Rep Keith Ammon (00:00:03):

All right, and Marc, you'll be our secretary for today. Is that right? Okay, thumbs up. Calling the meeting to order. It is 1 34 and this is the study for Nuclear Energy, New Hampshire State Government. So for folks that may not be in our area, we have a weather event today. And so I think many of the commission members are going to be online on Zoom. And we have three of us here in the room. I just need to call the roll. All right, so representative Ammon is here. Representative Harrington, is he on the line? I don't see Representative Harrington. Could someone please look in the participants group. Senator Gannon is not here. Catherine Bowmans, present in the room. Marc Brown is remote on Zoom. Alex Fries, I don't believe we'll be joining us today. I don't see him. Bart Fromuth, I believe has a conflict in scheduling. Daniel Goldneris present, is present online. Matt Lavander is on Zoom. Chris McLarnon

Chris McLarnon (00:01:47):

Present.

Rep Keith Ammon (00:01:48):

Chris is present. Thank you. And David Shulock is present in the room. All right. So we don't have a physical quorum, so we won't be approving minutes. They were sent out to the commission members. Everything is posted for those online. If you wanna follow along, everything is posted on our website. It's https://nuclearnh.energy. You could find the agenda for today's meeting on that website as long as well as the presentations. And if you go back to the previous meeting from December 12th, you can see the unapproved minutes. So we're gonna push that to the next meeting. Commission members. Are there any additional items that you'd like to add or adjust on the agenda? Good to go. Alright. Right, we have a lot of people online today. We'll just open it up for public comment. Representative Harrington is coming in. Okay. Representative Harrington, thank you for joining us. So we'll open it up initially to public comment. I know new people are coming on board with the commission as word of it spreads. So are there any members of the public that would like to introduce themselves or make any comments or statements for the commission? Just raise your hand with the Zoom function.

(00:03:23):

All right, Paul, Sarah, and Gary, I'm gonna go in that order. And Paul, would you please state your first and last name for the record and where you're from?

Paul Gunter, Beyond Nuclear (00:03:34):

Well, thank you. My name is Paul Gunter. I'm calling in from Tacoma Park, Maryland. And I work with a group called Beyond Nuclear, and we're a watchdog on the US Nuclear Regulatory Commission and the nuclear industry as a not-for-profit. And I guess my, I'll keep my comment very brief. Seabrook has a very long history for failure to meet time to completion and cost of completion. I'm sure the the representatives are very familiar with that. That situation has not improved despite the the so-called nuclear renaissance that was launched in Congress in 2005. Westinghouse started two construction projects in South Carolina and Georgia of 34 applications that were submitted to the US Nuclear Regulatory Commission and only only four units of the that 34 actually made it to construction.

(00:04:50):

And, and we're, we're here today just to remind the the representatives that the current cost of the two units in Georgia Vogel three and four, while originally offered at $14 billion by Westinghouse, are now pushing $34 billion. That's over twice the amount. and the the same, the same problems that plague Seabrook have only gotten worse. This also is a concern for small modular reactors. We're seeing the

industry's inability to control cost of construction and time to completion. And so we, I just, I'm just trying to address what I'm seeing, what we're seeing as a, as an amnesia that is across United States right now. And we're just bringing that to your attention that the the real costs of nuclear power be media are not being reflected. Thank you.

Rep Keith Ammon (00:06:11):

All right. Thank you for your comments, Paul. And I'll ask you to go back on mute, please. And anyone that isn't speaking, please mute your microphone. All right. Next up we have Sarah Abramson C-10 Foundation. Sarah, could you please unmute?

Sarah Abramson, C-10 Foundation (00:06:33):

Good afternoon. I'm Sarah Abramson. I'm Executive director of C 10 Research and Education Foundation. I had to shorten it for the Zoom. I'm calling from Stratum, New Hampshire. I, I live in Stratum, New Hampshire. The organization serves the communities with that lie within the 10 mile evacuation pathway, emergency planning zone, EPZ of the Seabrook Nuclear Power Plant. and that includes over 160,000 people in New Hampshire and Massachusetts. we have been in existence essentially since the plant opened, so for 32 years. And for almost that entire time, we've been operating a radiation monitoring network that measures the beta and gamma radiation in the air as well as wind speed and direction to tell from where and to where radiation is traveling. we have been contracted by the state of Massachusetts to do this work for their communities for a long time.

(00:07:28):

So their state is a little more represented by us in our radiation monitoring, but we have built up a, a robust monitoring network in New Hampshire as well. I'm familiar with this state of New Hampshire's Radiation Monitoring Program. I don't find it to be nearly as robust or adequate as our realtime monitoring network can provide. In an event of an acute radiation exposure or event, we are able to send automatic alerts to health officials. We can also provide evidence of where the plant is not the source of radiation, which has happened on many occasions. Road construction, create radiation clouds can travel from coal plants in other states. So we've been a key partner in establishing from where and, and when radiation has traveled to our region which mostly occurs not from the plant. We think that our role in radiation monitoring is, or, or some type of real time network is absolutely,

Rep Michael Harrington (00:08:25):

Depending on this one now,

Sarah Abramson, C-10 Foundation (00:08:28):

Is absolutely essential if you are to pursue I got muted there. <laugh> in the person of any other nuclear projects, you know, we want to make sure that the state thinks very clearly and, and thoroughly about what radiation monitoring should look like with today's technology. I would also like to point out echo a little bit regarding concrete issues at the plant.

Rep Keith Ammon (00:09:06):

Why isn't it muting

Sarah Abramson, C-10 Foundation (00:09:08):

Her? Should I stay muted, or should I keep

Rep Keith Ammon (00:09:09):

Talking? No, you should, you should keep talking. I'm trying. Just gimme one second. Okay. I'm gonna mute everybody. And then Sarah, if you could do, if you could unmute yourself.

Sarah Abramson, C-10 Foundation (00:09:22):

Okay,

Rep Keith Ammon (00:09:23):

There we go.

