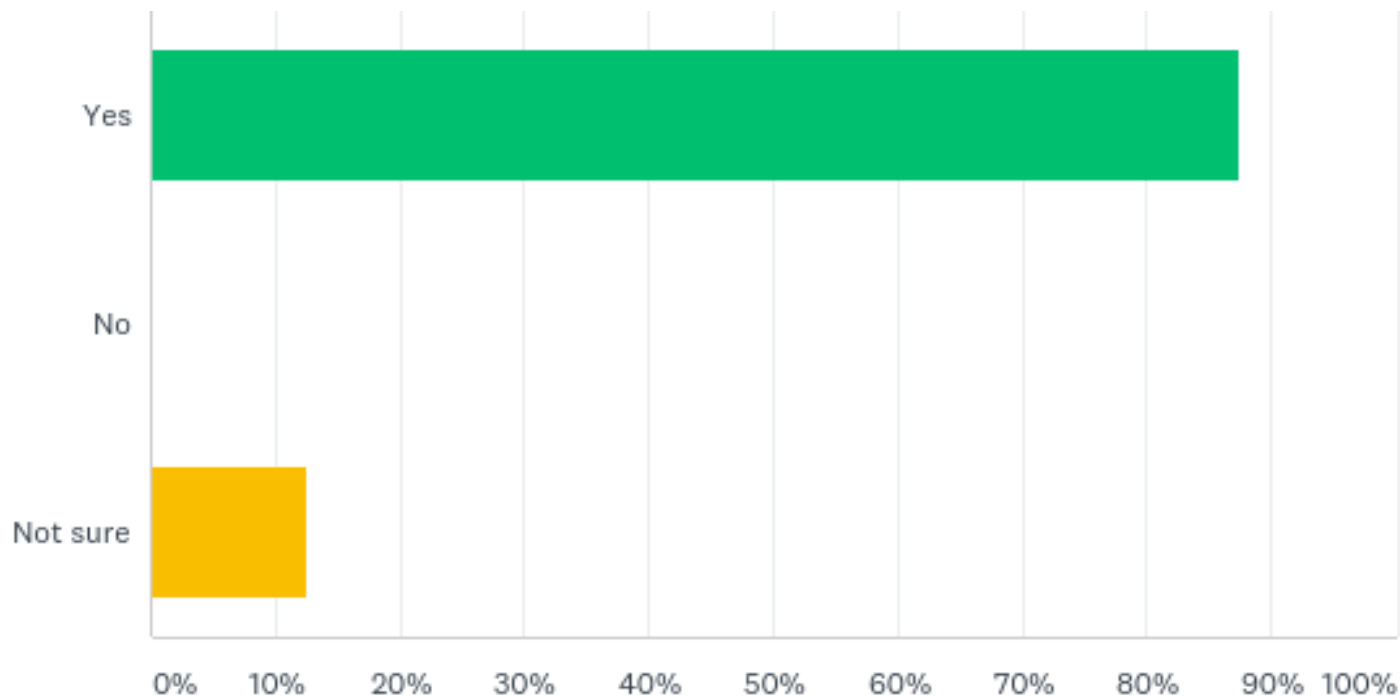
Q: How often do you intend to refuel?



