UNITED STATES

NUCLEAR REGULATORY COMMISSION

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MEETING ON UPDATE ON 10 C.F.R. PART 53 LICENSING AND

REGULATION OF ADVANCED NUCLEAR REACTORS

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TUESDAY,

MAY 16, 2023

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The Commission met in the Commissioners' Hearing Room, at 9:00 a.m. EDT, Christopher T. Hanson, Chair, presiding.

Commission MEMBERS:

CHRISTOPHER T. HANSON, Chair

JEFF BARAN, Commissioner

DAVID A. WRIGHT, Commissioner

ANNIE CAPUTO, Commissioner

BRADLEY R. CROWELL, Commissioner

ALSO PRESENT:

BROOKE P. CLARK, Secretary of the Commission

MARY SPENCER, Acting General Counsel

EXTERNAL PANELISTS:

TRAVIS A. CHAPMAN, Director, Reactor Licensing & Regulatory Affairs, X-energy

DR. KATHRYN HUFF, Assistant Secretary for Nuclear Energy, U.S. Department of Energy

DR. EDWIN LYMAN, Director of Nuclear Power Safety, Union of Concerned Scientists

NICHOLAS McMURRAY, Managing Director for Public Policy, ClearPath

STEVE SCHILTHELM, Director, Regulatory and Mission Assurance, BWXT

NRC STAFF:

TARA INVERSO, Director, Division of Security Operations, Office of Nuclear Security and Incident Response

SCOTT MORRIS, Deputy Executive Director for Reactor Programs, Office of the Executive Director for Operations

MOHAMED SHAMS, Director, Division of Advanced Reactors and Non-Power Production and Utilization Facilities, NRR

MARTIN STUTZKE, Senior Technical Advisor for Probabilistic Risk Assessment, Division of

Advanced Reactors and Non-Power Production and Utilization Facilities, NRR

NANETTE VALLIERE, Senior Project Manager, Division of Advanced Reactors and Non-Power Production and Utilization Facilities, NRR

ANDREA VEIL, Director, Office of Nuclear Reactor Regulation

P R O C E E D I N G S

(9:00 a.m.)

CHAIR HANSON: Good morning, everyone. I was just saying to someone, I think this may be the most full this room has been since we came back from COVID.

I wonder what it is we're all here to talk about this morning. I cannot imagine what has garnered this much interest. Oh wait, it must be advanced reactors and the rulemaking.

Well, welcome, everyone. I convene the Commission's public meeting on 10 C.F.R. Part 53, Risk-Informed, Technology-inclusive Regulatory Framework for Advanced Reactors, which the staff sent to the Commission, I believe now what, in late-February, and we've been assiduously working through it.

By way of opening remarks for myself, I'd like to thank my colleagues for the way the staff have worked together thus far in working our way through the rule and evaluating that, and I look forward to a good discussion with both panels, the external panel to start this morning, and then our staff panel, in digging into some of the key issues. So, I'm looking forward to, again, the constructive dialogue on that.

So, we'll hear from our first panel, our external panel, this morning. Following that, we'll have a short break, and then we'll hear from the staff.

But let me ask if any of my colleagues have any remarks they'd like to make to get us started. No? Hearing none? All right, with that,

we'll begin with Dr. Katy Huff. She's the assistant secretary for Nuclear Energy at the Department of Energy. Dr. Huff, the floor is yours.

DR. HUFF: Good morning, esteemed NRC Commissioners, my fellow panelists, and all that are participating, virtually and in person.

President Biden continues to make addressing the climate crisis a priority, and the administration has set ambitious goals of achieving a 100 percent clean electricity generation mix by 2035, and a net-zero economy by 2050.

To meet these ambitious goals will require both our existing fleet and new advanced reactors to provide clean, reliable electricity, to support other carbon-free sources, flexibly provide heat for industrial applications, produce hydrogen for hard-to-evade sectors of the economy, and re-purpose aging coal plants, and require them urgently.

Multiple energy systems analyses indicate that we may need at least 100, possibly 200, gigawatts electric, of new nuclear energy capacity by 2050, in order to meet those 2050 goals and mitigate the worst impacts of the climate crisis.

I'm pleased to be here today to share my thoughts on the role of Part 53 and the national strategy for ensuring that advanced reactors are available to help us meet these climate crisis goals.

So, DOE greatly values our relationship with the NRC, and the two agencies have a long history of cooperation, including a memorandum of understanding, pursuant to NEICA.

With the development of 10 CFR Part 53, we understand the NRC proposes to establish an optional technology-inclusive regulatory framework for use by applicants for new commercial advanced reactors.

The regulatory requirements would use methods of evaluation including risk-informed and performance-based methods that are flexible and practicable for application to a variety of advanced reactor technologies.

The draft rule aims to directly accommodate advanced reactor technologies, and includes two distinct and self-contained regulatory frameworks -- Framework A and Framework B.

Its technology-inclusive scope aligns well with DOE's broad landscape of advanced reactor technology development efforts, as do the flexibilities it provides, to the range of anticipated commercial advanced reactor deployments and end uses.

If these flexibilities can maximize efficiency and reflect the urgency of the climate calamity unfolding before us, then this will help the U.S. ensure a diverse set of available advanced reactor designs, to enable us to meet our ambitious climate goals.

The Framework A portion of the draft rule incorporates the major foundational elements of the approach developed through DOE's cost-shared and industry-led Licensing Modernization Project (LMP).

The risk-informed performance-based approaches developed through the Licensing Modernization Project have been formally endorsed by the NRC for industry use within the existing regulatory

requirements of 10 CFR Parts 50 and 52. This LMP approach is now being implemented by the two Advanced Reactor Demonstration Program projects.

Although both of the demonstration projects plan to use existing licensing processes under Part 50, they could provide insights to inform the Part 53 rulemaking process for future advanced reactor deployments.

Additional DOE cost-shared projects being supported through the ARDP Risk Reduction Awards and the Advanced Reactor Concepts 2020 Program could potentially benefit from such insights, as could the deployments planned by vendors well beyond the set supported by ARDP.

We also recognize that the Framework B portion of the draft Part 53 rule attempts to offer a more traditional approach to advanced reactor design and licensing and may be an option preferred by certain designers and intended end uses.

In conjunction with current regulatory requirements and this pending rulemaking, DOE's Office of Nuclear Energy will continue to pursue and accomplish major achievements through our research development demonstration and deployment activities at the national laboratories, through our university support and our close collaborations with industry stakeholders and international partners.

These activities focus on advancing scientific understanding of these technologies, establishing an international network of user facilities for civil nuclear energy, RD&D, improving economic

competitiveness, and reducing the technical and regulatory uncertainties for deploying new nuclear reactor technologies.

The results of these activities can be critical to establishing the underlying technology-specific licensing and technical requirements associated with the design and licensing process.

These efforts, combined with the associated regulatory requirements developed through rulemaking like this Part 53 effort, may result in a comprehensive regulatory framework for advanced reactor technologies that significantly reduce these uncertainties associated with their timely deployment.

I look forward to today's dialogue, as all stakeholders work to address our critical and urgent needs for firm, carbon-free, energy. Thank you.

CHAIR HANSON: Thank you, Dr. Huff. Next, we'll hear from Doug True. He's a senior vice president and chief nuclear officer at the Nuclear Energy Institute. Doug?

MR. TRUE: Thank you, Mr. Chairman, thank you Commissioners.

Pleased to be here again. I think this might be my fourth time coming to talk to you about new reactor regulation.

We still are in a moment of a generational opportunity. As Dr. Huff mentioned, there's a growing recognition of the need for nuclear to play a major role, and this rulemaking is a great opportunity to set us up for success. Next slide, please.

Unfortunately, I'm here to repeat things I've said before, which is that I don't believe that Part 53, as it is, is meeting the moment. It's too complex, it's too burdensome, and is not setting us up for the success that Dr. Huff described we need to reach, and we're here with basically the same list of issues that we had eighteen months ago when we provided detailed comments on Part 53. Next slide, please.

On the too-complex subject, is a very long, complicated rule and two frameworks, with a lot of guidance-level detail included in the rule language, which sets us up for challenges in the long run, reduces flexibility in the long term of being able to adapt, and institutes a number of new terminologies and programs that complicate things. Next slide, please.

Continue to believe that it's overly burdensome, and the regulatory analysis doesn't adequately address the burden that's been added, because it's basically a justification of what was done, and not an evaluation of what the alternatives could have been, and where the incremental benefits and burdens come from, made to those programs.

The list of unjustified additional burdens includes the Facility Safety Program, bringing ALARA into the design process, and having to design for Beyond Design Basis events. Next slide, please.

Our key issues are outlined in voluminous comments, starting back in 2021, with 100 pages of references that describe the fact that we don't believe two frameworks are needed, and a number of other issues which I'm sure we can get into in the Q&A. Next slide, please.

The moment is important. And what we found in a survey

that we did jointly with USNIC was that most of the industry does not intend to use this framework as-is. So, the moment is here to decide where we're going with this.

Efficiency needs to become an important priority. If we're going to meet that moment and achieve the scale that Dr. Huff and DOE has laid out for us -- which is consistent with the survey of our members by the way, of 100 gigawatts to support the half of the electricity needs that our members represent -- we need to put efficiency as a priority.

We also think there were some opportunity missed to address some other things, as part of Part 53, that are listed here. Next page, please.

I think the most important thing for conversation probably today is how do we go forward.

It's our belief that moving forward and issuing this proposed rule at this moment, without change, is not efficient.

You have the comments. You have the feedback from the stakeholders. Going back out is going to just cause a repeat of all of those comments back again. And that is not going to move the needle or change the outcome.

We think you have the information that's needed. We intend to stay engaged as we move through this process, or whatever path that the Commission chooses. But I've got to tell you, it's getting harder and harder to get our members to care.

The NRC staff has put in a ton of work on this, and I'm not

trying to undermine the amount of effort that's gone into this. It has been a monumental effort. Just producing 1300 pages of regulation in itself is a huge effort.

But we haven't found the path to achieve an outcome that we can all work through, and that's not going to help anybody in this process, in this moment.

So, we're here to continue, we'll continue to bring our members along to the degree we can. But it is getting harder.

And we think redirection is needed from the Commission to move this back in a different direction. And we hope that we'll see that outcome from your deliberations on this proposed rule. Thank you.

CHAIR HANSON: Thank you. Next, we'll hear from Niko McMurray. He's a managing director for public policy at ClearPath. Niko?

MR. McMURRAY: Thank you, Chairman. Hello. First, I would like to thank the Commissioners for the invitation to share ClearPath's perspectives on the Part 53 rulemaking.

My name's Niko McMurray, I'm the managing director of policy at ClearPath. Next slide, please.

ClearPath's mission is to develop and advance policies to accelerate innovations to reduce and remove global energy emissions. Next slide?

In order to do this, we worked on a suite of technologies, including nuclear energy. Next slide, please.

To start, the development of Part 53 is a once-in-a-

generation opportunity to fundamentally reform the deployment of nuclear energy.

The successful implementation of Part 53, and improvements in the license review process itself, can be a step change in how the NRC reviews applications.

ClearPath has been following the development of Part 53 since the rulemaking process started.

Over this time, we have collaborated with a number of organizations, including other think tanks and NGOs, private sector companies, and trade organizations.

After reviewing the draft language through the lens of a former member of the NRC staff, I think it's important to leave the details aside for a minute, and focus on how the Commission can help facilitate a higher-level change in perspective.

A higher-level change in the Part 53 rule would not only address the technical topics, like QHOs, but would make a rule that is not an undue burden on industry and is also not an undue burden on the NRC staff as they review an application and make their safety finding.

I believe that these are two questions for the Commissioners to ask as they prepare to vote: Can reactors licensed under the existing regulatory frameworks transition to Part 53, and can Part 53 efficiently and effectively handle a large volume of applications?

Since a lot of the recent discussions have been around technical topics like QHOs and ALARA, and the inability to get alignment on

them, it has not allowed the staff or external stakeholders to consider if the rule is implementation-ready.

However, today the Commission has the opportunity and obligation to vote on the draft proposed rule and redirect the staff in accordance with the goals of NEICA. Next slide, please.

A major debate around Part 53 is predictability versus flexibility. But this view is a false choice.

Attempting to create predictability only through rule text will actually make the review less predictable, less flexible, and harder to implement.

As I discussed in ClearPath's July 2021 public comment, there are dozens of advanced reactors under development, each with their own unique design and safety case.

The most important aspect of Part 53 is that it's performance-based. Unfortunately, the draft rule is centered around the role and use of risk information, and neither framework, as rule text, creates flexibility, because they lock in methodologies that may not work for all designs.

Therefore, to create flexibility, the rule should be performance-based and the framework should be regulatory guidance.

Due to uncertainty around new and novel technologies, predictability needs to be established through the actual license review process, by first improving licensing actions such as construction permits, combined licenses, and early site permits.

And second, by improving the staff's review tools, such as audits, requests for information, and the core team concept.

The staff has many tools in the toolbox and sharpening them will create predictability for both applicants and the staff.

Furthermore, having the frameworks be guidance will allow the NRC staff to incorporate best-practices and lessons learned from the ongoing and upcoming license reviews, in order for a robust, predictable, and effective, rule.

By crafting a performance-based rule, with regulatory guidance that is adaptable, the staff will be setting themselves up for success, while also allowing them to show the value of Part 53, and how to license new designs more efficiently, answering the questions posed on my previous slide. Next slide, please.

The Commission now has the opportunity to pause, take a few steps back, and consider if the draft proposed rule meets the needs of today and tomorrow.

At the beginning of the Part 53 rulemaking process, it was unclear how the staff defined a successful Part 53.

Any initial vision wasn't publicly shared, and it took months until LMP was understood to be the basis of Part 53, and stakeholders could begin crafting constructive feedback.

There still needs to be a Part 53, but a better Part 53. The draft rule does not exist in a vacuum. A tremendous amount of valuable work has already been done by both the staff and stakeholders, so the NRC

wouldn't be starting from scratch.

Refocusing the rule on performance-based requirements, and emphasizing the role of regulatory guidance, would leverage the work already done, while creating a pathway to a better, usable Part 53.

However, locking in overly complex language today will be harder to entangle and fix tomorrow.

This would be a waste of time, effort, and taxpayer resources, if the overall result is a rule that no applicant will seek to use.

Part 53 has the potential to safely license gigawatts of clean energy, but only if the Commission takes a holistic view, sends the rule back to the staff, and directs the staff to create a rule that can improve upon the current regulatory framework, and can efficiently and effectively license a large volume of applications.

My final two slides are references and contact information. Thank you again very much. I look forward to the discussion.

CHAIR HANSON: Thank you, Niko. Appreciate it. Next we'll hear from Travis Chapman. He's the director for reactor licensing and regulatory affairs at X-energy.

MR. CHAPMAN: Good morning and thank you for having us here today. Next slide?

It's a privilege to be here and share X-energy's views on the development of Part 53 as a regulation for the deployment of advanced reactors.

My views are informed a little bit by a progression of career

opportunities, starting in new reactor licensing on the staff side, and then progressing into advanced reactor licensing in 2015, with a little bit of flavor of microreactors, now with a small modular reactor vendor.

And Doug had the metric there, eighteen of 21 respondents to the NEI and USNIC survey, suggesting we won't use this rule.

And I'm one of the ones that has to determine, will we use it, and for what purpose will we use it? And so, many of my comments today will center around that.

X-energy is a developer of advanced reactors and the fuel that powers them. We use TRISO-based particle fuel and high-temperature gas reactor technology. It has a long precedent here in the United States and abroad.

The basis of many of the parts of Part 53 have been grown out through the advanced reactor regulatory frameworks that exist today, that we're implementing under Part 50 and Part 52, specifically for the Advanced Reactor Demonstration Program, as Dr. Huff mentioned, for our deployment with the Dow Chemical Company, on the Gulf Coast of Texas.

We also have a microreactor program, sometimes called XENITH, as well as some other designs there, that we look to deploy in different commercial models, different business models, than traditional reactors of the past.