Sarah Abramson, C-10 Foundation (00:09:25):

I just wanted to give a little background on the concrete issues that are occurring at the Seabrook Nuclear Power Plant. For those, I'll just give a quick overview for those that don't know. There is a reaction called Alkali-Silica Reaction because of certain aggregates that are in the concrete when the plant was built that are reacting with the groundwater and creating a chemical reaction that causes a gel to form and expand and cause cracking inside and on the surface of concrete structures like the containment structure and other critical parts of the building. This is the only nuclear power plant in the US known to have this issue. And so C-10 worked pretty closely with the NRC and NextEra, and actually actually won a legal challenge so that there are more strict requirements in place for the license, the operating license of the plant, so that we are keeping a close eye on that issue.

(00:10:13):

It's not curable, it's referred to as concrete cancer. and I want to make sure that for any projects that are considered that we don't rush I know that there is of course, a desire to become carbon free in pursuance of our climate goals. But rushing and maybe not selecting the best materials and contractors initially might be part of the reason why we're in this situation that we're in now. So the two focuses that I would like for the commissioner, anybody to, to entertain is, is radiation monitoring is absolutely critical as well as adequate selection of contractors and materials. Thank you.

Rep Keith Ammon (00:10:50):

All right. Thank you, Sarah. And for anyone online, if you go to the website, nuclearnh.energy, you can see, go to the about page, you can see the charter for this commission. So there, there's a certain list of items that the commission is directed to pursue. All right. And thank you Sarah. I'm gonna ask you to mute Sarah. And then Gary, you're, you're next. Would you please unmute Gary Woods?

Gary Woods (00:11:18):

Thank you. Yes, I'm, I'm Gary Woods. Sort of at this juncture just a interested citizen. I just completed two terms in the State House as a representative did move just recently. So I'm, I couldn't run for reelection <laugh>. But I had a long interest in this area. Although I'm a retired orthopedic hand surgeon my original background was a degree in physics from Berkeley in 1964 and then graduate work at Hopkins in biophysics. And I've maintained an interest in this area and have participated in a variety of ways both statewide and nationally served on AMAs council and scientific affairs, and where we dealt with issues such as this. and I'm, I'm just interested from at, at, as I said, at this juncture, sort of a no, no real position, just an interested citizen but might become engaged if some piece of legislation were, would, were to come forward. Thank you.

Rep Keith Ammon (00:12:33):

Great. Thank you. Thank you to everyone who gave us public comment that's important for us to consider. Alright. Right. So I'm going to give a heads up to our first speaker Michael Wentzel. He is the branch chief at the US Nuclear Regulatory Commission. And Michael, I, I'd ask you to unmute yourself.

Michael Wentzel, NRC (00:12:58):

Hello.

Rep Keith Ammon (00:13:01):

We can hear you. We can see you. Great. Nice to meet you, Michael. Thank you for presenting to our commission. And we hadn't had a chance to talk before the meeting started. Do you wanna present your slides from your computer, or should I pull them up and I can do, I could be your slide person, your choice.

Michael Wentzel, NRC (00:13:20):

If you could present them, that would be, that would be great.

Rep Keith Ammon (00:13:23):

That would be easier. Okay. Let me, so why don't you, while you're introducing yourself to our group, I'll pull up those slides.

Michael Wentzel, NRC (00:13:34):

Okay, great. So I, hi everybody. My name is Mike Wentzel. I am chief of the Advanced Reactor Licensing branch number two in the division of Advanced Reactor and non-power production and utilization facilities and office of Nuclear Energy Research. Just to give you a little heads up so there's, there's two organizations here that are looking at the, the next generation of nuclear designs. My division as, as I said goes by that we are looking at the advanced reactor licenses.

Rep Keith Ammon (00:14:13):

Michael, could I interrupt you? Would you pull your microphone to your mouth?

Michael Wentzel, NRC (00:14:18):

Sure.

Rep Keith Ammon (00:14:19):

Right up there. That's a little better. Thank you.

Michael Wentzel, NRC (00:14:23):

Okay. Yeah, sorry about that. So, so my my division's looking at the advanced reactor design, advanced non-light water reactor designs, and then we have another division the division of New and Renewed licenses and in the office of Nuclear Reactor Regulation, they're looking at the the newer lightwater reactor designs referred to as small modular reactors. The presentation, it's going to focus on a little bit of the, the, the licensing work that we had, and then the, the last part of it is going to be kind of on the policy and infrastructure activities.

Rep Keith Ammon (00:15:13):
Okay. just gimme one second, Michael, I'm gonna share your, sure. I lost the window here. All right.

Michael Wentzel, NRC (00:15:44):
Okay, great. Can you move to the next slide, please?

Rep Keith Ammon (00:15:57):
You want the next slide, Michael?

Michael Wentzel, NRC (00:15:59):
Yes, please. Slide two.

Rep Keith Ammon (00:16:12):
Slide two. That, that should be slide two right there. Is that correct?

Michael Wentzel, NRC (00:16:21):
I don't know. My, I see the, the title of slide. I dunno if my,

Rep Keith Ammon (00:16:28):
All right. Lemme try this again. I'm gonna stop sharing it. We sure. How's that?

Michael Wentzel, NRC (00:16:47):
Okay. I'm gonna try turning off my video if that's okay.

Rep Keith Ammon (00:16:52):
So I see a slide that says, our vision creating new paradigms. Is that what everyone else sees? Yeah, that's what I see. Yep. Oh, okay. That's right. Okay.

Michael Wentzel, NRC (00:17:01):
So I, I don't know what happened with my Zoom meeting is a black screen, so I'll, I'll take your word for it and go on with the presentation, and I'll just try to, the slide numbers, if that works. so, okay. So this slide represents shares a little bit of the vision that we've created for the advanced reactive program. so for the past few years, the NRC has been working on transforming the way it does its business to become a more modern risk informed regulator. And with the work that we've been doing with the Advanced reactive program, we've been guided by the, our vision statement, which is which you can see on the slide, which says you know, creating new paradigms to make the safe use of nuclear technology possible. Our goal is to like really build the more of a mindset and to develop new ways to achieve our mission while building on some of the strong foundation that we've, that served us well throughout the years. We continue envision, we continue to envision achieving this transformation through the evolution of many areas of our regulatory framework, which some of which I'll touch on later. This presentation. Can you switch the next slide, please. <inaudible>

Rep Keith Ammon (00:18:16):
Licensing status.