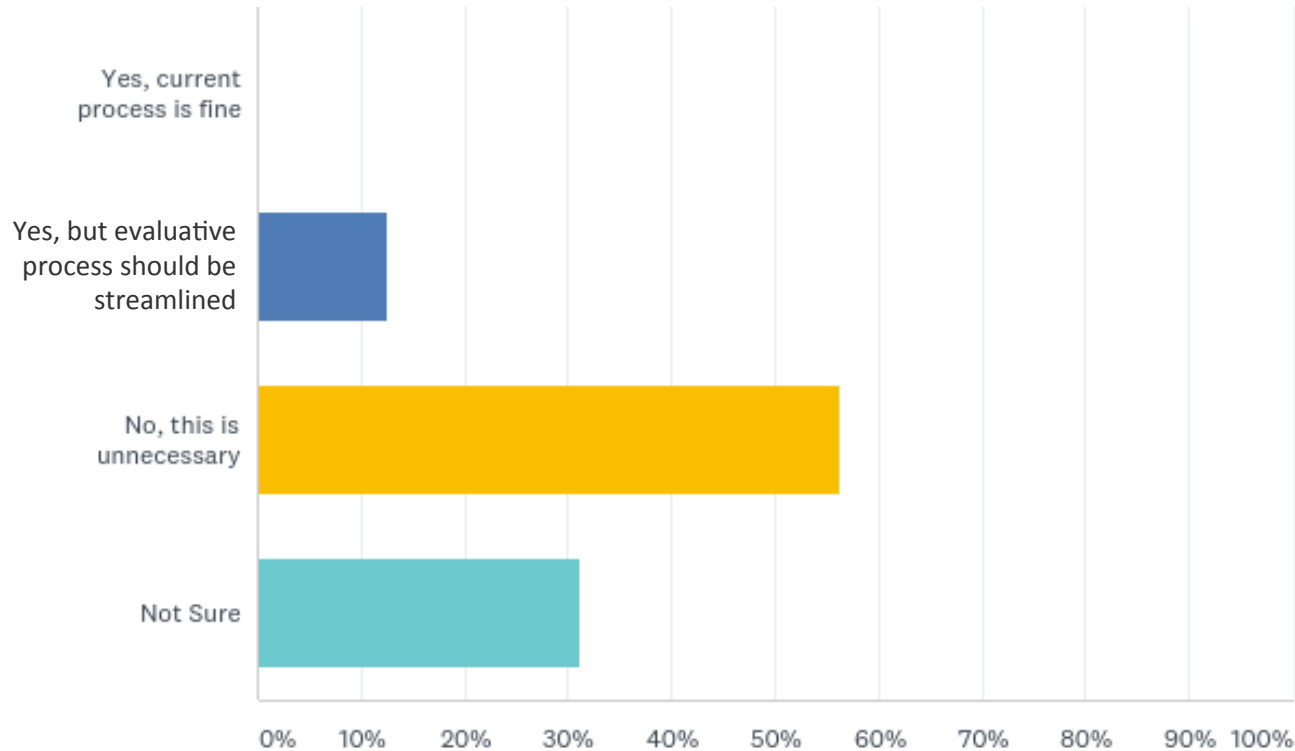
Q: What is an appropriate Nuclear Regulatory Commission fee (for the current regulatory framework and desired future regulatory framework)?



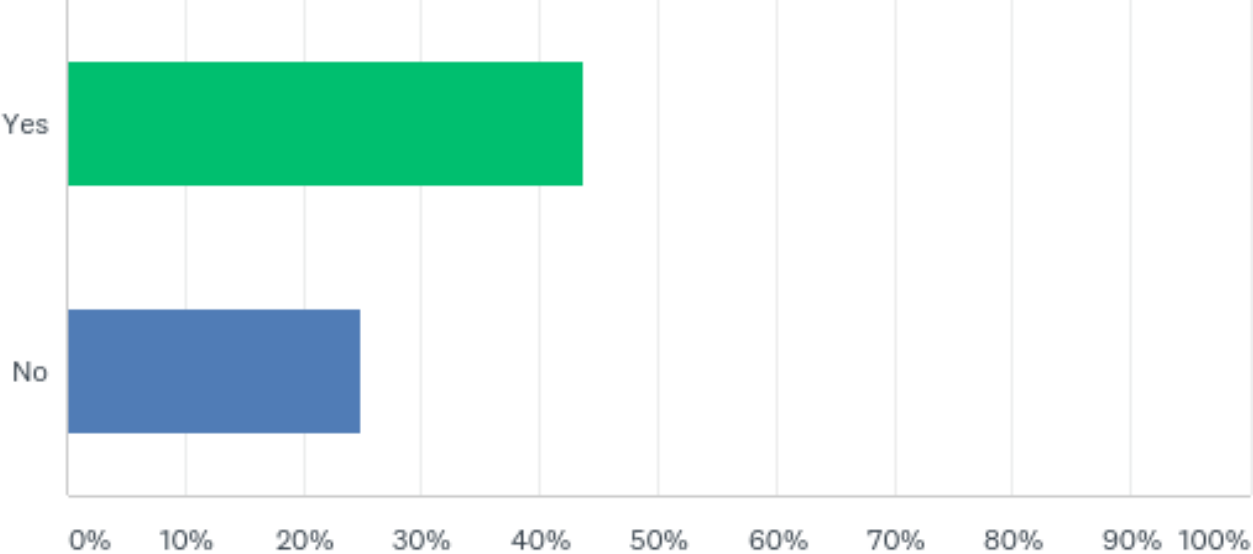
Q: Do you believe the NRC should undertake a process to create a Generic Environmental Impact Statement for advanced reactor designs?