So, we look at the rule language as a means of determining, are these commercially viable regulatory pathways for us to use

there. Next slide?

My notes this morning cover a range of topics, but can briefly be summarized as a recognition with the tension that this rule has always had, with its intended purpose and objective.

And the way that I phrase it is, the focus on providing a pathway for the first of the kind of the technology to be licensed, approved, certified, found acceptable, by the staff, versus the efficient means of scaling the deployment of advanced reactors domestically, through projects and through that supportive framework internationally.

These reactor technologies can be deployed in projects across a wide range of end uses and end users, scales, commercialization strategies, and business models.

To each of these lenses that we look at, the rule and the rule text within, with respect to the rule, is a vehicle for a licensee or an applicant seeking to certify or approve their design for the first time.

I think our comments have generally aligned with those provided by NEI and USNIC, that the changes, small though they can be, and the safety standard language and the rule text itself, caused some level of uncertainty for a developer, and we need to understand what will it take to meet that requirement, and ultimately have to translate that into a business strategy.

How many hours, resources, schedule, budget, will it take to address it in the Part 53 way, as opposed to our kind of longstanding interpretations of Part 50, Part 52 language.

Examples, design principles like ALARA, being translated into a requirement, and what does that mean for me as an applicant and my application, causes some challenge in how do we evaluate, will we use the rule for that purpose?

The second part though, that commercialization strategy is ultimately, how do we deploy projects? And Niko mentioned this.

I think about this as a matter of scale. What does it look like if the Commission were to be issuing combined licenses or operating licenses, a dozen every quarter, every year, multiple designs per year, through an approval cycle?

Does the rule and rule text allow a more efficient means of using the staff resources, applicant resources, to achieve those outcomes?

And given the types of applicants that we're expected to have in the future, it's a little bit different than what we've seen in the history of Part 50, Part 52.

We will have large, regulated utilities that are deploying gigawatt scale units, but we have small regional utilities that are non-nuclear players, that are looking to deploy their first small modular reactors.

We have microreactor use cases that look very different, with power purchase agreements, project companies that are newly formed entities, a number of different kinds of uses, including those industrial-use cases like co-generation, that we're seeing with Dow.

Is this rule going to work for those kinds of applicants, and welcome them into that community? Next slide?

Lastly in closing, I share many of the views that were provided earlier, that I think it's an opportunity for us to look at what do we want to use Part 53 for, what are the outcomes that we seek to achieve?

And we have the opportunity, through things like the demonstration programs now, to trial or see some of these novel applications, things like AERI, generally licensed operators, that we do see as an attractive alternative, see those in use now, before we lock those into the regulatory rule text.

Thank you for the time and look forward to the dialogue after.

CHAIR HANSON: Thank you very much. Next, we'll hear from Steve Schilthelm. He's the director of Regulatory and Mission Assurance at BWXT.

MR. SCHILTHELM: Thank you, and good morning.

So, first, BWXT would like to thank the Commission for hosting us, and for hearing our comments. This is a very important time. And I take a moment to reflect, it was over 20 years ago that we as an industry sat at this very table talking about Part 70 and the issuance of the Part 70 rule. And the Commission at that time had an important decision to make.

And at that time, they did redirect the staff and didn't put the rule out for public comment. And today, I feel like we have a better rule in Part 70, for the Commission having done that. So, I think that's an important point to make. There is an opportunity here for the Commission.

And we recognize that those are tough decisions that you have to make. And hopefully, what we have to say here today collectively can help you with those decisions. Next slide, please.

So, BWXT, formerly known as Babcock and Wilcox Company, we have a long history of supporting the nuclear industry, both in government and commercial space.

We have licenses dating back to the '50s, before there was an NRC. We've had critical experiment licenses at our Mount Athos facility, we've had research and test reactor licenses there, we've had a broad scope license for research and development, and of course today we have our two Cat 1 field facilities in Lynchburg, and now in Erwin, Tennessee.

So, I think from that perspective, we offer a wide perspective on the licensing framework for a number of kinds of facilities. And hopefully, that can be helpful to you, particularly as you ask questions.

We are very proud of that nuclear history, and we do feel like this is a moment in time, and it offers us an opportunity in Part 53 to create a framework that will allow some of the things that the others have said here, moving forward with numerous licenses to address numerous environmental and regulatory challenges. Next slide, please.

So, we have a number of advanced reactor ongoing projects. They're all small reactors. They're both in commercial space and defense space.

Relevant today are probably the two most relevant programs are our BANR Program, which is an advanced commercial reactor.

We're recipients of an ARDP award, a risk-reduction award, and we're moving forward both in fuel development and design space for the BANR Program.

Also relevant today, I think, is the experience we're gaining on the PELE Program. The deployment of that microreactor is a significant effort that's underway at BWXT, and there is significant learning, and your staff is actually involved in that learning.

They're participating as observers, although not as regulators. And that's a credit to the NRC and to the Department of Defense for having that foresight.

I pointed out the space programs only to say that these activities will likely flow through NRC license facilities, whether it be nuclear thermal propulsion, or space surface power, those activities -- fuel development, fuel research -- will likely flow through NRC facilities.

So, onto Part 53, I won't repeat things that others have said. I do want to recognize the staff and the industry, and the industry stakeholders. I think what Doug said is very, very true. It is difficult to maintain energy for two-plus, three-plus years, on a rulemaking, and continue to actively engage.

That's a challenge for the industry. I know it's a challenge for the NRC staff. So, applaud those efforts in that engagement, for that continued engagement.

We're members of NEI and USNIC, so I won't repeat their statements. But we do support the statements made by those entities in

various forums. And to a couple of specifics. While we support the concepts of the two frameworks, we think the rule can be done in a single framework. Next slide, please.

What's BWXT interested? We're interested in manufacturing license. We're interested in the AERI process. We think combining the manufacturing license and the AERI concept offers an opportunity for factory-built reactors that can be deployed quickly and on time for the various customers that exist out there.

So, with that, I look forward to questions. Thank you.

CHAIR HANSON: Thank you. And now, we'll hear from Dr. Ed Lyman. He's the director of Nuclear Power Safety at the Union of Concerned Scientists, and maybe the only other person at the table besides Doug who's been here as much or more often, usually remotely.

And we're particularly glad to have Ed with us in person this morning. So, with that --

DR. LYMAN: And it's good to be here. And on behalf of UCS I really thank the Commission for giving us the opportunity to present our views on this important subject.

So, overall, we think that the staff has done a very good job of being responsive to all the criticisms that have been leveraged on the draft language along the way.

But there are fundamental safety principles that have to be preserved. And I think they're doing a good job in many respects, not all, of sticking to those principles.

I wish I could say the same about their responsiveness to some of the concerns we've raised, including the fact that we think the scope is really too broad, and that could be really the root of some of the problems that we've been seeing.

First of all, extending the applicability to any commercial nuclear plant I think is not responsive to the intent of NEIMA.

And also, rather than just adhering to the basic issues regarding reactor design and their application to safety limits, the scope, incorporating all these operational programs, from physical protection, access authorization, fitness-for-duty, and operator licensing, without a direct quantitative nexus to reactor design, I think is going to make it harder to assess whether the overall package is going to maintain the same level of safety as operating reactors. Actually, slide number three, please?

So, and again, I do agree that the draft is complex because of the incorporation of those unquantifiable programs.

And we remain concerned that if this goes in the wrong direction, Part 53 could authorize weakening standards that would facilitate the licensing and deployment of reactors that have not had the operational experience and data validation to ensure they can meet the paper safety standards that they should. Next slide, please.

And just as an illustration that even a microreactor can still have significant health and safety impacts on public and the environment, this is a recent NRC study that looked at a two megawatt electric heat pipe microreactor, and these numbers looked good, and the evaluation of this

particular accident led to doses below the EPA protective action guidance.

But this also assumed that there was a BWR-sized reactor building over the microreactor that reduced the radionuclides in the building to the environment by a factor of 1000.

That's not realistic. And you can see that if that building were not there, you would be challenging the EPA PAGs, and also the AERI standards, if that was licensed.

So, you have to respect the quantity of radioactivity that's still going to be in small reactors. Next slide, please.

We've emphasized that we're concerned about the current safety goals and quantitative health objectives. We do think there need to be quantitative standards in the rule, but we think that they're outdated.

The staff believes it's simply too complex to try to open up and redo the safety goals. But if that's the case, we think it would be necessary to maintain a large margin between the safety goals and what the reactors actually show under Part 53, comparable to the margins that already apply to the operating fleet, because otherwise there is the risk that you may end up having reactors that are less safe than the current fleet. Next slide, please.

On a few issues that I haven't raised at previous meetings, ALARA, we think that there's a good reason to ensure that ALARA is within the rule, to make sure that operating reactors under normal conditions continue to minimize their impacts on public health and safety, and also conformity with international standards. And the industry itself stresses that

they would like harmonization of this rule with international standards, and ALARA is part of the longstanding international safety standards. Next slide, please.

With regard to the Facility Safety Program, we think it is an essential component of the rule that, given -- especially in Framework A -- the role of PRA in fundamental design of the plant gives that PRA a special role, and requires that it should be updated to accommodate new information that could challenge the initial assumptions when the reactor's first licensed.

So, we think that is critical and can also address issues of evolving risk over time, such as aging and climate change. They're not well-handled under the current framework. Next slide, please.

One category we're not happy with is the notion of generally licensed reactor operators, and we think the facilities that would actually qualify for that rule probably are not going to exist and it's not clear why the NRC should be spending time on developing rule language that may actually never be realistically used. Next slide, please.

And finally, with regard to the question of control of PRA information, as I said, given the importance of PRA, especially in Framework A, compared to even our current Part 52 requirements, we do think that the PRA should have a place in the FSAR, and should be controlled under stringent standards, given its fundamental role in the design basis of the facility.

And I'll stop there and thank you for your attention.

CHAIR HANSON: Okay, thank you. And thank everyone

for their presentations. We're going to begin questions this morning with Commissioner Wright.

COMMISSIONER WRIGHT: Thank you, Chair. And before I start, I want to compliment you on your orange tie. As you know, I have an affinity toward orange ties. I'm going to find out where you got that.

CHAIR HANSON: If I'm not matching Commissioner Baran, then I'm matching you, Commissioner Wright.

COMMISSIONER WRIGHT: Thank you. Good morning, everyone, and thank you for your presentations. And I appreciate the amount of time that it takes for you to prepare, as well as the staff too. And I'm really happy to get a chance to talk with all of you today.

As you all know, the draft rule is up before us now, and we've heard many folks -- some of them are in this room, some of them are at this table -- that you've not been very happy with the process so far, that you believe you've not been heard, maybe that you've been talked at and not with, and that the work that you've done to give input feels like it's kind of been a waste in a way. Right?

So, I want you to know that if it's up to the Commission, I believe the Commissioners are going to listen to you and they're going to interact with you.

And I will tell you that me and my team will do that. I want to have your honest opinions, because in my opinion, this rule has to be useful and usable by those that are going to use it. And that's you all. Right?

So, I'm happy to have your participation. I look forward to further engagement with you.

On another note, I have a little prop with me here today. This is the original Part 50 rule that was in the Federal Register on January 19, 1956. It's six pages. Six pages long.

Quite a contrast from the 1000-plus pages just in the FRN alone, that we have in Part 53. And I thought it was a helpful visual to get us started today, and a reminder that quality and quantity are not mutually exclusive.

And this is just, again, the draft rule. It's a draft proposed rule. So, I believe it's another reason why I believe the Commission can, and should -- Doug -- meet the moment and do our part to get the draft rule out so we can start getting comments on it and move forward to the final rule stage, and get public comment on it.

So, first question's going to be to anybody pretty much that wants to answer it. So, we've heard several concerns raised about the complexity of Part 53, stemming from having multiple frameworks.

So, if Part 53 were, I guess, condensed to one framework, what are your initial thoughts on how this could be streamlined, and maybe as a follow up to that, are there any plans for maybe an industry solution, or vendor solutions, to parts or all of this being put forward? So, I'd open it up.

MR. McMURRAY: Sure. Thank you, Commissioner. Great question. And going back to some of my remarks, where focusing on performance-based requirements can provide that clarity, for both industry

and the staff, for what needs to be met for making a safety finding.

And using the frameworks, which are still very useful and relevant, of something that looks a little bit more like LMP, something that's maybe a bit more traditional -- AERI -- for something that's a little bit more above maximum credible accident-type approach, can create different pathways for different applicants, different safety cases, different technologies, to meet those performance-based requirements.

And so, structurally, by having the focus be on those performance-based requirements and creating regulatory guidance as the two frameworks, but also AERI as an option, could allow that flexibility for applicants, and it could streamline the review, in the sense that, all right, well I'm going to follow LMP -- well, even the existing applications following LMP -- they're seeing what works or doesn't work, and they're able to kind of address that.

Similarly, I'm following Framework A or B, but it doesn't quite match. And so, they'll have to justify it. The staff will have to review and approve it. But that does provide that flexibility for different applications.

COMMISSIONER WRIGHT: Thank you. Anyone else? Anybody? Yes, sir, Steve?

MR. SCHILTHELM: Yes. So, I think there is opportunity. BWXT supports Framework B. We were one of the advocates for Framework B. But we don't think there need to be two frameworks.

If you condense the rule down to requirements, and maybe peel out some of the methodologies associated with how you meet those

requirements and relegate those methodologies to guidance, it's maybe quite straightforward to combine Framework A and Framework B, and get to a single framework, for example.

There's a lot of redundancy in language. Frankly, the redundancy in language is just different enough so when you lay the two side-by-side, you've got some different definitions in there and whatnot. It's just different enough that you miss the differences because of the redundancy.

So, from a complexity standpoint, that makes the rule just hard to digest from an applicant standpoint.

COMMISSIONER WRIGHT: Dr. Lyman:

DR. LYMAN: And if I could explain, we think that if you're going to have a risk-informed rule, that you need a high-quality, validated PRA.

So, the reason why the staff proposed Framework B in the first place, was to provide that alternative for those applicants that did not want to spend the resources on a PRA.

And so, I think some division along those lines is probably unavoidable, although there may be ways of more efficiently integrating them.

But I think that was the original logic, and I think it makes sense that without the PRA, applicants should not be able to avail themselves of some of the additional relief that Framework A would provide. Thanks.

COMMISSIONER WRIGHT: Thank you. Doug, one topic that continues to receive a lot of feedback is ALARA. Right?

And in the proposed rule package, the staff, they assert that ALARA requirements in Part 53 are consistent with current NRC regulations.

But in your presentation, you discussed that ALARA is being -- the criteria would place additional burden on licensees.

Can you expand upon that a little bit? Maybe why do you see that the proposed ALARA requirements as such a departure from current requirements?

MR. TRUE: This is a fascinating microcosm of Part 53 actually.

So, the Atomic Energy Act, as implemented through the NRC, requires reasonable assurance of adequate protection; adequate protection versus ALARA, which is as low as reasonably achievable.

So, bringing that into the design phase says you must go beyond adequate, to as low as reasonably achievable.

We use ALARA today in the current fleet very effectively. I think over the last 30 years, we've reduced doses to the workers by a factor of ten, or something like that, as an operational program.

But the notion of bringing ALARA into the design, I think is in direct contradiction to the NRC's mandate for adequate protection.

And that whole thing is sort of what has come into this rulemaking, with added ornaments on it, requirements, and continue to try to

tinker with it to add more things.

And that is not meeting the moment of being able to move forward with reasonable assurance of adequate protection.

Secondly, in terms of efficiency, this is more -- we're talking about the moment. We're talking about what I think DOE said, thirteen gigawatts a year of licensing would be required to meet the moment that they see.

If you don't have a predictable way to understand what's adequate, then you're going to argue about that. It's going to take longer for the staff to review and re-review, and re-review, and decide, have I gone far enough in meeting that as-low-as-reasonably-achievable?