Michael Wentzel, NRC (00:18:18):

Okay. So this is just thank you very much. So this is just what I'm gonna start with is a status of the licensing work that we have ongoing. And then after we get through that, I'm gonna move to the changes in radio players. <inaudible>, please. Slide four, please.

Rep Keith Ammon (00:18:39):

Evolving landscape.

Michael Wentzel, NRC (00:18:41):

Okay. Thank you very much. so this this slide represents some of the technologies that and activities that we've been involved with over, over a year in the, the future landscape that we have. And these technologies that are being proposed are, are bringing fundamental changes to reactor design manufacturing and uses. Based on the current interactions with the industry, we expect that by 2027, more than 13 license applications will have been submitted to the NRC with potentially more than six sites receiving an operating license. And I'll just caveat this is based on the information I have. So pre-application engagement with the industry, which we've been taking as really kind of a fundamental part of the approach that we're,

(00:19:32):

We've been using to try to approve the efficiency of this process allows us to attain a better understanding of the forthcoming technologies both the technologies and the vendor and central applicant's plans. And it really helps to, from an information staring standpoint with the focus on you know, shortening the licensing process and making these licensing a little bit more predictable. At, at this point, we've got over 15 entities that that we're currently engaged with through the pre-application review process. And, and just a little bit of background on that. When I say pre-application, that that really kind of encompasses engagement with the, with industry and interested parties from an information sharing sharing standpoint. And then more the like gradual steps towards the actual licensing process, where the process where vendors will submit white papers and topical reports for, for review and feedback. white papers is, is kind of like standard white paper, kind of maybe lays out you know, proposed approach or thoughts that they had on, on, you know, a particular topic that we could provide feedback on. And a topical report is more of a licensing document that you know, provides some finality for particular issues and then can be incorporated into the, the licensing issue. One of those.

(00:20:54):

So we have, relative to that, we have a draft the pre-application white paper that we have available on the public website, and I can give the, the agency document number that was interested in. And, and just one little note here. So we, this, this slide does kind of show some of the technologies that, that we've learned about through our engagement. And we have small modular reactors and micro reactors listed here in one of the cells. And I just kind of wanted to, for purposes of clarity small modular reactors, is a lightwater reactor that is expected to produce upwards of 300 megawatts electric. again, the key there, the difference between that is a, it's a lightwater reactor, and micro reactor is a typically a non lightwater reactor that is classified to produce, you know, anywhere from one to 20 megawatts. And that's a <inaudible>. Could you move to slide five, please?

Rep Keith Ammon (00:22:16):

Oh, I have the various vendors slide.

Michael Wentzel, NRC (00:22:19):

Thank you. Okay. So here's this slide kind of list out some of the vendors that we've, we've been engaging with both and, and current licensing reviews. we have three facility license applications that we're viewing and then some other ongoing pre-application activities where vendors have identified you know, near term plans to submit the licensing application.

(00:22:49):

This just to be clear, this is not the, the complete list of all of the, the entities that you're engaged with. These are ones that are public. Can put the slide six please.

(00:23:02):

So just can give you this slide that you see that it's up is just shows you, it gives you a high level overview of the three facility license applications that we, that we're working on right now. Just to kind of touch on these a little bit. the first one, Shine Technologies. This is a medical isotope facility. it's it's intended to be used to produce the medical isotope Molybdenum-99 and other, other medical isotopes. This is a facility that is currently under construction in Jamesville, Wisconsin. And it's nearly complete at this point. We're at the point of waiting for construction to be finalized, or we can issue finish the operating license application,

(00:24:00):

Excuse me. These other two projects, Kairos Power and Abilene Christian University. These are two licensing applications for advanced reactor concepts. The first one is the Kairos Power, Hermes test reactor. This is a 35 megawatt thermal fluoride salt, cold, high temperature non-power reactor. this is a facility that's going to, that's proposed to be located in Oak Ridge, Tennessee. And this, this is a test reactor that's intended, intended to demonstrate the technologies that would be employed by the full scale Kairos Power fluoride high temperature reactor. That's proposed later on in August. This we've got a, the Kairos submitted a construction permit application for this in September, 2021, and that's currently undergoing review. Right now it's, it's scheduled to be completed in September 20 of this year.

(00:25:07):

And then the most recent application that we've received here is the Abilene Christian University. This is for a proposed one megawatt thermal graphite moderated fluoride salt research reactor to be located on the Abilene Christian University campus. This application was submitted in August of this year, and the NRC accepted it for review this past December. There, the schedule is that we issued for this, which we just issued this past December with this forecasting a May, 2024 completion. And again, just to tie it up in case they didn't say clearly, the, the Kairos facility and the Abilene Christian University facility, these, these licensing applications are for construction permits. They, I will touch on this a little bit later in the licensing process, but it's it's just the first, this would just be a permit for them to construct the facility. They'd have to come into a second separate application to actually upgrade with. Should that be done.

Rep Michael Harrington (00:26:13):

A question?

Michael Wentzel, NRC (00:26:16):

Yes.

Rep Michael Harrington (00:26:17):

Yeah. how come you're doing a separate construction and operating permit? I know, for example, the Vogtle plant was issued a joint one. Why is it different on these test reactors?

Michael Wentzel, NRC (00:26:27):

Yeah, very good question. So actually touch on a little bit on the next slide. if you want, I'm happy to answer that now. If you want to just wait until, we'll go through the next slide then answer your question,

Rep Keith Ammon (00:26:42):

I have the next slide up, SMR and Advanced Reactor Licensing

Michael Wentzel, NRC (00:26:47):

Great, thank you. So this shows you the potential licensing pathways for a newer advanced reactor design. so we have the, so to, to get to the, the, the need of the question here. There's, there's two currently there's two current approaches that are in our regulations. the 10 CFR part 50, this is the original licensing pathway. And this proposes, or this has a two-step process where you an applicant will come in on and request a construction permit. we would complete our review and, you know, if, if appropriate issue, the construction permit, they begin the construction, the facility. And then when they get closer to the point where the facility is considered substantially complete, they can apply for a operating license in which case that we, they would do that review. Part 52, which, which you is what was used to license vog units three and four. this, this was a a regulation that came out. It, it started working in the, the late nineties, early two thousands. But the, this was the, the proposed to a combined the, those two approaches. So it's in, instead of coming in for a two-step process, if the applicant would come in for a at least for a power reactor operating power reactor, they, they could come in for a combined license, which would be a combined construction and operating license.