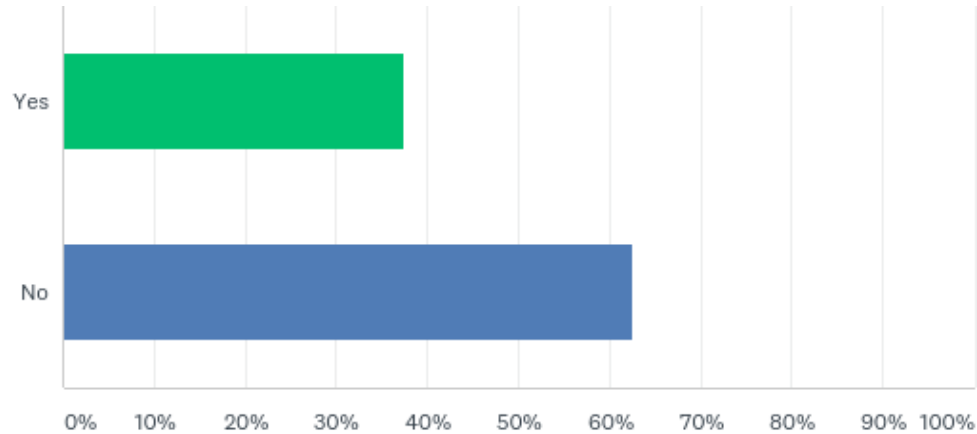
Q: Should the NRC EIS process include a need for power analysis?



Q: Do you plan to seek funding from DOE Loan Guarantee Program?



Q: Was your company a recipient of the DOE GAIN (Gateway for Accelerated Innovation in Nuclear) program?



Q: What are your views regarding the DOE GAIN program?

| | |
|---|------------|
| Good for industry and your company | 50% |
| Funding insufficient | 38% |
| Good for industry but not appropriate for your company | 25% |
| Needs improvement | 25% |
| Efficient for implementing policy | 19% |
| Funding sufficient | 0% |



Details-- What are your views regarding the DOE GAIN program?

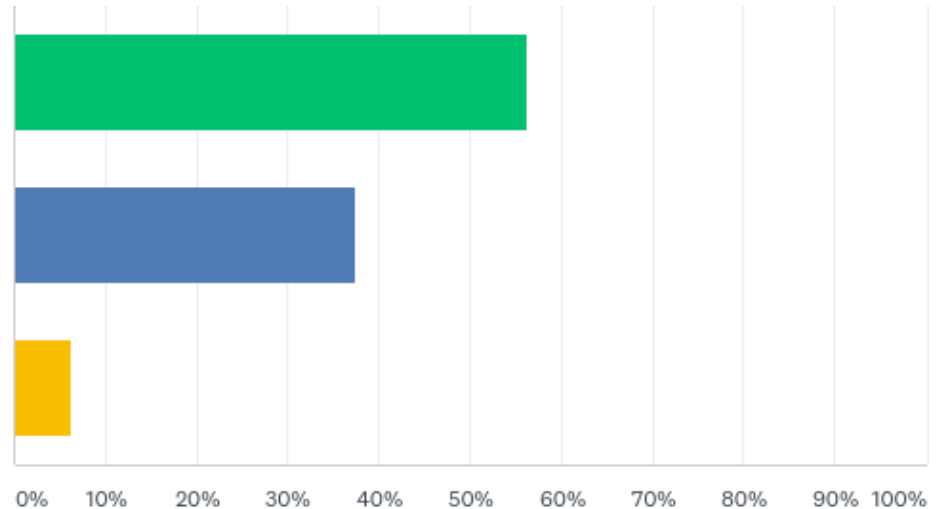
- Overall, DOE GAIN is good for the industry. The effectiveness of the program would increase if less awards were made with higher amounts.
- It appears the GAIN initiative is striking reasonable balance between private industry and federal resources. The planning and facilitation of effective and meaningful workshops and seminars is one example of GAIN providing a very useful bridge.
- GAIN restricts funding to be spent at the National labs - for commercialization we need industry to be part of the recipients. As example, GAIN helps for R&D work in most cases, but once R&D is done we need to start commercializing and perform maneuverability studies, etc. This expertise lies with industry and not the Labs.
- Have not seen the value of GAIN program as it calls for the work to have to be done in the labs.
- Funding levels are too low for some work activities and the limitation on awards is another barrier.
- With our level of maturity, something that might help us on the supply chain, for example, would be more applicable.
- CRADA IP implications should not prohibit development / export opportunities.

Q: Do you plan on using the DOE Office of Nuclear Energy Funding Opportunity (FOA) Awards?

Yes; have received an award

Yes; have not received an award yet but hope to receive in the future

No; do not expect to use this program



Q: What issues keep you up at night (multiple answers allowed)?

| | | |
|---|--|-----|
| 1 | Availability of High Assay Low-Enriched Uranium | 63% |
| 2 | Sufficient government funding for the development of advanced reactor technologies | 56% |
| 3 | Ability to sell initial 10-20 commercial units (beyond initial demo unit) | 56% |
| 4 | Availability of financing for domestic deployment | 44% |
| 5 | Administration change to one that is not supportive of nuclear | 31% |
| 6 | Availability of financing for international deployment | 31% |
| 7 | NRC reactor licensing process | 25% |
| 8 | Sufficient domestic manufacturing resources to produce your design | 25% |
| 9 | Potential requirements for safeguards and security | 13% |

For questions contact

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