And that's going to be inefficient for those regulators who're going to see, hopefully, that number of applications, and it's going to be inefficient for the designers to have to go back through that process.

So, I don't think it actually is consistent with 1552 -- 1552 saying, designed to meet the requirements, and implement an operational program, ALARA.

We do that, we support that, we do 100 percent support on operational program for ALARA, but not in the design phase.

COMMISSIONER WRIGHT: Thank you. Niko, in the minute that I've got left, I'm going to come back to you real quick.

So, a lot's happened since NEIMA passed in 2019. For example, the Energy Act of 2020, the Infrastructure Investment Jobs Act of '21, global political developments, all that. Right?

Do you feel -- and I heard your comments, so that's why I'm going to ask this question. Do you feel that the original intent and purpose of Part 53 are still valid today?

Because I did hear you, and I took note of your comment, that there still needs to be a Part 53, but a better Part 53.

MR. McMURRAY: Yes. Definitely still believe there needs to be a Part 53. I think the principles of NEIMA that laid out what Part 53 is trying to accomplish are still very much valid.

But I think the use case of what Part 53 needs to do is different. And that is due to the Energy Act, the bipartisan infrastructure law, global events that have really changed the narrative around the need for nuclear energy, not just for clean energy, for also for energy security.

And so, Part 53 is not just to license these first-of-a-kind designs. It's to be able to rapidly accelerate their deployment.

And that's why the two questions I posed: what's the value of going from Part 50 or Part 52 for these first-of-a-kind designs that are happening today, which was not the case four years ago when we set out to start developing Part 53 and NEIMA was enacted.

So, what's the value proposition for doing that? And then what are those efficiencies that can be gained for first-of-a-kind designs, but also those nth-of-a-kind designs.

And that's really where Part 53 still has that opportunity and that value. But that's different than four years ago. And that's completely okay.

But that's where we have to kind of collectively look at, the world is very different, and so what are we trying to accomplish with the rule?

COMMISSIONER WRIGHT: Thank you so much. Thank you, Mr. Chairman.

CHAIR HANSON: Thank you, Commissioner Wright. Commissioner Caputo?

COMMISSIONER CAPUTO: Good morning. Thank you all for being here. Dr. Huff, thank you for making the time to join us today.

Three years ago the Commission issued SRM-19-0117, approving the use of the LMP methodology as just one reasonable approach for establishing key parts of licensing basis, and content of applications for non-light water reactors.

Commission also directed in that SRM that staff, quote, should remain open to continuous critical examination of its thinking regarding approaches and metrics for the licensing of this coming class of reactors.

Additionally, the Commission directed that, quote, in its work on the regulatory framework for advanced reactors, the staff should continue to recognize the Commission's established policy on the application of safety goals, safety performance expectations, provides an acceptable minimum safety standard for new reactors, while taking into account the need to adapt the aspects of our current regulatory framework for reactors that provide operational flexibility based on risk assessment.

Several months later, in its approval of this rulemaking in

SRM-20-0032, the Commission specifically noted that, quote, the staff may need to develop requirements at a high level and utilize guidance documents to address the details and technology-specific considerations. Therefore, the staff should continue to work prospectively with stakeholders to identify and develop necessary regulatory guidance and technical bases.

With that as background, and recognizing that the Agency has not started a formal notice and comment process on the rulemaking yet, there have been a variety of correspondence from stakeholders, such as NEI and ClearPath, expressing concerns with complexity and increases in regulatory burden in the draft proposed Part 53, including the thought that many of the prescriptive details in the rule text are typically the sort that would be in guidance.

Mr. McMurray, you mentioned in your briefing, that much of what is included in the draft proposed rule, belongs in guidance. You also stated that the Commission should send the rule back to the staff with detailed, clear instructions and expectations.

In my opinion, the Commission has already approved putting the details of LMP in guidance and developing Part 53 requirements at a high level.

Commission also approved using guidance for details, like alternate methodologies and technology-specific considerations, to make it more flexible.

Given the delays already incurred in developing the draft proposed rule, I'm not sure the more detailed clear instructions and

expectations would be worth another delay.

Line-by-line editing strikes me as the most detailed, clear and efficient way to proceed, particularly given the deadlines in NEIMA.

Would you, Mr. McMurray, or Mr. True, please provide your thoughts about the Commission sending instructions back to the staff, versus a thorough line-by-line revision by the Commission?

MR. TRUE: Thanks, Niko. I'm glad we're talking about this in the context of how to go back, and not go forward with what we have.

Personally, we've spent a lot of time interacting and explaining, and back-and-forth. And I feel like high-level guidance, along with the SRM guidance you described, would take us back down the same kind of path. And I don't really think that's one I'd like to continue to relive.

So, I actually believe that rewriting, having the Commission align across the five of you, on what the rule should look like, would actually be the most expeditious and efficient way to get a rule out.

And it's unfortunate that I think that's the position that we're in. Not for a lack of effort on the industry's part, or the staff's part, for that matter.

But we're here. And I think that trying to move forward with a clear line-by-line change is the better path and more expedient.

COMMISSIONER CAPUTO: McMurray, anything to add?

MR. McMURRAY: Yes. I think it's a yes-and, where there's value in conceptual policy questions and directions around some of the areas that NEI has especially raised around things like ALARA, beyond-

design-basis accidents, etc.

And I think there's larger questions there that can be addressed. I think there's also likely line-by-line edits when it starts to get into structure, or different requirements that happen to exist in the proposed rule.

So, I think there's both of those. I think the last part that's also really important is not just the rule text.

And so, how would the staff actually implement the rule? And I think that's really where, what are those review processes that are layered on top of the technical requirements -- the construction permits, operating licenses, combined licenses, etc., etc.

COMMISSIONER CAPUTO: Is that something you think might be fleshed out through, say, tabletop exercises?

MR. McMURRAY: I think a lot of that could be fleshed out with tabletop exercises, especially looking at the rule. And I think a lot of that will also help make sure that the rule is fully looked at.

So, it's not just looking at, what are the requirements, but actually how to implement them, and then what are those opportunities for creating that predictability in the review process itself when there may be less predictability for first-of-a-kind, or novel, technologies.

COMMISSIONER CAPUTO: Okay, thank you.

MR. McMURRAY: Thank you.

COMMISSIONER CAPUTO: Mr. True, one item you mentioned in your briefing that resonated with me was how various

requirements were aggregated in the regulatory analysis, by providing the potential to obscure regulatory burden.

I've been noticing a tendency in that area in recent years, where regulatory analyses don't evaluate separate provisions. Makes it tough for decision-makers to distinguish between the costs and benefits of individual provisions, and their overall contribution to safety.

The Facility Safety Program in the draft proposed rule is an example where the staff chose not to separately analyze the requirements, it was difficult to uncover that the staff concluded there would only be costs and regulatory burden that result from the requirement.

Regulatory analyses should clearly and transparently present fulsome, quantitative cost-benefit information, such that decision-makers, the public, and other stakeholders, can understand the bases for proposed rulemakings.

Do you have any suggestions on how to improve the analysis of the proposed rule and our regulatory analyses in general?

MR. TRUE: Well, I think I agree with your points on, particularly, the Facility Safety Program, where you had to dig really deep into the analysis to try to understand that.

I think particularly when it comes to new requirements, it's very important that they be broken out and looked at, and alternatives considered on how to accomplish what the objective is, and what the costs are and what the benefits are, of different approaches.

I think there has been somewhat of a history of doing the

regulatory analysis to sort of justify what's in there, rather than to consider, is this worth adding, is that worth adding, is this a better alternative to this?

And I think the regulatory analysis guidance steers towards that. It may not be as clear that that needs to be the case in all cases, but we feel that the places where there are new things added, those definitely should be looked at specifically, to see whether their benefit merits the burden.

COMMISSIONER CAPUTO: Thank you. Mr. Chapman, your second slide mentioned X-energy's XENITH microreactor. We've heard from some microreactor vendors expressing interest in the manufacturing license pathway for mass development of these designs.

But in Mr. True's presentation, he mentioned that certain manufacturing license provisions discussed in public meetings were ultimately removed from the draft proposed rule.

I understand that these provisions address loading of the fuel at a manufacturing facility, which might make sense for microreactors.

Do you think it's beneficial to include such an approach in the rulemaking, and do you expect that we might need legislative authority to do so?

MR. CHAPMAN: Sure, thank you for the question. I do think there are commercial models that make sense to have facility fuel loading and testing, ITAAC based there, where it's appropriate to do it, in that kind of an environment.

And if you have to manage repairs or modifications to

assist them based on that test result, you're in the right environment to be able to do so.

Having a regulation that allows, within that business model -- I'll call it the applicant or the licensee for that activity -- be able to do that, I think is appropriate.

I think that it's possible to do that within the regulation, outside of other legislative changes.

COMMISSIONER CAPUTO: Are you referring to the temporary licensing authority and the Atomic Energy Act?

MR. CHAPMAN: Could be through several mechanisms. But for each of these business models, depending on what -- I'm going to use my friends at BWXT as an example -- how they may proceed using a manufacturing license, versus ourselves, versus other microreactor developers, I think each of those is a little bit novel, and the development of the rule and the rule language to support that, certainly being informed by the types of use cases, would be a benefit.

COMMISSIONER CAPUTO: Mr. Schilthelm, anything you'd like to add?

MR. SCHILTHELM: Yeah, I agree with what Travis said there. There are a lot of different business models. Ultimately, loading fuel at a facility, and possibly testing, first criticals, or benchmark testing and whatnot, might be an attractive alternative to folks.

I think you have the regulatory framework in place to accomplish that. In today's reactor licenses, for example, you combine fuel

handling and storage with the reactor license. So, it's a Part 70-like aspect, combined with a Part 50-like aspect.

You could conceivably combine a Part 70 fuel handling aspect that addresses the safety of fuel handling, addresses safety of fuel loading, and does it quite well through the Part 70 construct, combine that with, say, a Part 50 piece that allows you to do benchmark critical testing, like a critical experiment facility.

So, I'm not a lawyer. I can't speak to whether or not you need legislation for that. But I think you have opportunity within the current regulations to do all of those things, depending on the business model and how you choose to move forward.

Factory-built manufactured reactors, we believe, are a way forward, particularly for the microreactors for these unique use cases, where you have customers who don't have the infrastructure, they don't want to build the reactor at their site. They want a product delivered to them.

And we think that's an opportunity for industry to deliver purposely built reactors to these use cases.

COMMISSIONER CAPUTO: Okay, thank you.

CHAIR HANSON: Thank you, Commissioner Caputo. Commissioner Crowell.

COMMISSIONER CAPUTO: Thank you, Mr. Chair. Thank you to all of our panelists. It's been an informative discussion thus far.

As the most junior member of the Commission, I don't have the benefit, or perhaps the burden, of having been here from start to

where we are now on Part 53.

And I'm going to use that position to try to take an independent, objective, and high-level look at where we are and where we need to go.

And keep in mind what the proper role of the Commission is, versus what the role of the staff is, in terms of the work and guidance that goes into hopefully getting Part 53 over the finish line.

One of the reasons I accepted the opportunity to come to the NRC was that I saw nuclear as essential to addressing climate change. And I'm comfortable with that construct because I think nuclear has established itself as a safe -- has a good track record of being a safe, reliable form of base load energy. Certainly, the benefits of being carbon-free.

There are cons associated with nuclear as well: waste, expense, etc.

And we certainly shouldn't be exacerbating those issues as we go forward. If so, we'll need to find other avenues to appropriately address climate.

But the numbers just don't get there if you're looking at energy security or climate change. It doesn't happen without nuclear, on a timeline that makes sense.

So, we've got to find a way to match up what the NRC traditionally does by maintaining that basis for safety and protecting public health, with meeting these broader societal issues that have equal, if not

much greater, impacts to public health and safety.

If Part 53 can't meet that threshold, and it can't do so on a timeline that is more expeditious than our current regulatory process, and such that it is commensurate with what we need to do to address climate energy and security, then we need to take a pause and figure out if we're going in the right direction.

I'm not concerned about the length of a regulation. I'm more concerned about getting it right. That it's clear, that it's transparent, that it's usable, that it's enduring, and then it's an improvement, both in terms of content and efficiency, over what the current process offers.

So, with that brief moment on my soapbox, I'll turn to some questions. And, Dr. Lyman, I'd like to start with you if that's all right.

Do you think that the increasing impacts of health and safety from unabated climate change should be considered within the role of the NRC's regulatory jurisdiction for new and existing reactors?

DR. LYMAN: Yes, thank you for the question. I don't. And I think the NRC's statutory authority is very clear, what you're describing is really within the purview of other parts of the government.

This Agency, as far as we understand it, is to ensure adequate protection of public health and safety from radiological hazards, as well as ensuring the common defense and security.

That's the role of this Agency, the essential role it plays, and we don't see this Agency as having a role in helping to accelerate the deployment of nuclear power, or to slow it down.

You have to ensure that whatever comes before you has to meet the fundamental safety and security requirements.

And so, considerations like these broader considerations really, I think, beyond the bounds of the scope of what the Agency's currently legally authorized to consider, except in, let's say, the environmental legislation, perhaps.

But as far as the Atomic Energy Act and the safety, that's your focus.

And you're going to do a better -- it's not going to be in anyone's interest to license unsafe reactors that may lead to consequences that could reduce or eliminate the prospects for nuclear power's role in mitigating climate change, because it'll drive the public away.

So, I'd just say focus on the safety and security mission, and that's probably the best contribution this Agency can have to ensuring a healthy climate in the future. Thanks. That was my soapbox.

COMMISSIONER CROWELL: No, I appreciate it, I gave it to you willingly, but don't put your mask back on quite yet. Do you think the current regulatory framework could -- maintaining that health, and safety basis couldn't be improved, streamlined, and made more efficient?

DR. LYMAN: Of course there's always room for efficiency, but as an observer, I think that the problems that the industry is having in licensing new technologies are not this agency's fault. I think the NRC has been scapegoated by observers who want to point fingers. But I mean it's really the complexity of new designs, even those that purport to be simpler,

and safer.

Just look at NuScale for example, there were some very important safety vulnerabilities in the original design that only came out through the review process, and even today, the application after all the pre-licensing, and design certification, there was still safety gaps in what's before the Commission. So, it's a hard road, and the burden is on the applicants to ensure that they provide all the information that's necessary.

So, I don't think it's fair to blame the NRC. That said, of course there are always ways to do things better, but that doesn't mean curtailing the scope, and the intensity of reviewing the safety of new designs where there's simply a lack of good validating information compared to the current fleet. I mean, there are just some things you can't speed up.

So, speed is not really the factor that you should be -- or a major factor in self-evaluation of what this rule could, or couldn't do.

COMMISSIONER CROWELL: I agree in part, I don't think it is the sole evaluating factor, but I think it needs to be an evaluating factor, and I think that NRC has historically done a very good job of meeting these metrics, but it does not preclude the ability to do it in a more modern, efficient way, and I think that's why they recognize that that's doable, and we just need to find a way to do it, and that time is of the essence.

There's been talk about the two framework model, and this is open to anyone other than Dr. Lyman, although you can jump in if you want. I've heard about what I think is a desire to merge the two frameworks, and I want to know if that's correct. And also whether instead of the

voluminous two framework model that has been criticized, would it have been better looking backwards to have gone with a single framework, as in framework A in Part 53, and then done a, say Part 50X style update.

MR. McMURRAY: One quick comment on your previous question, other part of the Atomic Energy Act is promote the general welfare, and I think that's also something important to keep in mind. And from the promote piece, I think not promoting, but definitely enabling what are the needs of society, and what are the needs from industry for new, and novel technologies.

So, making sure that the rule is responsive, and prepared for that I think is where that is definitely the nexus for Part 53. To this question, I think that the merging of the frameworks could make it more convoluted, as they're just very different methodologies of something that looks a lot like LMP, a little bit more PRA risk heavy, versus something a little bit more traditional.

And that's where merging them might not achieve that goal, as opposed to these are different approaches in order to try to meet the regulatory requirements for public health and safety, and dose, and things like that. So, that's where that structural piece, I think is really important. To help create that predictability, and flexibility for applicants.