Rep Michael Harrington (00:28:26):

Follow up question on that.

Michael Wentzel, NRC (00:28:27):

Yeah, sure.

Rep Michael Harrington (00:28:28):

Yeah, sure. the, the Nuscale reactor that just got certified, that was under part 52, then?

Michael Wentzel, NRC (00:28:33):

That was, that was under part 52. Yeah. So thank you. That's, yeah, that's the design certification process here. And, and I can touch on the that a little bit too. So part 50 is pretty straightforward there, there's no there's not really any way to standardize and design or have an approved standardized design. But par 52 does, does allow for that. It's an attempt to make that the licensing process more efficient. So you know, a reactor vendor could come in and get their design certified which is what Nuscale did, and you know, what other vendors like Westinghouse have done before. And then power reactor licensee, or potential power reactor applicant can submit licensing application referencing that standardized design. And then so these are the two that are currently in the regulations and, and staff is currently working. And I'll touch on this a little bit more on the ne the next few slides here. But there's a

proposed part 53, which would be you know, it's a new licensing framework that was the agencies have been directed to develop. But I, I'll touch on that a little bit later.

(00:29:47):

Turn to the next slide, please. Slide down. Actually, you can just go to slide if you want.

Rep Keith Ammon (00:29:56):

All right. Commission policy statement.

Michael Wentzel, NRC (00:29:58):

Okay. So this, this, so we're transitioning over from the the licensing status to, to more of the regulatory framework that we've been doing. Slide nine here. This this shows you a quote from the commission policy statement on advanced reactors and it, it's just something that really kind of focuses in but the, the direction that the staff has received and, and looking at changing the way that the the, the agency regulates these new technologies. So just a a little bit of background on this beforehand, the, the, the agency's current regulations are, are very much geared towards large lightwater reactor like traditional reactor designs. So with these that, and that served the agency well throughout the years for these bigger, larger plants. But with these newer technologies non lightwater technologies we really needed to take a look at our existing regulatory framework to make sure that it's appropriately focused not overly burdensome to these, to, to require, you know, potentially unnecessarily or duplicative safety features for while still maintaining the same level safety that've established in the existing regulation.

(00:31:26):

And so that, that's kind of what this quote here is representing the commission is directed is you know, the staff that the, any new regulated regulation or guidance that, that are developed must be at, you know, at least equal to, if not greater than the level of safety better that's provided by today's, you know, existing operating fleet. But because the, the fact that these, you know, technologies are SMR and smaller sizes, they have different system structures and components we're gonna, we're really trying to look at developing the appropriate framework that to provide that, that same level of safety. Can you go to slide 10 please?

(00:32:14):

Okay. So I kind of touched on this, the, the couple slides ago, but part 53 is this part of the, the way that the agency is transforming its regulatory framework to, to meet these new challenges. So the driving force behind part 53 was the 2019 Nuclear Energy Innovation and Modernization Act, which stated that the NRC shall complete the rulemaking to establish a technology inclusive framework for optional use by commercial advanced reactor applicants. By law, the, the, the law directed the staff to complete its rulemaking no later than December 31st 2027. So just a few specifics about the rulemaking. So part 53 builds on the, a strong foundation of commission, you know, current regulatory framework as well as adding in some additional performance base and risk inform regulatory options. in, in that vein, the rule embodies the risk inform framework that capitalizes on the pro progress that's been made over the, the last several decades in the art of the probabilistic risk assessment, which is sometimes refered to as PRA, it uses some performance based requirements, meaning, which means that the, you know, desired result is, is not necessarily scripted.

(00:33:44):

It's going to, I'm not gonna telling necessarily how, how to get there, but we're just establishing performance objectives that these designers will need to meet to, to ensure the safety. So the rule also

modernizes the licensing basis change process into a risk and form approach that leverages the design margin to afford operators some greater flexibility, and features a consequence-oriented regulatory framework by applying alternative graded emergency preparedness and security requirements that reflect the facilities potential risk to public health and safety. So overall part 53 is striving to strike an optimal balance between allowing some flexibility and predictability by providing some clear and specific performance-based requirements that ensures an efficient and effective licensing process.

(00:34:47):

Good. Next slide, please. okay. So, but in addition to part 53 the agency's been taking significant steps with new regulations, policy and guidance to enable to the efficient licensing of these advanced technologies. Just a, a few to point out here, the agency's working on an alternative physical security requirement for advanced reactors. It's developing a consequence, consequence based approach to security. So what that means is, if we're a given reactor an applicant can show that the, the consequence from an accident is less than 25 rem, then that designer won't need to protect against the design basis threat. This aligns the security requirements for some of these facilities to to be consistent with the requirements for an existing material licensing security.

Rep Michael Harrington (00:35:53):

Excuse me, question. Yeah, so the security, rather than a one size fits all approach, which is sort of used now because it's basically all light water reactors, this would be technology based on the type of reactor and the consequences of what somebody could do to that reactor and the resulting accident?

Michael Wentzel, NRC (00:36:12):

It, so it'd actually be technology agnostic. but yeah, the, it would be based on the consequence of this.

Rep Michael Harrington (00:36:20):

So two, like a one type of a molten salt reactor would've different requirements than a light water reactor or something like that then?

Michael Wentzel, NRC (00:36:29):

It, it, yes, it would be possible.

Rep Michael Harrington (00:36:31):

Okay. All right. Thank you.

Michael Wentzel, NRC (00:36:33):

Yeah, and that, that's the same thing with emergency planning, which is another thing that we're working on here. It's, I mean, in, in that it's not it's not necessarily prescriptive. the, so the agency's actually released a proposed rule on this, and it emphasizes the performance capabilities rather than identifying prescriptive emergency plan requirements. It includes an in its scalable approach to the size of the plume exposure pathway. Emergency planning zone requires licensees to establish contacts and arrangements and procedures for coordinated offsite response organizations. There's other ways that we're changing too, to make the process more efficient than scalable. We're working on a generic environmental impact statement for our advance reactors to, to look at the, you know, from a programmatic standpoint, the environmental impacts to licensing these new facilities changing the looking at revising the citing requirements.

(00:37:37):

So for example, rather than having a fixed criteria of limiting population density out to 20 miles, the new criteria will consider the reactor design and site specific accident consequences that can result. Looking at revising the fee structure to make it you know, more equitable to you know, particular applicants. So it's not, not, we won't be charging the same fees for a large baseload power solution that we a smaller advanced reactor. And then just another one to note here is fusion. So the nuclear energy, and with nema, the Nuclear Energy Innovation and Modernization Act its definition of advanced reactor also includes fusion. So the NRC is required to develop an associated regulatory. The staff's currently working on developing options on how to treat fusion reactors, and at that time, it'll be presented to the commission for a policy decision. And the next slide, please, is my, my final one. That completes my part of the presentation.

Rep Keith Ammon (00:38:55):

All right. Thank you, Michael. We really appreciate your taking the time to present to us. We'll open up the floor to any questions. If you could use the Zoom feature to raise your hand participants online. Anybody in the room? I have a question. Michael, this is Keith talking you mentioned fusion. Realistically, how far away is a commercial fusion reactor?

Michael Wentzel, NRC (00:39:25):

so I can't actually speak to that directly. I, I know that there's kind of a, it's always just down the road, but that I know that there have been a lot of advances on that. We've heard some announcements on that lately. So it's, I think, you know, our approach is, you know, just trying to develop the, have a framework in place so that once these facilities do become a reasonable option, that we can have a pathway in place there for licensing.

Rep Keith Ammon (00:39:59):

Okay, understood. All right. We have a question from Sarah. Sarah, unmute.

Sarah Abramson, C-10 Foundation (00:40:08):

Thank you. I wanted to ask in the initial planning phases and some of these construction site construction permit phases that you're at, are any of these new sites taking into account from the beginning the need to store nuclear waste on site? Since the single repository isn't really doesn't really have any momentum currently, rather than the current process of plants reactively after the fact creating storage area on site for waste?

Michael Wentzel, NRC (00:40:43):

So yeah, so the, the safety of spent field storage is something that's considered as part of the, the license. Yeah.

Rep Keith Ammon (00:41:00):

All right. Sarah, does that answer your question?

Sarah Abramson, C-10 Foundation (00:41:07):

Yes, that particular question.

Rep Keith Ammon (00:41:10):

Okay. Thank you. Anyone else? questions for Michael Wenzel? All right. we have, okay, Sarah, is that you again? No.

Sarah Abramson, C-10 Foundation (00:41:25):

Yes.

Rep Keith Ammon (00:41:27):

You have another question?

Sarah Abramson, C-10 Foundation (00:41:28):

I do. I didn't hear anything specific about the emergency planning procedures and how they might vary for this light water reactor compared to a reactor like Seabrook, which is of a different type. Are there any specifics or is it still in the discussion phase of whether it would still be a 10 mile radius or otherwise? Or is there a formula, like you mentioned this not a one size fits all approach, could the radius for the evacuation pathway and the ingestion pathways change based on a formula of, of calculated risk? Am I understanding that correctly?

Michael Wentzel, NRC (00:42:04):

So I, I understand the question. Unfortunately, I'm, I'm not directly involved in, in that rulemaking, so I can't really answer that myself, but I, I can be happy to get back to you on that if you wanted to send your contact on the phone.

Rep Michael Harrington (00:42:23):

Keith, Mike Harrington? I don't have any hands on my screen, so I can't one up, but I do have a question. Go ahead. Okay. Under the part 53 licensing, is that, is that going to be what we call now combination construction and operating license, or will it be multi phases as in the older way we did things?

Michael Wentzel, NRC (00:42:46):

So so it is envisioned to be a, a single for a, an application for a

Rep Michael Harrington (00:42:54):

And, and is the overall goal, other than the obvious safety ones is it to speed the process up? Is that one of the goals of the new process to make it go faster? I mean, it did have that combined one down in Vogtle, but it didn't exactly not, I don't think it was the NRC's fault so much, but it it didn't exactly go fast.

Michael Wentzel, NRC (00:43:15):

So it's, I wouldn't say that it, that there's, so we we're attempting to make a, an efficient licensing process. I, I'm not speeding up, this isn't necessarily a goal per se but we're just trying to provide regulatory certainty for the, for these technologies. Okay. Because again, it's just trying to focus in on like what's safety significant for a, or important for a specific design. And so that's more of the goal to like make that process more efficient at having, having that certainty would likely lead to a faster review

process, but it's the, the goal making this, the speed for which an application is isn't necessarily something

Rep Michael Harrington (00:43:55):

That's okay. In a, in a quick follow up, then would there be one single set of rules that applies to all different technologies, or would they be broken down into, you know, a certain set of requirements that applies to everything, and then part A applies to molten salt reactors and part B applies to something else and so forth?

Michael Wentzel, NRC (00:44:15):

So the, the rule is it intended to be technology inclusive. So it, it's not in what we mean by that. It's not, it's not technology dependent. So it the,

Rep Michael Harrington (00:44:25):

Okay. So it'd be the same for everybody.

Michael Wentzel, NRC (00:44:27):

It'd be the same for everybody, but the, the specific safety benefit a facility, but determine compared to specific requirements.

Rep Keith Ammon (00:44:40):

All right. And this is Keith asking a question. Are there any more specifics you can share with us regarding the approval of the Nuscale reactor?

Michael Wentzel, NRC (00:44:52):

I don't have anything specific. So the new scale just submitted so that we've did the certified design they just submitted an application for standard design approval which is another, it's, we talked a little bit about the design certification process in part 52. Standardized design approval is I'd say like a, a similar thing to a design certification, but it's maybe like a step below it. It provides some, you know approval of certain parts of the design. But, but those are on the, the vendor side. I, I don't have anything specific from the actual operator.