COMMISSIONER CROWELL: Thanks. Doug?

MR. TRUE: Yeah, I agree with Niko. I think he said earlier go to a higher level, move things that are very detailed, and prescriptive into guidance to provide methods of compliance. And I think framework A, and

framework B are two, I don't think they should necessarily be the only two. I think there are some middle grounds.

I think there's interesting -- if we think globally about the need for American technology, I think methods that enable some of the IAEA concepts to be married into this could be put into this. And in fact I think it was in 2021, we offered to the staff that we would be happy to work on guidance that would show how that could be done, we were explained that that wasn't necessary, they were handling it.

But that offer stands. And if that's helpful, then the industry would come forward with guidance that described how those methods could all be applied to meet those higher-level objectives.

COMMISSIONER CROWELL: One last question quickly if I may, Mr. Chair. I've heard discussion about QHOs today, and whether they should be incorporated into Part 53. If they're not appropriate for Part 53, are they then not appropriate for the existing Part 50 and 52, and why would they be appropriate for one versus the other?

MR. TRUE: They're not in Part 50 or 52.

COMMISSIONER CROWELL: As guidance --

MR. TRUE: So, the question is actually reversed.

COMMISSIONER CROWELL: As guidance, or rule?

MR. TRUE: In rule, regulation, in regulation. The issue is putting it in the regulation, in the 24/7/365 requirement that spawns from that, that you have to demonstrate you're meeting that 24/7. The QHOs should apply, but as policy, and then through guidance.

COMMISSIONER CROWELL: And that will lessen the cost, or that will enhance the expediency of the licensing process?

MR. TRUE: Yes.

COMMISSIONER CROWELL: Both? Okay, thank you. Thank you, Mr. Chair.

CHAIR HANSON: Thank you Commissioner Crowell. Thank you all again for being here. I'm not quite sure where to start, we've ploughed a lot of ground already, but I guess I'll start with an overarching question. I appreciate that the staff included, or teed up, a number of kind of high level policy issues in Enclosure Four, which you all have identified today.

But let me kind of put this question. Are there other significant policy issues that were not identified in Enclosure Four that you think should be in front of the Commission for consideration as we go through the rule? Don't answer all at once.

MR. TRUE: I don't think at a policy level there are additional ones.

CHAIR HANSON: Dr. Lyman?

DR. LYMAN: I don't have it in front of me, but I think that 73.100, I have a lot of concerns about that. I think providing essentially --

CHAIR HANSON: Security?

DR. LYMAN: Yes, security. Providing essentially an alternative security framework with very few requirements for any applicant is problematic and doesn't really comport with the idea that this is supposed

to be promoting overall -- even comparable on safety and security of the operating fleet. So, I would suggest the Commission take a closer look at the implications of that alternative.

CHAIR HANSON: Okay, thank you. Mr. McMurray?

MR. McMURRAY: Not necessarily a policy but reiterate that implementation piece of what are the different licensing processes that Part 53 would utilize on top of the regulatory requirements, and then support for what are those different review tools that I discussed to help enable the review of an application.

CHAIR HANSON: Okay, thank you. One of the ones I'm trying to get my arms around is the issue of applicability. It's implied in the rule, but it's not necessarily teed up in Enclosure Four, and I'll kind of just put this out to the group, but Doug, I think I'm going to maybe primarily point this at you. Currently proposed, Part 53 is applicable to any commercial nuclear power plant.

Which could include, in theory, current generation reactors, as well as advanced reactors. So, is there any benefit, or advantage, or disadvantage of limiting the use of Part 53 to reactor designs with certain advanced design attributes? If nothing else from a public acceptance standpoint, or other criteria.

MR. TRUE: I don't see the value in limiting it in some way. I think that the designs would have to meet those expectations, which are different, and I think, again, as long as it's generating a safe design, which by the way, I agree with Dr. Lyman. There's no compromising on safety,

there's no point in having a regulation that yields unsafe reactors.

It's in no one's interest, the industry, or regulator, or the public interest. How we get there and doing that efficiently I think is a fair question, and I think we all need to walk, and chew gum at the same time, and work on both angles of this as we go forward. But there's no interest in compromising safety by becoming more efficient in the process, nor by narrowing the scope.

CHAIR HANSON: Anyone else?

MR. SCHILTHELM: So, I will add, broad applicability would be useful. I've been in experiences, we've actually come to the Commission, BWXT has come to the Commission for regulatory interpretations on trying to navigate specific language. It happened to be in Part 50 at the time, and we ended up with a Commission decision for a class 103 non-power reactor in a SECY.

But we had to go through that process with the Commission to get that decision, it took many, many months to go through that process, just to confirm yes, you can license a class 103 non-power reactor. So, broad applicability could obviate the need for those kinds of deliberations on whatever -- like Travis said, whatever business model is being developed for whatever type of reactor is being developed.

Dr. Lyman said safety is safety, and that's the mission, so constraining rules to specific types and classes of reactors doesn't seem to make a lot of sense.

CHAIR HANSON: Go ahead, Dr. Lyman.

DR. LYMAN: Yeah, so I think my main concern with that is these other operational programs that don't have, again, this direct quantitative nexus to the safety of the design. I just worry that this could provide essentially a pathway for current technologies, even maybe the operating fleet to get significant relief in things like physical protection, access authorization, operator licensing, through that pathway without really deserving it.

And it also, the larger issue I think is the Commission's advanced reactor policy statement hews to this notion that you don't need to do any better than the current fleet. I think that's holding things back, but I think NEIMA's intent was clear, that it wanted to promote improvements in various safety, and other aspects, design, by not respecting that the Commission is probably holding back progress and innovation.

CHAIR HANSON: Thank you. Mr. Schilthelm, you mentioned AERI in your presentation, and I wanted to ask, I'm interested in AERI as it provides an alternative method for kind of assessing risk, and using a conservative, or kind of bounding analysis for facilities. Do you have any concerns, or Mr. Chapman, since you guys are looking at micros as well, I could ask do either one of you have concerns with kind of the entry conditions for AERI?

Because I know that's been kind of a subject of discussion out in the world.

MR. SCHILTHELM: Yeah, so the entry conditions are pretty specific. I think we're actually going through an evolution on our

defense program right now, where we're -- it's a DOE project for DOE authorization, but we're actually working through for a specific design what those bounding consequences look like. It is very design specific, even to the point where it may not be this advanced gas reactor has the same sort of thought process as this advanced gas reactor.

It is very design specific, so I think we'll be in a position to offer some comments downstream, whether it be on a published rule, or what not on the AERI entry criteria with a little bit more learning on the real detailed work that we're actually doing today. But AERI, in our view is a very important concept, and just because it doesn't require a PRA doesn't mean it's not robust.

You can be very robust without a PRA, and robust safety is important to process of design, and to our customers.

MR. CHAPMAN: I think the entry criteria are clear, we have two different designs that come to mind when I think about this. I have one design that implements the advanced non-light water PRA standard, thousands of requirements that we get some benefit out of that. I can visualize the margins that exist in the plant design, where those are at, and I get good risk insights out of it, we know that tool quite well.

Even on our micro reactor design, we do implement PRA, or at least probabilistic method, so we get good risk insights out of that as well. I can appreciate though from a simplicity standpoint, the idea of defining what are credible events that can occur, as opposed to just hypothetical. Hypothetical in some ways implies no boundary, I can keep

thinking up more things that can happen.

So, I have to define a credible boundary on that. But operationally, at least in design space, we recognize you're going to give up some margin, probably, because you're going to make very conservative assumptions, but for the class of reactor, the kinds of events that can occur, operational flexibilities, I think those are still achievable even in that set.

CHAIR HANSON: Thank you. Mr. True?

MR. TRUE: I think AERI is a very useful concept, and actually we think it should be applied to both frameworks, or all frameworks, or available to be used. There is one element of it that essentially assumes an accident once per year, that I think is part of those entry conditions that needs to be thought about.

CHAIR HANSON: That's what I was trying to get at, yeah.

MR. TRUE: I'm not sure if they understood that's where you're coming from, so I wanted to jump in. But that does -- that's a super bounding kind of assumption that probably is not realistic in the way it translates to the actual demonstrating you make to QHOs.

CHAIR HANSON: Thank you. And thank you again, I know I'm out of time, I didn't even get to the QHO question, because I do think it is really important, and my -- it's one of the key aspects of this, and I appreciate the issue of whether, or not QHOs really belong in the rule, or whether they belong in guidance, and then kind of what is that performance standard.

And one of the things that I think as we seek to have a

flexible framework that I worry about a little bit -- worry is too strong a word. That I'm paying attention to is the clarity to the public about how we're evaluating the safety of the designs in front of us. And so, if we have something that's flexible, or we take the kind of numerical requirements out, I can understand that in favor of say qualitative safety goals.

Going back to the 80s, which are still, I think relevant, and applicable here, then do we lose something in maybe potentially public confidence, or communication with the public, and how do we navigate around that? Maybe, Mr. McMurray, as you've said, this is on the implementation end of things, and we think about what those review tools are, and how do those -- what kinds of review tools actually make our processes clear to the public, and how we communicate those.

So, with that having run over, I will hand it over to Commissioner Baran.

COMMISSIONER BARAN: Well, thank you all for being here, and sharing your perspectives on the draft proposed rule. We appreciate it, I know. My questions are for anyone who wants to weigh in. And I'll just take the baton on QHOs, and turn that into a question, because it was going to be my first question.

Which is, as the Chair pointed out, the safety goal policy statement includes qualitative health objectives, and quantitative health objectives, and I'm interested in what folks would think about including the qualitative health objectives in the rule, and the quantitative health objectives in guidance.

MR. TRUE: I think that depends how the qualitative health objectives are framed. Certainly, we'll want to minimize the impacts -- puts no undue risk to the public, I think we can all subscribe to that. The issues, the particular concerns we have related to putting quantitative objectives in there, and then all of the spin off that comes from that that create potential legal problems, and compliance problems down the road.

Four technologies that are in the formative stages. Many of Dr. Lyman's points are very legitimate about the fact – PRA is a projection of our state of knowledge, and that state of knowledge is going to change over time, and we need to take that into account as we head down this road. I do think there are many other aspects of the rule that actually provide confidence that no undue risk is being provided.

But a statement generally supporting that notion, I think it would be fine in the rule. But I'm very concerned if we go down a quantitative pathway in the rulemaking itself.

COMMISSIONER BARAN: Any other thoughts?

DR. LYMAN: I guess I would take the opposite view. I think that as far as the rule goes, the more specific, and especially if a PRA is involved, you get an answer. It seems like that would even be better for an applicant than having to meet some sort of vague qualitative standard, where you'd think it would be -- there would be so much subjectivity that could be even open to more challenge.

So, I think it would actually protect applicants to have that kind of quantitative number in it.

COMMISSIONER BARAN: Go ahead.

MR. TRUE: Just to debate a moment, I find it interesting that on one hand Dr. Lyman's position has been QHOs should absolutely be in the role, and then in another slide says you can't do PRA on these kind of reactors. So, to me, there's sort of a dichotomy in this that you must quantify, but you can't quantify, and it seems that we need to think carefully about that.

And in fact that's part of the reason why we have concerns about that pathway.

DR. LYMAN: And if I could defend myself. You have defense in depth, so the quantitative limits go only as far as you can justify them with the input data, and then you compensate for what you don't know with qualitative deterministic requirements, and defense in depth. And it's that combination that we think makes sense. But you have to have a pretty rigorous way to address that defense in depth to ensure the overall level of safety is in place.

COMMISSIONER BARAN: Okay. Let me turn to a different issue. Different terminology in framework A, framework B, and the existing regulations are causing concerns about how quality assurance programs would work, including for vendors, or suppliers. Some stakeholders think the new regulations should simply reference Appendix B in Part 50, so that all the rule language is consistent.

Does anyone want to weigh in on that issue? Steve, on a different topic, but I think more generally kind of touched at this, that there

are subtle differences in framework A, and framework B on quality assurance, and subtle differences between those frameworks, and what we have in our existing regulations. Does anyone want to talk a little bit about is that going to cause problems, and what's the best way to address that if it is?

MR. SCHILTHELM: So, to take your question a little bit broader, we're still very focused on NQA1 Appendix A from Part 50, and what not. Our current experience with the supply chain is very, very relevant. And to find approved suppliers is very, very challenging. So, I think consistency of language would be fine, but we didn't make this comment specifically, but broadening the thought process around acceptable QA programs.

Well, there are aerospace programs in AS9100, or whether they're ISO9000 type programs, those are very legitimate programs that other industries use very successfully. And it would broaden the supply base, so that you're not forced to do extensive commercial grade dedication on almost every piece part that you buy that has some safety importance to it.

That's turning out to be one of our most significant challenges right now. So, maybe thinking a little bit more broadly about QA would be useful.

COMMISSIONER BARAN: Okay, any other thoughts on QA?

MR. CHAPMAN: Related, but slightly different

perspective, my intersection with the vendor community is largely through services, although we have similar concerns on the hardware side, finding the vendors to supply the components, things like that. Early in the design cycle, XE100, again, we implement LMP, the definition of safety related that comes out of that, that the staff endorsed in Reg Guide 1.233 is not quite the same as what's in Part 50 in the defined terms there.

So, when we go to the supplier, we often, industry wide, at least we'll think of is it safety related, or not? Therefore is it nuclear quality, or something different? But to Steve's point, there are many management systems that will produce high quality products with the right inputs into it, and providing clarity in a framework in the regulation to be able to do that, broaden that applicability.

Bring more vendors in that can provide those high-quality services, products, whatever the end state might be would be valuable.

COMMISSIONER BARAN: On the Facility Safety Program, this is a new concept in Part 53 that we don't have in 50, or 52. The staff thinks it would be beneficial, I think Ed thought it was a good idea, I've heard others who think it's -- aren't persuaded. Should we think about making that program voluntary in the rule?

MR. CHAPMAN: I'm going to weigh in, but I'm going to steal something that Steve, and I talked -- mentioned on the way in. In Part 70, you can just correct me when I'm wrong on this, in Part 70 we have facility safety program language in the rule right now, but much less. So, much of the implementation is left to guidance, certainly precedent by

applicants that have done that.

I think for me, in my review of the rule language, and providing comments on that, just the uncertainty of what all is going to be in the Facility Safety Program. If this is the regulation language, how are we going to interpret that as opposed to what guidance will come out? Therefore, how will this impact any given project? It was challenging to do.

COMMISSIONER BARAN: Any other thoughts? Steve, it sounds like that was actually your idea.

MR. SCHILTHELM: Well, no, I think the staff was very well intent, and in the documents they put out, they said that they borrowed this idea from the Part 70 concept, but they went a little bit beyond borrowing, and wrote a lot of words. And you find that the more words that are in the regulation, the more words that have to be explicitly satisfied through the application process, and what not.

And that just adds time, and energy to things that are important, but maybe not in the context of the rule, maybe in the context of guidance.

COMMISSIONER BARAN: Niko?

MR. McMURRAY: The one thing I would add is just kind of the broader operational programs, and with my background with looking at the integrity management programs for components, especially because these reactors will be at high temperatures, that program has proposed in the rule, and the specific requirements around that, while yes, likely need something to monitor those effects.

And when I was staff, when we were discussing this, but how that overlaps with existing codes and standards, in service inspection, QA, in service testing, and these other operational programs, I think that's really the interesting question of making sure that there is an extra redundancy within the rule. Recognizing that what these programs are trying to accomplish are likely relevant.

And so, that's where I think making sure it's not overly prescriptive language in the rule, and making sure that any programs that are proposed aren't overly redundant with other potential operational programs.

MR. TRUE: I'm a little bit confused on the optional. If the regulatory analysis said there was no real benefit, it would just burden, why would anyone opt into that? So, are you visualizing it might be an option among others, and then if that's the case, then we'd sort of need to understand what the other options would look like to decide whether that option is useful.