Rep Keith Ammon (00:45:35):

Okay. All right. Well, great. Thank you. Anyone else? last chance to ask a question, and Michael,

Michael Wentzel, NRC (00:45:47):

Just for redness, I, I did put a link in the chat to the <inaudible> public website on the emergency preparedness rulemaking, so that, that should, provides some additional information on that <inaudible>.

(00:46:00):

[https://www.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/emergency-preparedness.html]

Rep Keith Ammon (00:46:03):

Okay. So there's a link in the chat. I see it there, it goes to the rulemaking website. Excellent. Someone's asking in the chat. Can I get a copy of the recording? The recording will be posted on our website in a day or two. So the answer is yes. Okay. Any, anyone else? Sarah, I see your hand again, but is that from before?

Sarah Abramson, C-10 Foundation (00:46:28):

No, it's new.

Rep Keith Ammon (00:46:30):

It's new. All right. Last, last chance.

Sarah Abramson, C-10 Foundation (00:46:33):

Okay. the, the performance indicators that, that you mentioned are those the same or, or comparable to the performance indicators and inspection finding indicators? The, the green, white, yellow, red scale? Is that what that was touching on?

Michael Wentzel, NRC (00:46:48):

No, I'm, I'm sorry. They probably, it, it's similar sounding terms, but the different different ones. So performance indicators, those, those are, as, as you note something on the operating rector inspection side, what I was talking about was performance based regulation, the performance based requirements. So it's, it's saying that you know, I'm just making something up. A certain structure needs to be able to you know, perform a certain safety function. I'll just keep it generic. That, that, that's what I mean by performance based. So it, it es it establishes what something needs to do, not necessarily dictating how it's done. So that that's the difference between the performance based regulation and traditional deterministic based.

Sarah Abramson, C-10 Foundation (00:47:40):

You trailed off towards the end, but I think I,

Michael Wentzel, NRC (00:47:43):

Oh, sorry about

Sarah Abramson, C-10 Foundation (00:47:44):

That. I understand your answer. Thank you.

Michael Wentzel, NRC (00:47:47):

Yep.

Rep Keith Ammon (00:47:51):

All right. Thanks, Michael. We really appreciate it. And if you could send me your, your contact information that you'd like us to be able to share, that would be appreciated in case we have follow up questions for you. And we, we did have new scale present to us at a previous meeting, so that's exciting their license got approved. All right. So now we're going to turn attention to David Durham. And I see he's on, he's on deck here. David, I'm gonna pull up your slides and we can do just what we did before.

David Durham, Westinghouse (00:48:26):

Okay, great. Thanks.

Rep Keith Ammon (00:48:29):

Just give me one second here. Let's see if I gotta kill Adobe here. It's giving me some trouble. So Mr. Durham is the president of Energy Systems at Westinghouse Electric Company. And David, we put your bio on our website in case folks would like to see that. I'm gonna pull up the slides now and we'll get started. Okay?

David Durham, Westinghouse (00:49:42):

Okay. You ready?

Rep Keith Ammon (00:49:44):

I think we're ready.

David Durham, Westinghouse (00:49:45):

All right, great. Well, thank you. Thank you all for for having me today. I apologize I'm not there in person, especially being from right next door in Maine, I really, and, and having lived in New Hampshire for a year after college, I really wanted to try to get home to participate in person, but I'm afraid we'll have to do it virtually this time. Why don't we go to the next page, please. So I'm just, I've just got a few, a few pages to go through, high level information and really wanted to, to open it up to the Q and A as fast as possible. I mean, I'll assume that maybe you've heard of our name before, but just to give you a, a few factoids about, about what we're gonna talk about today, a little bit about Westinghouse and who we are, and then our AP1000 reactor, which is our large PWR lightwater reactor. and then our, our very, very small micro reactor, eVinci, which is a heat pipe reactor using TRISO fuel. So that's clearly NextGen. And then our SMR, which is a lightwater version, I call it the miniature AP1000. And then talk a little bit about our Newington facility. So with that one, we go to the next page, please.

(00:50:57):

So about Westinghouse, I mean, we've been in leading the nuclear industry for over 70 years. Over half the reactors in the world use Westinghouse technology, either direct because we gave, we, we built it, or because we licensed it. I mean, what a lot of people don't realize is that our two biggest competitors, the Korean state-owned entity and the French state-owned entity we actually had joint ventures and licensed our technology to them, and then eventually they became our competitors. So we've really, truly been leading the, the, the industry since, you know, the very, very beginning. We we're global. We've got, you know, 21 countries. We've got offices we've got four business units that are global in nature. We have our operating plant services business. It's just like, it sounds, it's, it's services and spare parts for, for operating reactors. Our nuclear fuel business is the same, you know, fresh fuel for, for operating reactors. And there's my business with Energy Systems, which is the new plant business. So it's new reactors of all sizes. It's also our long duration energy storage technology, which is non-nuclear, but, and then environmental services, which is largely decommissioning for both commercial and government nuclear facilities when they've reached their, the end of their life. So why don't we go to the next page, please.

(00:52:20):

So here's just a snapshot of kind of what I just said, so I won't repeat it all, but you can just see a few of our, a few of our neat things here with with fuel and various components that we manufacture. We

manufacture a lot of things ourselves. We also source components from all around the world with a dedicated supply chain, which is, you know, a very complicated thing for, for a new company. And that's, as we talk about the varying technologies out there, there's a lot of neat ideas out there. There's a lot of great smart people and, and startup companies out there. But getting a an experienced manufacturing supply chain is one of the most difficult things to do for a new company. And I, I wouldn't, and we certainly learned some lessons along those lines, and I, I think somebody earlier mentioned some of the challenges at Vogtle, which I'll talk about later.

(00:53:13):

Because supply chain is, is a big deal when it comes to succeeding on new, new plant projects of any size. Why don't we go to the next page, please. So, first, like to talk about my baby at Vogtle. This is unit three. this unit will be starting up in the next few days. Knock on wood. initial criticality should take place in the next couple of weeks. It is the safest, the most advanced reactor available in the world today. we have four operating in China. We have four more under construction in China. We have two units obviously at Vogel that are near in completion. One is complete, the other will be complete in a couple of months. And starting up later this year. We also have firm commitments for at least 14 more in Poland, China, and Ukraine. And you may have seen last week that Bulgaria announced that its legislature had voted to negotiate an agreement with the US government for one, if not two more AP1000s that would be sole sourced to us in Bulgaria.