So, I'm not exactly sure, Commissioner, where you're coming from on this.

COMMISSIONER BARAN: Well, the reason I phrased the question the way I did is that it just, as I've kind of read the interactions on this, the staff seems throughout to have thought this actually should be appealing to applicants, and many applicants don't seem to see it that way. And so, I guess the question is it could be a requirement.

It could be a requirement that you have a Facility Safety

Program, that's the way it's written right now in the draft Part 53, or it could be an option. Where if one has a Facility Safety Pprogram, that confers potential benefits which the staff sees, but perhaps an applicant doesn't. So, it's an option to either do it, or not do it. That was the question.

MR. TRUE: I guess, like I said, with the regulatory analysis showed there wasn't really any benefit, so the reason to take it, to opt in, doesn't seem to be there.

COMMISSIONER BARAN: All right. Ed, did you want to weigh in on this one? I'm a little over on time.

DR. LYMAN: Right, sorry, it wasn't really clear. But I think staff identified a gap in the way Part 53 would apply risk-informed rulemaking, and this is one way of helping close that gap. So, whatever is in the rule should be specific enough so that it's clear, again, not only to the applicants, but to the public, who need to understand what's going on with this.

COMMISSIONER BARAN: Thank you, thanks everyone.

CHAIR HANSON: Thank you, Commissioner Baran, and thank you again to our panel for, I think provoking a lot of thoughtful discussion already, just in the first half of our meeting. Thanks again to my colleagues. We'll take about a ten-minute break, we'll reconvene at 10:42, and thanks again.

(Whereupon, the above-entitled matter went off the record at 10:32 a.m. and resumed at 10:41 a.m.)

CHAIR HANSON: I'll recommence with the NRC staff

panel, we're going to be led off today by our deputy executive director for reactor, and preparedness programs, Scott Morris. Scott, the floor is yours.

MR. MORRIS: Thank you, and good morning Chair Hanson, and Commissioners. We're very pleased to be here today to provide an update on the agency's activities to support the 10 CFR Part 53 rulemaking, and licensing for new, and advanced reactors. Part 53 continues to represent an agency wide effort, as well as a significant investment by stakeholders to produce a proposed regulatory framework covering commercial reactors of all types, and sizes.

There was tremendous cooperation across the organization to deliver this groundbreaking rule to the Commission on an accelerated schedule. Part 53 represents transformational vision, and progress towards realizing the promise of a modern risk-informed regulatory framework that provides at least the same degree of protection of public health as is record under our current reactor regulations in Parts 50, and Part 52.

Part 53 takes advantage of risk-informed, performance based, and technology inclusive concepts to apply a greater approach to regulation, and to allow operational flexibility commensurate with the risk posed by a given facility. While delivering on Part 53 represents a significant accomplishment for the NRC staff, we recognize that there is more work to be done to prepare implementing guidance for the rule, among other things.

The staff has worked diligently to identify, and prioritize areas needing guidance, and has developed several key advanced reactor

guidance documents that are referenced in the draft proposed rulemaking package. The staff proposes to seek stakeholder feedback on areas where the rule might be expanded to better accommodate more fully new technologies such as micro reactors.

The Part 53 proposed rulemaking represents an extraordinary collaborative effort that demonstrates the NRC's commitment to effectively license a broad variety of new, and advanced reactor designs. Next slide please. So, I'd now like to introduce the panelists for today, who will talk about the agency's activities to support the licensing, and regulation of new, and advanced reactors.

Our first speaker today is Andrea Veil, director of the Office of Nuclear Reactor Regulation, or NRR. She'll talk about delivering on the requirements of the Nuclear Energy Innovation and Modernization Act, or NEIMA. After Andrea, Mo Shams, director of NRR's division of advanced reactors, and non-power production, and utilization facilities, or DANU.

We'll discuss the overview of the draft proposed rule development, and addressing stakeholder comments. Following Mo, you will hear from Nan Valliere. A senior project manager in NRR's advanced reactor policy branch, who will provide an overview of the draft proposed rule structure focusing on key topics of interest.

Next you'll hear from Marty Stutzke, a senior technical advisor for probabilistic risk assessment in NRR, who will discuss the development of innovative risk assessment methodology in Part 53. And finally Tara Inverso, currently the NRC's director of the division of security

operations in the Office of Nuclear Security and Incident Response will discuss leveraging innovation in the rulemaking process to optimize internal, and external stakeholder engagement during the development of Part 53.

Of note, Tara was the deputy director in the division of rulemaking, environmental, and financial support until very recently. So, that concludes my opening remarks. Next slide, and I will turn it over to Andrea.

MS. VEIL: Thanks Scott, and good morning to you, Commissioners. Next slide please. The staff's Part 53 proposed rule package is a key cornerstone of the NRC's efforts to effectively license advanced reactor technology. We are on target to complete the Part 53 rulemaking significantly in advance of the NEMA required schedule of 2027. The draft Part 53 is risk-informed, performance based, and technology inclusive.

Incorporating data driven approaches to inform the development of proposed requirements and supporting guidance. The most prominent example is the use of PRA data to establish licensing basis events to categorize plant equipment and contribute to ensuring adequate defense in depth. Data from the PRA is also used to determine whether facility changes require prior NRC review, and approval.

The rule accomplishes this, while achieving an equivalent level of safety to that of existing regulations without increasing regulatory burden. Next slide please. The NRC's advanced reactor program has had other significant accomplishments in parallel to developing the proposed rule. For example, the staff has developed -- excuse me, rulemaking

packages to address several regulatory areas to more efficiently account for advanced reactor technologies.

Some examples in various areas are emergency preparedness, physical security, and environmental impacts. In addition, the NRC has issued a substantial amount of guidance to support advanced reactor licensing. Some of the most significant guidance includes our endorsement of a new ASME code, and sections, and issues of importance that are very important to non-light water reactor technology.

There's a trial use regulatory guide on PRA acceptability for non-light water reactors, and there's also fuel qualification guidance for advanced reactors. In addition, the staff, and advanced reactor applicants are leveraging innovative, and flexible approaches now for licensing under 10 CFR Parts 50, and 52. We are taking advantage of these approaches to optimize the review of applications, and pre-application products.

This approach is already helping to demonstrate our ability to efficiently review advanced reactor applications. For example, we established a 21-month review schedule for the Kairos Hermes construction permit application. We will apply lessons learned from these ongoing advanced reactor reviews to continue to refine our review processes going forward.

The advanced reactor demonstration program, applicants are using concepts from the live sensing modernization project, which you heard in the external panel. It was issued by the Nuclear Energy Institute, and the LMP was funded by the Department of Energy, developed by the

U.S. nuclear industry, approved by the Commission, and endorsed by the NRC.

The resulting guidance provides a transformative methodology for licensing novel non-light water reactor technologies. Part 53 leverages this technology inclusive methodology, and framework A, as you will hear about in more detail during Marty's presentation. We're also incorporating licensing efficiencies and guidance, such as that being developed under the advanced reactor content of application, or ARCAP project.

In addition, we encourage robust pre-application engagement, including the use of regulatory engagement plans, and pre-application readiness reviews, which can markedly improve the effectiveness of interactions between the NRC staff, and prospective applicants. Another process enhancement is the use of NRC core teams, which offer a multi-tier project team approach for review of advanced reactor applications.

And a similar approach is used on the operating side of the house, which I'm sure we can get into in Q&A. Next slide please. Stakeholder outreach has been integral to the Part 53 rulemaking process. We expected, planned for, and actively sought stakeholder input. The NRC staff considered the feedback we received, and we revised the draft proposed rule that was submitted to the Commission.

Taking that feedback into account as the other panelists will discuss. In the proposed rule package, the staff provided a summary of the topics of greatest interest to stakeholders with a discussion of how our

proposals to address them, which Nan, and Marty will describe later. And that is outlined in enclosure four to SECY-23-0021, and some are policy issues.

Consistent with the NRC's value of openness, engagement will continue during the public comment period, as Tara will discuss in more detail in her remarks. Next slide please. I'm now happy to turn the presentation over to Mo Shams.

MR. SHAMS: Thanks, Andrea. Good morning, Chair Hanson, and Commissioners. It is my pleasure to be here today to share with you some insights on the Part 53 rulemaking, and the staff's efforts to develop this modern risk-informed regulatory framework. In my remarks I will provide an overview of the draft proposed rule development and discuss how the rule is reflective of stakeholder feedback.

Next slide please. Since we last briefed you in July, the staff delivered the draft proposed rule package for Commission consideration. The package demonstrates the NRC staff's commitment to creating a transformative rule to regulate advanced reactors that is reflective of significant internal collaborations, and thoughtful stakeholder feedback.

The rule represents a remarkable effort by NRC staff throughout the agency, by the Commission's advisory committee on reactor safeguards, and by external stakeholders. One of the key challenges in creating Part 53 is the need to develop technology inclusive requirements to address a broad spectrum of potential designs that vary in a number of ways including size, risk profile, fuels, and technology to name a few.

In that regard, innovations to incorporate performance-based approaches have been applied over a broad range of topics within Part 53. The staff is re-envisioning the approach to security requirements, operator licensing, fitness for duty, and other traditional regulatory approaches as more flexible, graded, and consequence-oriented requirements.

The performance-based proposal also includes a flexible, and graded approach to regulatory controls based on the role of a particular design feature of human action, or program. The proposed rule, and supporting guidance also embody Commission policy decisions that provide applicants, and licensees greater flexibility while maintaining safety.

Such as the use of functional containment, and adoption of a consequence oriented citing alternative. Internal collaboration, and stakeholder engagement have resulted in meaningful improvements to the draft proposed rule. Those were reflected through the inclusion of innovative approaches such as the adoption of a second more traditional licensing framework.

The development of the alternative evaluation of risk insights, or the AERI approach, and the inclusion of performance based seismic provisions. Next slide please. Consistent with our goal, and stakeholders' feedback to create an inclusive rule, the draft proposed rule is versatile, and accommodates a variety of approaches, and technologies. We started with the PRA led approach in framework A.

And through early stakeholder engagement, it was clear

that additional options were desired, thus we pivoted to address the need. The proposed rule now encompasses two licensing frameworks, framework A, and framework B, which includes the AERI approach. Framework A maintains a PRA led approach consistent with Commission policy to leverage PRA in regulatory activities as supported by the current state of the art.

While framework B offers a technology inclusive traditional regulatory approach. Framework B is structured around compliance with a set of performance based, and prescriptive requirements that define the design capabilities required to meet the safety criteria. Conversely, framework A enables a vendor to optimize the design by leveraging a comprehensive design specific assessment to develop a safety case and demonstrate the viability of the design in meeting the safety criteria.

One of the safety criteria leverage in framework A is the quantitative health objectives, or QHOs. A question that sometimes arises is how frequently are the QHO calculations updated, and how are risk fluctuations during operations, or maintenance activities addressed? The draft proposed rule envisions updates to the PRA reflecting plant changes at every five years.

Conversely, the risk fluctuations due to maintenance, or other plant activities do not require exercising the PRA, and are expected to be assessed, and addressed with appropriate compensatory measures, much the same way as is currently done in the operating fleet. Another issue of interest to stakeholders has been the presentation of the

frameworks in the rule.

The current rule construct presents frameworks A, and B as two distinct approaches. Addressing both approaches in one set of rule language would have resulted in writing the rule at a very high level, likely lacking clear regulatory guideposts for future applicants, and potentially resulting in protracted review timelines, especially for novel designs.

The staff used the dual framework as an effective means of ensuring advanced reactor applicants understand the licensing framework options available to them, and the means for meeting the requirements under either framework. Although the inclusion of two frameworks makes for a longer proposed rule, it is worth noting that on their own, each framework is more condensed than the existing set of regulations it replaces in Parts 50, 52, 55, and 100.

The staff is confident that both frameworks provide an equivalent level of safety while leveraging as appropriate a flexible technology inclusive approach to meeting the requirements. Next slide please. Part 53 strikes a balance between specificity, and flexibility, providing an appropriate degree of predictability to support efficient licensing reviews while enabling operation flexibility for advanced reactors with demonstrated safety margin.

The NRC staff aimed at providing a level of detail in the draft proposed rule that would ensure effective, and consistent implementation while deferring more prescriptive methods to guidance. For example, the proposed rule includes performance-based requirements for

fire protection, seismic design, and analysis, and a development of design criteria while implementation is addressed in guidance.

The rule also enables the use of generally accepted consensus codes, and standards, including international standards when demonstrated to provide an acceptable safety outcome. Part 53 requirements also support performance-based approaches in which an optimal combination of programs, design features, and human actions provide a flexible framework for applicants, and licensees to demonstrate the safety of novel technologies.

Such a construct can be especially helpful to applicants with designs for which there is limited operating experience early on. In such cases, operational monitoring programs can serve as a key component of the safety demonstration by ensuring fulfillment of appropriate safety criteria while harvesting the potential safety benefits of new technologies.

In closing, the development of Part 53 has been carried forward through an incredible effort by an extraordinary group of staff from around the agency. I am humbled by the team's exceptional contributions, and commitments, and I'm immensely proud of the remarkable product the team delivered to the Commission. This concludes my remarks, I will now turn the presentation over to Nan Valliere. Thank you.

MS. VALLIERE: Thank you, Mo. Good morning, Chair Hanson, and Commissioners. Next slide please. In the next few slides, I will discuss several issues that were of significant interest to stakeholders. The staff provided the Commission with in-depth discussions of each of these

issues in an enclosure to the staff's paper that transmitted the draft proposed rulemaking package.

This enclosure discusses the issues, provides the rationale for the staff's recommendations within the proposed rule, and outlines possible implications of adapting alternative approaches for each issue. Next slide please. Stakeholders provided significant feedback on two concepts in Part 53 that relate to the existing regulatory framework for power reactors.

The first of these relates to provisions in both Part 53 frameworks to keep radiation doses to members of the public, and plant workers as low as reasonably achievable, or ALARA as it is commonly abbreviated. The ALARA requirements proposed in Part 53 are generally consistent with current NRC regulations to address both worker exposures, and public doses.

Which for decades have required reactor applicants, and licensees to consider ALARA principles. In addition to broad ALARA requirements, current NRC regulations include specific requirements for applicants to address ALARA in plant design consistent with the Commission's advanced reactor policy statement. The staff's Part 53 proposed rule includes requirements equivalent to those in current regulations.

That a combination of design features, and programmatic controls be established such that estimated doses to members of the public are maintained ALARA. Part 53 allows flexibility in the specific combination

of design features, and programmatic controls that will be proposed for a specific design. The staff has proposed a technology inclusive performance goal in Part 53.

Similar in concept to those in Part 50, Appendix I for light water reactors to reinforce that it is not the purpose of the regulations to require continuous dose reductions without due consideration of the associated costs. The staff is currently developing guidance to incorporate performance-based approaches to addressing ALARA requirements to support potential near term applications for advanced reactor designs under Parts 50, and 52 within the advanced reactor content of application project.

The staff plans to adapt this guidance to support Part 53 if the proposed rule is approved by the Commission. A second area of key stakeholder interest relates to the inclusion of provisions in Part 53 to address a category of events termed beyond design basis events within the current regulatory structure.

The consideration of events beyond those traditionally included in the accident analysis section of original application documents began long ago and has continued to evolve over the subsequent decades. The distinctions between event categories has often been based on factors other than whether the events influence the overall design of nuclear power plants.

The most often cited examples of requirements that went beyond the original design basis for existing plants are the regulations pertaining to anticipated transients without scram, and station blackout.

These rules involved imposing regulatory requirements that resulted in changes to plant designs to prevent, and mitigate scenarios categorized as beyond design basis events.

Likewise, the current requirements addressing severe accidents certainly influenced proposed plant designs. For these reasons, calling the events subject to these regulations beyond the design basis is a misnomer insofar as these regulations establish requirements for design features, or human actions that an application must describe.

Thereby encompassing such events in the basis for the facility design. Next slide please. There was also extensive stakeholder interest in some innovative concepts proposed in Part 53. The first of these is the inclusion of requirements for a facility safety program in framework A. This program would require licensees to routinely assess potential changes to plant hazards.

And consider when appropriate risk reduction measures, taking into account technology changes, economic costs, and operating experience. This approach to licensee assessment of new information presents an opportunity to continue to leverage insights from the PRA during plant operation under framework A and would be a departure from the practice under the current regulations.

In which the NRC monitors the magnitude of external hazards, and addresses information showing an increased hazard with affected licensees. The staff modeled the facility safety program proposal on provisions in 10 CFR Part 70, addressing licensees authorized to possess

special nuclear material, and on regulations issued by other federal agencies, such as the Department of Energy, Department of Transportation, and the Environmental Protection Agency.

The proposed requirements provide criteria for considering risk reduction measures under the program, which include a cost benefit process to determine whether to implement a change. When fully considered as part of an overall regulatory regime, the facility safety program could enable an optimization of NRC oversight programs, and more focused operating experience, and hazard assessment programs.

Another area of high interest during the rule development was the transformative proposal for the possible use of generally licensed reactor operators as an alternative to the current specific licensing of individual reactor operators by the NRC where justified. The proposed rule provides flexibility for facilities where reactor operators do not have a role in maintaining and fulfilling safety functions at the facility.

Allowing reactor operators to perform duties under the provisions of a general license that would be effective without the filing of an application with the Commission, or the issuance of licensing documents to a particular person. These requirements would ensure that the expected reduced reliance on human actions for reactor designs is achieved in a deliberative manner that continues to provide defense in depth, and protect public health, and safety.

Two additional topics of particular interest that were included enclosure four will now be discussed by our next speaker, Marty

Stutzke. Next slide please.

MR. STUTZKE: Thank you, Nan. Good morning, Chair and Commissioners. Due to your vision, the development of Part 53 is a milestone in the evolution of risk-informed regulatory philosophy. Next slide please. Prescriptive requirements in Parts 50, and 52, and in framework B provide reasonable assurance that commercial nuclear plant design, construction, and operation will be in accord with the common defense, and security.

And will adequately protect public health, and safety. Framework A contains function oriented, and performance-based requirements including risk-informed performance standards to ensure a comparable level of safety. As shown, framework A is consistent with the principles of integrated risk-informed decision making described in Regulatory Guide 1.174.

The risk-informed performance standards play an important role in framework A, because they apply to all licensing events ranging from anticipated event sequences to very unlikely event sequences. However, framework A is not a risk-based regulation, rather the risk-informed performance standards are used as one of several safety criteria. Next slide please.

So, why use the QHOs as the risk-informed performance standards in framework A? First, the QHOs define an acceptable level of radiological risk, that is how safe is safe enough. Second, Commission policy expects that advanced reactor designs will comply with the safety goals. Third, in

SRM-SECY-20-0032, the Commission approved the staff's plan to focus the Part 53 rulemaking on risk-informed, and performance based functional requirements built on existing NRC requirements, Commission policy statements, and the NRC's vision of strategy for non-light water reactors.

Fourth, use of the QHOs as risk-informed performance standards is consistent with guidance on performance-based regulation in NUREG/BR-0303. Specifically, failure to meet the QHOs will not result in an immediate safety concern, because the QHOs do not define adequate protection. Cumulative risk metrics are calculable parameters.

Staff has endorsed industry consensus PRA standards developed by the American Society of Mechanical Engineers, and the American Nuclear Society. We've also endorsed PRA peer review guidance developed by the nuclear energy institute. QHOs are technology-inclusive, and objective performance standards.

Applicants, and licensees will have flexibility to define, and use technology specific risk surrogates for the appropriate justification. Large light water reactor risk surrogates such as core damage frequency, CDF, and large early release frequency, LERF, are not easily adaptable to other reactor technologies. For example, attempting to adapt core damage frequency to a molten salt reactor would be an exercise in futility.

Fifth, use of the QHOs as risk-informed performance standards is consistent with SRM-SECY-98-144, which indicates that the performance parameters may be included in the regulation itself, or in license conditions. Next slide please. In Framework B, the innovative

alternative evaluation for risk insights, or AERI approach provides an alternative to PRA for confirming that a commercial nuclear plant can be constructed and operated without undue risk.

Commission policy expects advanced reactors to develop a PRA to inform the design. Identify, and address potential severe accident vulnerabilities, and demonstrate that the safety goals are met. PRA is a systematic, comprehensive, and rigorous method. However, PRA development may be resource intensive.

PRA is not needed to develop useful risk insights for plants with small fission product inventories, and straight forward designs such as micro reactors, and other small power reactors. The AERI approach provides qualitative risk insights. It uses a bounding approach to demonstrate that the safety goals are met, which reduces the resources needed to perform the assessment.

The AERI entry conditions are not safety, or siting criteria, rather they are only used to determine which plants may develop an AERI in lieu of a PRA. The draft proposed rulemaking includes specific questions on the issues that Nan and I have discussed. We look forward to getting Commission input on these important issues, and if approved, considering public comments received to help inform the content of the Part 53 final rule.

Next slide please. I will now turn the presentation over to Tara.

MS. INVERSO: Thank you, Marty. Good morning, Chair, and Commissioners. Today I'll be sharing the ways in which we leveraged

innovation, and optimized internal, and external engagement to deliver a well-informed Part 53 draft proposed rule. Next slide please. The NRC has long relied on the mature licensing requirements in Title 10 of the Code of Federal Regulations.

Part 52 was adopted over 30 years ago, and Part 50 has been on the books since the 1950s. Adding any new part to the CFR is a historic undertaking, and we recognize that the creation of Part 53 warranted a unique approach. To meet Commission direction, and significantly shorten the Part 53 rulemaking schedule, we developed several transformational approaches.

For example, we conducted early, and frequent internal reviews of interim products. This identified and resolved key issues prior to the formal concurrence period. We formed a steering committee of division level managers, and an advisory committee of office level managers, and held periodic meetings with each, which facilitated timely alignment.

We worked closely with staff from the Advisory Committee on Reactor Safeguards, ACRS, who gathered key topics of interest from the committee. From there we were able to structure engagements with the ACRS to ensure that their informational needs were met, and that they were prepared to issue a recommendation letter to the Commission. Lastly, we established a core team of six subject matter experts.

Three from NRR, two from OGC, and one from NSIR. In some cases, this proposed rule became their primary work focus. The core team was ultimately a smaller group of individuals than a working group

might entail. From these examples, you will also get a sense of the teamwork that went into this rulemaking effort. The draft rule represents the creative, flexible, and technically sound contributions from across the agency.

Next slide please. Creating the Part 53 framework required a unique approach to early stakeholder engagement. When planning our outreach strategy, we exercised flexibilities afforded at the pre-rulemaking stage. You will see in the circled step that the NRC's pre-rulemaking phase allows the staff to choose the appropriate level of pre-rulemaking outreach for a project based on a number of factors such as complexity, and public interest.

In this case we elected to use an approach that included extensive two-way communications with external stakeholders. We issued two Federal Register notices to advertise and describe an approach where the NRC would frequently release draft preliminary proposed rule language. Over a 22-month period between December 2020 through September 2022, the staff published over 20 iterations of the preliminary proposed rule language.

We updated the draft language as appropriate and provided additional releases. This process provided stakeholders the opportunity to actively engage with NRC staff in the development of these important requirements and enabled the staff to create a more refined set of draft regulations. In parallel with frequent rule language releases, we conducted 24 public meetings.

We also held 16 public meetings with the ACRS to benefit from the views of the committee. We were, and continue to be, responsive to stakeholder requests. Several of the public meetings we conducted were added to the schedule at the request of stakeholders. For example, on February 8th, 2022, the staff conducted a public meeting for the specific purpose of obtaining broad feedback from non-governmental organizations, and other external stakeholders.

We obtained valuable and diverse feedback from many NGOs during that meeting. To demonstrate how we used feedback received to improve the draft rule language, we highlighted changes during a public meeting in March 2022, and the October 2022 ACRS meeting. You heard about some of these changes today from Mo's presentation.

At the request of external stakeholders, and with approval from the Commission, we extended the rulemaking schedule by an additional nine months to develop framework B, and further engage stakeholders, in all we received 126 letters. During the development of the proposed rule, the ACRS wrote four interim letters to the chair, and issued its final letter in November 2022, which recommended that the proposed rule be published for comment.

Next slide please. When we communicated the accelerated Part 53 schedule to the Commission, we identified key risks, and uncertainties that could impact the rulemaking activity. On this slide I'll provide an update on these risks, and I'm pleased to report that we've been largely able to mitigate the challenges. I'll group the first two risks together.

Reaching alignment with stakeholders on the scope of the rulemaking, and engaging with stakeholders, and NRC staff on key issues. As I mentioned earlier, we engaged extensively. Seeing the benefit of these engagements, we sought Commission approval, and extended the engagement period by nine months. The next risk is related to development of key guidance documents.

The novelty and scope of this regulatory framework also requires a significant amount of new guidance documents in order to successfully implement the requirements. During the engagement activities, we sought feedback from stakeholders to establish a shared prioritization of guidance. This resulted in four categories of guidance based on the timing of the guidance, and the regulations it would support.

Using this scheme, the proposed rule package includes seven draft regulatory guides, and three interim staff guidance documents that will be issued for comment concurrent with the proposed rule. The final risk is the ability of stakeholders to review the proposed rule within the 60-day comment period. This remains a risk, as the draft rule, and guidance documents contain a significant volume of material.

However, we believe this is mitigated by the extensive engagement during the pre-rule phase. In addition, the draft proposed rule documents are currently publicly available, which allows stakeholders to familiarize themselves with this version if they choose to do so. Lastly, I will note that the Commission recently issued a staff requirements memorandum.

That among other things, directed the staff to pursue fusion energy systems under the byproduct material framework, which eliminated a previously discussed risk of including fusion within the Part 53 rule. Next slide please. If the Commission approves the draft proposed rule, we will publish it for a 60-day comment period.

We've included a number of questions, 22 to be precise, in the draft proposed rule in areas where we would like specific feedback. We will conduct a multi-day public meeting during the comment period and will continue our coordination with ACRS. As we finalize the rule, we will, and are required to prepare a formal response to all public comments received on the proposed rule.

While it is too early to do a lessons learned review of the innovative approaches I've described, we all agree that the draft proposed rule is a better product because of the feedback we've received from stakeholders. We look forward to continuing this two-way dialogue as we finalize the rule.

Next slide please. This concludes my remarks, and I'll turn the presentation back to Scott Morris.

MR. MORRIS: Thank you Tara. So, to conclude we are proud of the extraordinary efforts undertaken by the NRC staff in combination with the significant contributions from numerous, and varied stakeholders to enable us to deliver a comprehensive draft proposed rule for Commission review. The staff looks forward to receiving Commission input on this groundbreaking rule, and ultimately to assessing the public

comments that will inform the final content of Part 53.

The staff is committed to completing the development of a risk-informed, performance based, and technology inclusive Part 53 rulemaking on the Commission approved schedule, and within the framework of the Commission's Advanced Reactor Policy Statement, and the NRC's Principles of Good Regulation. Thank you for the opportunity to meet with you today, and we look forward to your questions.

CHAIR HANSON: Thanks, Scott. We'll begin again with Commissioner Wright.

COMMISSIONER WRIGHT: Thank you, Chair, and good morning to each of you, thank you for being here, appreciate really the time, and effort that it took you to put together your presentations, and want to thank you for that, and I know it's been a tall order, and a lot of work, and everything hasn't gone exactly as planned, but I do appreciate your dedication to the task.

And with that, I've got a couple of questions. So, Andrea, we've heard from the industry about a potentially unprecedented number of license applications that could be coming our way, right? In fact, as we've heard this morning, the NEI study that was out there says we'll need over 99 gigawatts of new nuclear power by 2050 if we're going to meet decarbonization goals, right?

Which they say translates to 300 new reactors in 25 years. We've even heard on top of that, from some of the early movers, that even before their first builds are complete, the second wave is going to come, and

that could be dozens more, if not more than that behind those early movers. So, and that's under current regulations, right? So, I guess how are you ensuring that the staff are going to be ready to meet this challenge under Part 52?

Because we've never experienced anything like that before. So, and then a follow up too, would be in your opinion, when do you think the first applicant will come under Part 53?

MS. VEIL: Well, I'll start with the people aspect of this. We've been hiring aggressively, I know some of you were able to come over to the hiring fair we had on the 11th. We have retired annuitants, one at the table. We have an all-of-the-above type approach. We have matrixed knowledge from people. It doesn't matter if they're in NRR, we reach out across the agency, and leverage that knowledge.

We also have what we call ET, executive team, either chats, or significant topics where we actually spotlight certain designs, and activities so that across the board everybody knows something about the design. We have dashboards where we kind of deep dive into the designs as well. In terms of -- I'm not going to answer the question about the first applicant coming in for Part 53, I'm just not even going to try to speculate on that.

But we are ready to review -- we're reviewing currently now, new and advanced reactor applications. So, I don't know when the first application will come in for Part 53, but we're preparing for, and as you heard from the external panel, the DOE ARDP applicants are using concepts from

Part 53. They're obviously not using Part 53, because it's not ready yet.

But there are key concepts in framework A that they are using right now in their application, and there are others.

COMMISSIONER WRIGHT: Thank you. Mo, good morning.

MR. SHAMS: Good morning, how are you, sir?

COMMISSIONER WRIGHT: I'm doing pretty good. And you know I like to have complete information when I go to make a decision, it's got to be well informed. So, I want to talk a minute about alternate opinions, because I've heard anecdotally that there were those on staff with other views, but those views don't seem to be outlined in Enclosure Four.

And I know from other SECY papers that have come up in recent months that there have been detailed outlines of alternate views included, and I'm wondering why this package doesn't have the same type of detailed outlines. So, the question would be to what extent did you include alternate views, and why were others excluded?

MR. SHAMS: Thanks for the question, Commissioner. So, as I mentioned in my opening remarks that Part 53 was done in an open, and transparent way, we had a working group that spanned across the agency, we had upwards of 100 plus staff on it. We had a group of division directors as the steering committee directing the rule development.

We had a group of deputy office directors looking over our shoulders and making sure that we're making the right decisions. So, views were discussed, views were assessed, and debated, they were brought up,

they were fleshed out. We had lively debates about issues, which we always do in the NRC, that's the way we operate. We report on every interaction, particularly we did that every week to our office director on different activities.

So, that was the nature, and the dynamic of how Part 53 was developed. In terms of collectively aggregating the views, Enclosure Four is a reflection of internal stakeholder views, as well as external stakeholder, it's not just designed to reflect on external stakeholder views, and their feedback. ACRS views are involved, and included in there, staff views are included in there.

So, to the extent that we've included staff views, we did, and if there was any formal non-concurrences, or DPOs, the Commission would have been informed of those, we did not receive any of those.

COMMISSIONER WRIGHT: Well, I guess I'm not really speaking to the formal DPO process. But I know that there have been situations where it's been hey, this has been an alternate view that's been expressed, we decided to send it up to you. What if we wanted to talk to some of those people about that, right? Just to see the other side. Is that available to us on the Commission, to do that, could they be identified?

MR. SHAMS: It's certainly available to the Commission to talk to -- staff would come up on a weekly basis to discuss with your staff where we are with the rule, and how we developed. But I continue to assert that what was in Enclosure Four did reflect both external, and internal stakeholders. These views are captured in there when we say folks didn't

want QHOs, some are from the staff views.

COMMISSIONER WRIGHT: Okay, great, thank you.

MR. SHAMS: Sure.

COMMISSIONER WRIGHT: Martin, we've heard several stakeholders today discuss QHOs, and Part 53. So, tell me a little bit more about the staff's perspective regarding the use of QHOs in framework A and B. Also, I know you're a risk expert, but I'm really interested to know how the other risk experts in other parts of the agency were consulted and involved in the development of the rule.