(00:54:21):

And, you know, this is really the leading technology in the world right now. It is nth of a kind. It was painful, Vogtle was painful. Let's not kid ourselves. We know what caused the challenges. We've addressed those challenges. The three biggest lessons learned from Vogtle and, and V.C. Summer, where don't start construction with your design significantly incomplete. We fixed that. We have a hundred percent design. We have six units that have been been built identical. We won't change our design for anyone. And so when I, when I go around the world talking to new customers, you know, I say, well, I'll paint it pink, I'll paint it blue. But that's about it. We're not changing anything else. We have a standard design, it's industry leading. and we're not changing it. And so that's a critical lesson learned from Vogtle. the second is to have an experienced constructor.

(00:55:15):

We obviously had an very inexperienced constructor, had never built a nuclear plant. They happened to be our 20% owner. So we didn't have a choice and we paid for it, and we were jointly and severally liable with that constructor. So when they started having financial challenges, it took us down. And that's why we, we went into chapter 11 in 2017. And the third major lesson learned goes back to the supply chain that I talked about before. We also had some suppliers of key components. The first components that, that go into the reactor building, the structural modules. We had inexperienced suppliers and that set the projects back big time from a schedule and a quality standpoint. Now we've solved that, we've replaced them with American and Canadian suppliers who, who are nuclear qualified, nuclear competent and, and ended up doing a great job and we won't change from them.

(00:56:11):

So that's, those are the three less key lessons learned from vog. Painful process problems fixed. And, and this is now, we we're excited. We've got line of sight to more than 30 reactors, central line nation of Europe that we should be awarded in the next five to 10 years. you know, Europe is different than the US obviously. almost all the utilities are state owned, so they take direction from the government. And when the government says we commit to decarbonize, the utilities salute. And so you've got a number of countries who are literally shutting down all coal and will be shutting down gas over time. And they're

committed to decarbonize and they realize that renewables aren't enough. They never will be enough. They're important, but you need some other baseline base load, source of electricity and central heating, which is real big in Europe.

(00:57:04):

And so the AP 1000 is extremely well positioned in particular in central and east eastern Europe where we're competing against the French and the Koreans, who for the most part have first of a kind technologies. And here we are nth of a kind. The next, the next reactor we start construction will be serial number 13. And that puts us in a pretty good position from that standpoint. you can see some of the factoids there. It's almost 1200 megawatts. You'll, you'll, it's called the, the 1000. I don't know why named a long time ago, we, we knew it would generate over 1100, but it's really generating almost 1200. Why don't we go to the next page, Bruce. There's a few other data points that I think are important as, as we talk about the AP 1000. These are two units in China that are operating at the same site.

(00:57:55):

The most important performance metrics for an owner are safety and operating availability. How, how, what percentage of time is my reactor available to generate electricity? And you can see there that our reactors over almost five years are generating 92.5% availability. That's best in class in the world. They're much, much simpler units, fully passive safety, much less equipment to maintain. and because of that they just operate flawlessly. And, and you could see the startup, this, this is when you build a new reactor, typically the commissioning process, once you test it and you load fuel, it typically takes about one year until you're at commercial operations. Various tests, very, you know, the reactors typically will trip and shut themselves down because of issues. You, we've lowered that almost a year average to five months or less at every single unit. And we anticipate Vogtle will achieve the same thing.

Rep Michael Harrington (00:59:01):

Excuse me, question.

David Durham, Westinghouse (00:59:03):

Sure, go ahead.

Rep Michael Harrington (00:59:04):

Yeah, I, like I said, I can't raise my hand. I'm sorry to interrupt you when you, you're using the term, okay, availability factor where normally people use capacity factor, because I mean, you could be available but not running. So are you, is this a new term that you're saying, or this

David Durham, Westinghouse (00:59:18):

This is the most relevant term. This is the most relevant term capacity factor takes into things like the it didn't generate electricity because the regulators shut the reactor down for a while. And this, we see this in China. When China has national holidays, industry shuts down and so they don't need the electricity. So the regulator will typically say, shut that reactor down. So that will affect the capacity factor, but that's not the reactor's fault, that's not the operator's fault. The most important is what percentage of time is your reactor available to generate.

Rep Michael Harrington (01:00:01):

And new able to cycle? And that's an important,

David Durham, Westinghouse (01:00:03):

Sorry, go ahead.

Rep Michael Harrington (01:00:04):

No, they're able to cycle the reactors in China for like one or two, I mean a hundred percent power down to zero for a couple of days, then back up again. That's not kinda put a little bit of wear and tear on the vessel.

David Durham, Westinghouse (01:00:16):

No, it doesn't put wear and tear. It, it, it does affect fuel life. But they do do that. And much of Europe does that as well. I mean, load follow mode is critically important and that's one of the criticisms of large reactors. They can't load follow, right? And so if you're gonna frequently ramp down, you know, they're not, they're not efficient and most reactors you have to use boron. So then you have to do chemical cleanup of your water, right? The AP 1000 doesn't require boron and it cycles, it load follows with ramp rates faster than a gas plant, one megawatt per second.

Rep Michael Harrington (01:00:52):

So it's basically, excuse me again, it's basically then just a control rod manipulation. There's no boron injection.

David Durham, Westinghouse (01:00:59):

It's b Yeah, no, no boron injection. It's, it's, we have two things that are different. It's the the new control rod blades that we have and then it's the oversized pressurizer allows us to cycle this thing much faster up and down at one megawatt a second. And that's huge.

Rep Michael Harrington (01:01:18):

Wow. That is fast. It's, it's blazing for a reactor.

David Durham, Westinghouse (01:01:23):

<laugh>. It really is. I mean, it is better than a gas plant. So this is, you know, this is a game changing technology. I mean, this isn't, you know, your mother's Chevy. This, this is a and and react. And you know what's interesting? The southern operators are finding this out. It's, yes, it's a PWR. Yes, it's a lightwater reactor. Yes, there's lots of similarities, but it's also very, very different. How you start it up, how you operate. It, it, you can't just walk in and say, well, I've operated, you know, another unit at a different site. I know how to operate this reactor. There it is different. It is much different. It is much better. And with the safety systems and the fully passive safety systems, I mean, it, it has, it, it, it it is the safest reactor in the world, bar none.