And really what was their participation, and if they had an alternate view, or opinion on things, how did y'all flesh that out, and how were they addressed from your perspective in the package?

MR. STUTZKE: Yeah, to go about using the QHOs as I laid out, is that they're readily available, and they are technology inclusive, and straight forward to calculate like this. We have been tied so long to the use of risk surrogates like core damage frequency, and large early release frequency, which by their very names indicate your computing frequency, and it is the heart and soul of PRA, event trees, fault trees, that type of thing.

In the early days of PRA, there was feelings that computation of the consequences was more problematic, more uncertain like this. And so for that reason, it's been focused down onto core damage frequency and large release frequency. And I think some people would prefer to have a more frequency-oriented base than a full level three PRA.

That being said, I think the current state of practice

certainly within the agency, and within industry is indicated by their standard, which addresses all parts of it to make this a very feasible, practical approach.

COMMISSIONER WRIGHT: Thank you. I've got a minute, and a half left. I'll come back to you, Mo. So, you mentioned in your presentation that Part 53 strikes a balance between specificity, and flexibility, and this would lead to, in your opinion, predictability in licensing reviews. Expand on that a little bit. Can you give me examples of how the rule would provide those operational flexibilities?

MR. SHAMS: Sure, as far as the operational flexibilities themselves, I'll strike the balance aspect of it. If we look at framework A, for instance, framework A is a performance-based approach, so the staff defines, or the proposed rule defines safety criteria to be met, which happens to be the 25 REM dose, as well as the QHOs. And then from there it flows -- safety requirements from there flows -- functional design requirements for these safety features.

Those are all choices that a designer makes. In the current framework, under 50, and 52, we would be very specific about the number of radiation control -- I'm sorry, the number of perhaps emergency diesel generators, or emergency power, or -- so these choices are left to the designer to develop, and so that's the striking of -- the flexibility piece. The predictability piece comes when we say we're going to need an analysis to show that the choices in these analyses were done appropriately.

So, we're trying to balance if we leave one part out versus

the other, we lose that appropriate balance, and now we get into protracted reviews, once that we would have challenges predicting. In terms of the particular operational flexibilities that would come with this, I think the panel went through a number of those. The generally licensed operator would be an example.

Siting criteria with risk-informed seismic input would be an example. Fitness for duty is another one, security is another one, there are a number of them that come with the risk-informed approach.

COMMISSIONER WRIGHT: Thank you so much.

MR. SHAMS: Thank you.

CHAIR HANSON: Thank you, Commissioner Wright. Commissioner Caputo?

COMMISSIONER CAPUTO: Good morning, thank you all for being here, and thank you all for the hard work. Certainly, there's been a lot of time and effort put into generating a 1300 page rule over a 4 year effort. So, I want to compliment the staff for just the level of time, and effort put into it. I also want to compliment the nature of the transformative process that Tara discussed.

I think that is a great way to approach an effort like this, and I do want to compliment you on just the level of interaction with stakeholders, and the iterations, and the nature of how that process was conducted. I'm a little flummoxed that we have -- that the end of that process has created an outcome that the industry finds unworkable, so I will get into that in a minute.

But I also want to add my thanks to Commissioner Wright for -- and for Mr. Shams for the discussion of altering views, and opinions among the staff. I'm glad to hear that the staff are welcome to openly discuss with the Commission any various views, and opinions that they have, and I hope you will make clear to the staff that they are welcome to freely express their views to the Commission.

Be it through the weekly meeting that's ongoing, or in other forms.

MR. MORRIS: Absolutely.

COMMISSIONER CAPUTO: Thank you. In the Nuclear Energy Innovation and Modernization Act, Congress instructed the NRC to establish a risk-informed, performance based, technology inclusive regulatory framework for advanced reactor applicants. That instruction cited the Commission's longstanding guidance to the staff to move from prescriptive regulations towards performance standards.

Prescriptive regulations add regulatory burden, and stifle innovation, which is something we should strive to avoid in a novel, and important area like advanced reactor development and deployment. The current draft proposal for Part 53 is very prescriptive, including many requirements that exceed those for current reactors. Stakeholders have repeatedly given substantial comments to that effect.

For example, there are longstanding requirements for a program to keep radiation dose as low as reasonably achieved, ALARA, as Nan was discussing earlier. That's a program managed by licensees, not a

design, or construction requirement placed on vendors. And it will end up adding complexity and cost without a corresponding safety benefit.

The new program that the staff would impose on advanced reactors, the Facility Safety Program, for currently operating reactors, the NRC monitors external hazards, and determines if they warrant backfitting requirements on licensees. Facility Safety Program would require licensees to self-impose backfits subject to inspection and potential criminal penalties for their failure to do so.

This is in direct conflict with our backfit rule, which limits changes to regulatory requirements to those that are safety significant and cost beneficial. The Commission also has a long-standing position that new nuclear plants should be regulated to the same safety levels as the current operating fleet of reactors.

This was documented in the rulemaking plan by reference SRM-SECY-10-0121, that the existing safety goals, safety performance expectations, subsidiary risk goals, associated risk guidance, key principals, and quantitative metrics for implementing risk-informed decision making are sufficient for new plants.

As I mentioned earlier, the Commission in its SRM approving the use of LMP as guidance reiterated the policy that the application of the safety goals, and performance expectations for currently operating reactors provides an acceptable minimum safety standard for new reactors. The draft proposed rule departs from this direction, neglecting to reflect the inherent safety features of advanced designs.

Another way the draft proposed rule increases regulatory burden is through codifying the quantitative health objectives, or QHOs, as the staff panel has already discussed. The basis for this approach is unclear. Codification of QHOs as cumulative risk limits for individual reactors would expand far beyond current practice.

This would result in stricter regulation of new reactors compared to those currently operating by regulating aspects that are not currently regulated. This is contrary to the Commission's repeated direction, and the direction in NEIMA to develop a risk-informed framework. This is also in contrast to our clarity principle, which states that regulation should be coherent, logical, and practical, and that agency positions should be readily understood, and easily applied.

An issue that Mr. True mentioned on the earlier panel is the use of regulatory analyses by the staff. For many years, our guidelines for developing regulatory analyses have included criteria for evaluating individual requirements in order to allow decision makers to distinguish between the safety benefits and costs of various requirements.

Such an approach prevents the inclusion of unjustified requirements that might be obscured by the overall benefits of a rule. Strikes me as odd that the staff identified a number of alternatives that were significant enough to discuss in a separate enclosure with the Commission paper but chose not to analyze them individually in the regulatory analysis.

Instead, the regulatory analysis reaches a vague conclusion that quote all of the new requirements are separately needed to

enable the benefits of the new requirements. For the Commission to make informed decisions, the regulatory analyses must evaluate the costs, and benefits in a meaningful way that supports quantitative, data driven, and disciplined decision making.

Complete and transparent regulatory analyses are also crucial for stakeholders, and the public to understand the basis for our decisions. For these, and other reasons, I believe my colleagues, and I should roll up our sleeves, and vote on revisions to the draft proposed rule. It took the staff four years to develop the work product that is currently before us.

Revision to the rule at the Commission level is the most efficient way to proceed and reflect the sense of urgency expressed earlier by Dr. Huff on behalf of the administration. But also on the part of Congress, and many of our stakeholders. That said, I don't have any specific questions for the staff at this time.

CHAIR HANSON: Thank you, Commissioner Caputo. Commissioner Crowell?

COMMISSIONER CROWELL: Thank you, Mr. Chair. Thank you to all of the panelists today for informative presentations. When Congress says to write a technology neutral, risk-informed, flexible rule, it sounds great, and easy from their vantage point. But putting pen to paper is really difficult, you basically have to capture both the known, and the unknown in equal measure, and treat them fairly, and appropriately, and it's tough to do.

So, I applaud you guys for taking your best crack at it with the addition of guidance from this, and previous Commissioners. So, we've got our work to do, it's some measure we're ahead of schedule, and some measure we're behind schedule. But I think it applies that we need to be moving as rapidly as possible.

And that finding a rule that can be finalized and upheld in the most expeditious manner is important for everybody in this room, and a whole variety of purposes. So, that being said, my understanding of the rule is that it's intended to apply only to commercial utilization facilities, and not to production facilities, and fusion, and things like that, is that correct?

MR. MORRIS: That is correct.

COMMISSIONER CROWELL: And will the draft rule clarify that in the Federal Register, or at the appropriate point?

MS. VALLIERE: So, the rule right now, in the definition of commercial nuclear reactors, which is the set of reactors that the rule is applicable to, discusses the fact that it's applicable to commercial reactors.

COMMISSIONER CROWELL: But it doesn't explicitly state it's not applicable to utilization, or fusion, or production?

MS. VALLIERE: It does not state in that definition that it's not applicable to production facilities, correct.

COMMISSIONER CROWELL: Is that the right amount of clarity we should have in --

MS. VALLIERE: We would certainly welcome Commission comment that additional clarity would be warranted.

COMMISSIONER CROWELL: I mean, at the very least there's legislation in Congress to make it clear on the point of fusion not be included. So, in an effort to be clear, and transparent to stakeholders, and the public about what this is, and isn't, I think that we need to be pretty well defined about what it is, and isn't, not just what it is.

MS. VALLIERE: Yes, agree.

COMMISSIONER CROWELL: Likewise, in a technology inclusive, or neutral rule, in theory when it is put into practice, it would not require the use of exemptions going forward?

MS. VALLIERE: That's correct.

COMMISSIONER CROWELL: One of the -- from my vantage point, one of the big shortcomings of our current regulatory environment is the extensive use of exemptions, it means that the current rule is not sufficient to address the types of applications for technologies we're receiving. So, having a rule that is not heavily based on exemptions is one that should withstand both legal and public scrutiny.

As you prepared Part 53, was there an effort to look at different things that you were incorporating, and associate a specific, or proposed time frame at which that part of the rulemaking would take, how long it would take, so that you could look at it in its entirety, and determine whether this on the whole is going to be a more expeditious, or a less efficient process than the current application process?

MS. VEIL: I'll start, I'm sure there's others that will want to weigh in. The whole part of starting Part 53, and some of the discussions

we've had about different frameworks, and whether, or not we have one or two frameworks, the whole point was to be more efficient in our reviews, and to be very specific. I think Mo mentioned having a protracted review schedule.

If we had something that was so level that we're not giving not only licensees, or applicants, but the public any certainty on what it is that we expect, and what our expectations are, and what our bases are for reviewing a safety case, that means protracted review. That could mean a lot of back, and forth in iteration because we haven't been clear on what it is we expect.

So, the overall construct was to make sure that we're being more efficient. Now specific time frames, I don't know that that was we're going to do this, and this will take 22 months, or this will take 12 months, I'm not sure that was the intent.

COMMISSIONER CROWELL: And I know this is a somewhat challenging, and somewhat unfair question to ask, but I ask it intentionally knowing that, and I would encourage you all to try, and think innovatively, and find ways where we can give some time certainty, review schedule certainty for that needed stakeholder confidence. Mo?

MR. SHAMS: And, Commissioner, thank you for the question. As Andrea indicated, perhaps we did not have specific metrics of how long would it take to review this. But the concept of efficient reviews was ingrained in what we've done. Is ingrained in the balance again, between being specific to provide a clear path on how you get reviews.

And also provide sufficient flexibilities reflecting where we are today with risk-informed decision making, and the tools that can support the variety of applications, and designs that are being presented by the industry. A lot of the programs in there also is intended to streamline the information being provided to the staff, and we're reflecting that to some degree in the rule, and to a larger degree in the guidance itself as well.

What information needs to be provided, that has a direct impact on how quickly can an application be reviewed. If you allow me just one last second, there was a lot of discussion this morning about how the rule is going to allow us to deploy a large number of reactors, and how that's being done. That is also ingrained in actually the licensing processes that we have.

Part 52 was invented for that approach, standardization, you can get a certified design, you can apply that at multiple locations after that, and the focus of such reviews would be just on site specific. That is incorporated in Part 53. We also created a connection between the Part 50 licensing approaches, construction permit, operating license, and connected those back to Part 52.

So, you can do a design cert, and bring it around in a CP, or an OL type application. So, we looked at these things. Perhaps we didn't put particular metrics on them, but they were ingrained in our thinking.

COMMISSIONER CROWELL: Understood. And obviously I just want us to keep our eye on the big picture, these are complex topics, and you've got a lot of staff working in various places and

going deep down various necessary rabbit holes. But if we're not taking a big picture view and making sure we're hitting the mark in terms of what overall it should look like, and how it operates, and how well it operates, and how it quote unquote meets the moment, we always need to pause, and make sure we're meeting that metric.

So, Tara, I think this is going to go to you, but looking back on our stakeholder engagement process, if you could, based on the feedback you've received, both good, bad, and otherwise, if you could go back in time, and do it differently, what would you change about how that process was conducted?

MS. INVERSO: So, as part of this innovative approach, we will do a complete lessons learned review that we haven't done just yet. What I would say initially is there was a two-pronged approach for getting public feedback on the draft proposed rule. The first was through the iterations of the draft rule language, and the second was through the public meetings.

For the first piece, the written iterations, we released two Federal Register notices to describe that process --

COMMISSIONER CROWELL: I'm going to cut you off because I have limited time. I know what you did do, I want to know if there's anything that you would do differently to address the criticisms if you could do it again.

MS. INVERSO: Sure. I think the thing that we would do differently is really specify the difference between the pre-rulemaking phase,

and the actual rulemaking phase. So, it's a balance. It's getting that right amount of pre-rulemaking public feedback, while also getting to that formal process. Part of the feedback we hear is where were the formal responses, what exactly did you do?

And perhaps we could be more clear at the onset, what we are planning to do, and what perhaps the stakeholders won't see in terms of those formal written responses.

COMMISSIONER CROWELL: Okay, because I mean this is a big undertaking to do it in a more novel way, but it shouldn't necessarily be a one off. We should approach other rulemakings in this manner as well, but only if they're going to be a value add, and we're going to do it well, and it's going to be well received on all sides.

And we've got to take into account that this was also during the period of COVID, and the pandemic, which makes it all that more challenging. In the panel before, Dr. Huff, in her remarks, was mentioning the License Modernization Program Project, and the value therein, and its inclusion in Part 53. I know it predates me, but that was something that was developed, from my understanding, jointly between both stakeholders, and the NRC.

And was generally kind of agreed upon or supported. I've kind of been hearing now that the LMP is not something that is as supported for inclusion in Part 53. Is that accurate, and can you answer any questions as to why?

MS. VEIL: It depends on who you ask. So, for LMP as I

said, there are applicants now that are using LMP. The ARDP awardees are using LMP. When we started, we had one framework, and that was framework A. There was a recognition by the industry, wait a minute, some of these smaller reactors may not be able to do the pedigree of a PRA that's needed to do the LMP.

That's how we got to framework B, and that's the -- I can stick a pin in the reason why we need two frameworks. Because we started with one, the recognition of LMP may not be the answer to all things is how we got to framework B.

COMMISSIONER CROWELL: Thank you. And, Mo, quickly, I do want to ask --

MR. SHAMS: Yeah, a quick second. We actually are working on additional guidance through the industry that the industry is sponsoring to augment LMP. So, to Andrea's point, it depends on who you're talking to about whether they like the LMP, or not.

COMMISSIONER CROWELL: Thank you.

CHAIR HANSON: Thank you, Commissioner Crowell. Thanks again, everyone for being here, and thank you all for the tremendous amount of work that I know has been gone into the draft proposed rule that sits before the Commission now. And I think I'll add my -- a number of people touched on this, but Tara you did a nice job of kind of highlighting the way in which we engaged stakeholders, and the process for developing this.

I think the staff's to be commended for that. We do have a -- as I think I've said before, we're in the middle of the process, and we still

have a ways to go. I'm always trying to connect with Commissioner Wright in looking for a baseball analogy. I don't know what inning we're in, it's not the seventh inning stretch, it may be the bottom of the third, or something in terms of where we need to go.

But I guess I'll start off with hopefully what is a straightforward question. So, the industry developed technology inclusive content of application, and the NRC's developed advanced reactor content of application. What's the status of those, are we held up? And if so, why?

MR. SHAMS: We're actually in final concurrence on both documents, they should be out for comments within days.

CHAIR HANSON: Days?

MR. SHAMS: Yes.

CHAIR HANSON: Okay, I'm going to hold you to that.

MR. SHAMS: Yes, sir.

CHAIR HANSON: Great, I appreciate that. So, let me kind of dive in on something. And it's an issue that I've heard Commissioner Caputo raise, I think quite rightly in a couple different ways. But Mo, it was part of your presentation, and you talked about -- you said a question that sometimes arises, how frequently the QHO calculations would be updated, and how are risk fluctuations during operations addressed.

And that the draft proposed rule would say at a minimum of kind of five years. And here's the thing that kind of sticks out in my head. First of all that sounds like kind of moving the goal posts for licensees that I kind of have a concern about. But the thing, the concrete example that

sticks in my head is I think about Limerick. Limerick was built '70s, came into operation late '70s, '80s.

At some point somebody decided to plop down an outlet mall right outside the fence, which is fine. You can practically stand in the parking lot of the Starbucks, and throw a rock, and hit the cooling tower, that's fine, that plant is safe, the people who visit that outlet mall are safe due to both operator actions, and due to NRC oversight.

But under this new framework, it sounds to me like if somebody plopped a -- right, the existence of that outlet mall didn't change the licensing basis for Limerick. But this sounds like if somebody did that with one of these advanced reactors, that it would change, it could change the licensing basis. And how is that kind of consistent overall with our principles of good regulation? Or, if I'm misunderstanding it, then kind of redirect me.

MR. SHAMS: No, sorry, you're not misunderstanding it at all. But if we go to the specific example that you've provided, the presence of a mall next to the nuclear plant would not represent a hazard to the plant. So, as such, there's really no adverse hazard on the plant itself to be captured. But let's reflect that more on maybe we put a chemical plant, or something that actually has an impact to the facility.

What a PRA update at five years, which is what I was pointing to in my remarks, captures that. What developed, what's new, what are new assumptions that are -- go ahead.

CHAIR HANSON: I'm sorry to break in. You're right, it

wouldn't increase the core damage frequency, or the large early release frequency, but we're talking about QHOs, which are actually health objectives, right? That's about frequency, and amount of dose to people.

MR. SHAMS: Right. We would have to go back to the assumptions made, or the requirements that were made with siting the plant. There are requirements around how the plant is sited, the population density around the plant. So, to what degree building that mall had actually changed that. And that, to your point becomes now whether it's a change to the licensing basis, or it's not.

So, it's not just the fact that they showed up. It's the fact that were they in a space that was intended to be or assumed to be with a different density of population, and the like. So, that would be, more, or less the way we judge that activity.

CHAIR HANSON: Okay, I think that conversation is worth continuing in the context of the staff discussions that we're having. I think that's an issue, and whether that's in the PRA, in the Facility Safety Program, or whether the kind of QHOs writ large, I think that's something I'd continue to just kind of --

MR. SHAMS: Just the point, sir, that I would want to make is we do not have the expectation that the QHO as was mentioned earlier today is a 24/7 item to be calculated, that's not the intent of it. I'm sorry, the QHOs are intended to be a check on the choices that were made in the design. As I indicated earlier, there's a significant degree of freedom in selecting accidents, in selecting structures, systems, components,

classifying them.

So, that's what the QHOs is, it's not intended to be a meter today, risk fluctuation, as I indicated are intended to be captured through regular best measures that we see today, that are done in operating fleets today.

CHAIR HANSON: Thank you. I get the impulse, right? Because as I've said many times, I'm all about what do we know, how do we know it, and what differences does it make? But I think that's worth additional -- certainly additional consideration.

Marty, I've got a question for you, and that is kind of what would be the practical impact of including qualitative risk standards for cumulative risk in the rule instead of QHOs?

And leaving the discussion of kind of quantitative risk targets to guidance, and application specific reviews? It's kind of a question about the cumulative risk standard as much as anything else.

MR. STUTZKE: Yes. If the QHOs were not in the rule, if you had a higher-level qualitative goal, and you have those defined in guidance, I would expect we would reference that guidance in a license condition, so that they would be imposed that way. And the other thing I would point out is guidance is non-binding, it can be challenged in legal proceedings, and things like that.

Whereas if you put the QHOs in the rule, once it's approved, it's done, from my understanding.

CHAIR HANSON: Okay.

MR. SHAMS: If I can expand on that?

CHAIR HANSON: Sure.

MR. SHAMS: So, as Marty indicated, that could be a path, certainly, of putting the qualitative health objective versus the quantitative one, but there will be a price in that, in the sense that if we listen to the conversation this morning about ALARA, the issue is being presented, when is good enough? It's subjective, we're going to continue to iterate, and review, and continue to look at means, and ways to reduce.

It would be the same thing if we go with the qualitative health objective, that it would be speculative to some degree, or at least subjective, I'm sorry, I didn't mean to say speculative, subjective. And it would be challenged, it would be based on judgement a large degree. So, the quantitative approach provides that objective metrics.

Again, as a check on the variety of flexibilities that were offered in the rule. Have the designers made appropriate choices collectively that actually ends up in a safe design? So, having the qualitative metric provides that check. Having a quantitative metric is going to add to a degree of subjectivity in making that judgement.

CHAIR HANSON: Okay, thanks. Marty, I wanted to come back to you. Given the kind of interest in micro reactors, and the potential for some of those things to deploy potentially before we're done with Part 53, the ACRS recommended that AERI, this alternative evaluation of risk insights, I didn't say that before, I wanted to spell it out, that the AERI approach should be made available for applicants using Part 50, or 52.

So, does the staff see any barriers to including AERI, or making that available, and should that be considered as part of the 50 52 alignment rulemaking?

MR. STUTZKE: Yeah, we'd have to look at it, but I don't see any barriers personally, of being able to adopt the AERI approach either under Parts 50, or 52.

CHAIR HANSON: I see. Could somebody kind of come in, and do that today?

MR. STUTZKE: Yes, they could always apply for an exemption.

CHAIR HANSON: Okay, thank you. I think I'll just wrap up with a thing. I thought the conversation that Commissioner Crowell had about the review approaches, and about how to expedite these is partly a question about culture, and how comfortable staff are going to be making, in a way, precedent-setting safety findings when maybe there's limited guidance.

So, I appreciate the efforts in part to create guidance for the staff in these reviews in order to set those guidelines, but also then to make this efficient and expeditious. I mean, one of the things that has, I think been successful about some of the advanced reactor applications we've had in front of us is the project management approach, and the way that management has focused staff's attention, and resources on safety significant issues, and I think that's going to be necessary in this other context when ultimately, hopefully, Part 53 comes into wide use. So, with

that, I'll hand it over to Commissioner Baran.

COMMISSIONER BARAN: Thanks. Thank you for the immense effort that's gone into this draft proposed rule. I think whether people like it, or don't like it, everyone's acknowledged it's been a huge effort, and they appreciate that, and I appreciate it as well. On QHOs, just to follow up on that, I don't want to spend the whole time on it, because we have focused on it quite a bit.

But I was reflecting a little bit on the discussion of the first panel, when Doug True, and Commissioner Crowell were talking about this, and Doug made the point about QHOs are in policy statements, policy statement applies to everything that's happening under Part 50, or Part 52, but it's not part of the regulatory language in Part 50, or Part 52.

Would that be true of Part 53 if we did not have it in the regulatory language of Part 53? And if so, the Policy Statement applying, and if so, what effect would that have? How would it be different than having it in the rule?

MR. SHAMS: So, thanks for the question, Commissioner. Part of the reason that the QHOs are not in Part 50 or Part 52 is really that the framework there is a deterministic framework in a way that all the components that are laid out in the regulations, the different rules that need to be -- or different requirements, different design attributes, the general design criteria, the principal design.

All of these pieces together gives us assurance, gives the Commission assurance that that design is a safe design. So, the QHOs, the

PRA plays a confirmatory role. Have we ultimately made choices, have we identified severe accident vulnerability effectively, do we have mitigations for these types of events, rare events, high consequences? In framework A, the paradigm is different.

It's a top-down approach, one that offers, as I've been sharing, significant choices. We don't say how many, or what type of emergency cooling system you need to have, or radiation control system. So, the designer has the ability to do that. So, at the end of the day we need to have some performance metrics to judge how that design was actually carried forward, and how these choices were made.

Framework A for instance, we don't require a single failure criteria. We do that in Part 50, 52, we do that in a framework B. So, it's a tradeoff, it's a component of, or I want to say it's a contract of pieces that come together to provide a coherent approach, and in framework A, having a qualitative risk metric is integral to be able to provide these flexibilities, and choices. That's --

COMMISSIONER BARAN: A quantitative risk metric.

MR. SHAMS: I'm sorry, I meant quantitative.

COMMISSIONER BARAN: I just wanted to make sure I heard you correctly.

MR. SHAMS: Yeah, yeah.

COMMISSIONER BARAN: In terms of one of the big questions I think we're all grappling with, whether we need two frameworks in the rule, or it could be done with one, either through merging A, and B, or

having more overarching language, and then having more options like framework A, and B, are the biggest challenges to, if we talk about a merger for a minute, QHOs in framework A, and the treatment of PRA?

I mean are those the biggest -- I know they're kind of different philosophies, and I've read it, and A, and B have different philosophies, but they also have huge chunks of text that are almost identical between the two. There is this natural appeal to think can we do this in one framework. What are the challenges to doing that?

MS. VEIL: I just wanted to quickly reiterate kind of the comment about where we started, and I know Mo can feel it, he wants to kind of put some color on it. But we started with one framework, and then based on stakeholder comments, went to another framework. To combine those two together -- to tabletop this for a minute, we'd have a series of if then statements.

A very high-level rule, if this, then that, if this, then that. That, to me, adds more uncertainty, convolutes the whole process more for an applicant. And remember, a lot of these applicants are probably going to be looking at process heat, and not traditional type of nuclear reactivity, and everything that we're all used to. These are folks that don't really care about the black box.

They just want the process heat for whatever activity that they want to do.

COMMISSIONER BARAN: And what's the response to the contention we're hearing a lot, that one way to have the certainty, and

predictability would be to have fairly detailed rule language. Another way to be would be to have higher language rule language like you're describing, and then a fair bit in guidance. Such as, for example, a lot of the specifics around framework A, and framework B, what's the staff's reaction to that?

MR. SHAMS: I can take that. Honestly, sort of the most straight forward way would say that we will chip away from the clarity of the rule, and we would really impact the elements that many of you discuss, which is predictability of the review. To what degree can you put a time frame on it?

Once it becomes a customized review for every applicant, it becomes extremely challenging for the agency now to be able to identify reasonable time frames to be able to do these reviews. So, if we put it all in guidance, it's going to be a custom review for every design essentially.

COMMISSIONER BARAN: Well, let me -- first of all, I feel very strongly we need to have great predictability here. Because I think if we end up in a custom review situation, that's not going to go well for anyone. So, that sentiment, I completely agree with. Let me push back though, on this question about would you have that? I mean if -- there's this model that was talked about on the first panel of well, what if you had something higher level in the rule?

In framework A in all its glorious detail, and framework B in all its glorious detail existed in guidance, would that not provide flexibility, or would it not provide predictability? Is the problem enforceability, that that's not in the rule? Is the concern really a lack of predictability? Because it

seems like whether it's in guidance, or whether it's in rule language, I think you'd have the same predictability, you'd have a difference in enforceability, I suppose.

MS. VEIL: Definitely in enforceability, but also too with all the interactions we've had already, and the concerns about framework A, and framework B as we sit, or stand right now. Putting it in guidance, to me, is even more uncertainty. Because someone will come along, and say I had a big problem with framework A, and framework B when you had it in the rule.

I'm going to propose this new approach to you. The staff will be ready to review that, but you don't have that certainty, you don't have the enforceability, and you certainly aren't optimizing timelines. Because we are going to have to make decisions based on novel approaches.

COMMISSIONER BARAN: So, a concern there, and this makes some sense to me, a concern there is if someone comes along with framework C, D, E, or F, and it differs in every application then it's going to be rough going on the actual reviews.

MS. VEIL: Because there's no standard. We're not saying we won't review C, D, E, F, or G, but the standard is framework A, and framework B. So, that's why putting it in guidance, you do have an enforceability issue, you also have a clarity issue, and you certainly have an optimization, and efficiency issue.

COMMISSIONER BARAN: Okay, let me ask it for a minute on ALARA. Obviously there was a big debate about this about

whether it's a principle that should be design principle in the rule, or an operating principle. When I read the draft rule, it requires a combination of design features, and programmatic controls to maintain ALARA for both public, and occupational dose, when I look at Part 50, and 52, they don't use that same language.

If the staff sees the approach, and Part 53 is consistent with what we've historically done in 50 and 52, can we keep the same language, I mean would that address some of the concerns that we're hearing about this?

MS. VALLIERE: Commissioner, I'll take a shot if you don't mind.

COMMISSIONER BARAN: Yeah.

MS. VALLIERE: And thank you for that question, and maybe if I can just take one minute to address a potential misconception that could have been left from the earlier panel. I just want to state that it is definitely not the staff's intention that the way the ALARA requirements were written in Part 53 were to take it to some standard beyond the adequate protection standard, which I think might have been implicated this morning.

But I will say that ultimately we stand behind our position that the way the requirements are worded in Part 53, it was just a structural difference from the requirements in 50 and 52, and were never meant to convey significant differences in how those requirements were applied. In 50 and 52 there are requirements specifically for design certification applicants.

For example, to provide information about design features related to ALARA. So, it was meant to carry over those same requirements. That said, if the Commission is concerned about the way the requirements are written in Part 53, and wanted to provide some direction to the staff, I think we could find a way perhaps to move closer to the language in Parts 50 and 52.

Which, as I said, address both design, and programmatic requirements currently, and do that in a way that would be consistent with the Commission's policy regarding ALARA, but perhaps get a little closer to the existing wording.

COMMISSIONER BARAN: But does Part 50 -- Part 50 doesn't address ALARA generally in design, right? It's specific to like effluence, or --

MS. VALLIERE: Right, yes, yes.

COMMISSIONER BARAN: So, it seems to broaden it then, in Part 53 to go beyond effluence, to say generally as you design this, you're looking at ALARA.

MS. VALLIERE: Well, it provides the applicant with the flexibility to choose whatever combination of design features for whatever portion of their design they think is best to address ALARA, and/or programmatic controls.

COMMISSIONER BARAN: So, is it fair to say as you all are thinking about it, when you -- the language you have right now in the draft of Part 53, you're really reading it as and/or. Design, and/or

operational, whatever gets you to ALARA in the end, it can be a combination of those things.

MR. SHAMS: It's a fair read on that. When we say combination, we don't mean 50-50, or 80-20, it could be 1 and 99, it could be any combination. It's intended to leverage the opportunity at the design phase to implement as many cost effective or chosen features as possible. But it's not intended to --

COMMISSIONER BARAN: You want to encompass flexibility, but not make it mandatory that it be done in design. It could be done in design, or it could be done with an operational program.

MR. SHAMS: That's a fair way of explaining what we're doing, yes.

COMMISSIONER BARAN: Okay, thank you.

CHAIR HANSON: Thank you, Commissioner Baran. And thank you, once again to all of our panelists, both external, and internal to the agency. Thank you to my colleagues for the thoughtful questions, and statements that you have made, and thanks also, it was mentioned, I think this morning, that all the Commissioners have dived into this. Our staffs are meeting on a regular basis on this, at least weekly for several hours with the NRC staff, and amongst themselves to understand better the basis for this, and to chart a path forward. And I want to thank my colleagues for that cooperative, and collaborative approach to dealing with a reasonably complex set of issues. So, with that, thank you all again, and we're adjourned.

(Whereupon, the above-entitled matter went off the record at 12:09 p.m.)