(01:02:11):

And it's the only reactor capable of station blackout cope. And that's, you know, that's the, if I like to say this to people, if Fukushima had happened with operating AP1000s it would've been a total non-event because the plant will shut itself down with zero human action with zero backup sources of electricity. And it will keep the fuel cold cooled, excuse me, for 72 plus hours with no human action whatsoever.

And then the only thing you need to do to keep it cool past the 72 hours is any two of us could go to Home Depot and buy a small water pump and a garden hose, and we could use any source of water we wanted and we could refill the tank at the top of the reactor and it would cool for another 72 hours.

(01:03:02):

I mean, this is, this is a, a game changing technology. And you know, it was designed with station blackout in mind. You know, every other technology that's out there and there's lots of good reactors and they're all safe. But every other technology out there that is available on the market today is active, only has active safety systems. So you need backup sources of electricity, you need backup sources of water. And you know, one of our competitors, you know, they, they, they wanted to minimize the chance of station blackout. So they have four of everything. Well, that sounds great, but having four of everything makes this reactor just monstrosity size wise. And the cost is to both build it and operate it is far more and it makes it very complicated. We've, David, this the opposite. Go ahead please.

Rep Keith Ammon (01:03:58):

Sarah, would you like to ask question?

Sarah Abramson, C-10 Foundation (01:04:00):

Yes. Yeah. this is Sarah Abramson. I wanted to know as we're talking about this, I I'm thinking of refueling frequency is, is, can you speak to that?

David Durham, Westinghouse (01:04:10):

It's the same. It's, it's, you, you can choose it's 18 months to two years. This is, this is a regular PWR from, from that standpoint as far as the fuel and the frequency and, and the fuel loading and unloading and all that kind of thing. Was there another question or Sarah, did you have another one?

Rep Keith Ammon (01:04:36):

I think that was it.

Sarah Abramson, C-10 Foundation (01:04:36):

No, not right now. Thank you.

David Durham, Westinghouse (01:04:37):

Okay. So, you know, we're very proud of this and like I said before, we've got line a clear line of sight to over 30 units in the next five to 10 years. And, you know, maybe we won't win every one. Most people, usually you don't, but I bet we win most of them. And so we're gonna have a very significant AP1000 operating fleet. And now frankly, we're starting to get interest from US industries. You know, they were all kind of waiting for Vogel. Now Vogel's getting close and I'm optimistic within the next couple years you'll see, you know, I I believe a couple, I'll say a couple at least US industries all of a sudden say this makes sense for them as well. If no other questions, maybe we can go the opposite spectrum. And let's talk about eVinci back. One more please.

Rep Keith Ammon (01:05:35):

Back one more.

David Durham, Westinghouse (01:05:36):

There we go. Yeah. eVinci. This, this is our, this is our latest technology that we're working on. We've been working on this for a long time. We licensed this from Los Alamos National Laboratory. This is a, excuse me,

Rep Michael Harrington (01:05:51):

Sorry. I'm sorry. I had a question. I was having trouble with my computer. Be before you leave the, the last thing. (Oh sure.) There, did you talk a lot about supply chain and setting it up and everything and of course, you know, over the years as the reactors all got built and turned into more of just operating rather than building new ones, the amount of suppliers drastically reduced. Mm-hmm. <affirmative> and of course the whole 10 CFR 21 commercial grade dedication came about. And you are building these newer reactors now. I know there's less safety related parts, but, but still obviously the need for quality control. Do, do you have manufacturers that are full appendix B certified or is Westinghouse going there and sort of like providing the additional quality control and quality assurance themselves?

David Durham, Westinghouse (01:06:34):

It's a little of both. It's a little of both. We, we do have some that are but our supply chain, you know, it's a global supply chain. We do not have a, a fully capable US supply chain for every single major component. As an example, steam generators. Currently we get them from Korea or Japan. We could also get them from France. We haven't yet, maybe we will in the future, but there's no US supplier ca right, right now, you know, capable with the facility and the equipment of manufacturing the steam generators for the same with the reactor pressure vessel. But then, you know, on the flip side, you can look at our reactor cooling pumps, which are, are unique in the world for commercial reactors. We get them from the United States and Curtis Wright EMD, and they're the manufacturer of coolant pumps for the nuclear navy. So these are based on, on pumps that they provide, you know, larger pumps, but that they provide for the Navy and they're very different than anything out there. And they're sealed. And so you don't have reactor coolant leaks like you do at most have to worry about at, at at most reactors. So we do have some very, very competent suppliers in the US but it's not the full supply chain.

Rep Michael Harrington (01:07:53):

As you start to ramp up here with more production, do you envision supply chain as being a problem or being it getting better? Because I mean, if you're building 10 reactors is obviously a lot more business that you can bring to someone so they can ramp up and, you know, spend all the additional money to get a, appennix B QA program approved and so forth. Or as you're looking at it is, it's only so many people that can build this stuff, period. So you're gonna start getting problems as volume goes up.

David Durham, Westinghouse (01:08:20):

No, I think you definitely, we, we have, we see line of sight to, to building up capabilities. I don't see us being resource constrained from a supplier standpoint at this point. I mean, you know, we had four projects underway before with China and the US eight units all at once. We clearly have the capability both in supply chain and internally to have a similar situation developed in the next couple years which is likely to have three or four projects, eight-ish reactors underway, various stages, but underway at the same time. And I'm not worried about that at all from a supply chain standpoint. Now, if we get, you know, if we hit the jackpot and have eight different projects with 16 reactors underway, then could we start getting some squeeze? Yeah, we probably could, but I think that's realistically probably close to 10

years away. And so I think there's lots of time to be working on that. I hope that answered your question.

Rep Michael Harrington (01:09:27):

Thank you. Sure. Yes it does. Thank you.

Rep Keith Ammon (01:09:30):

I think we have one, we have one other hand up. sure. Paul, would you unmute, please and ask your question?

Paul Gunter, Beyond Nuclear (01:09:40):

Yes. Thank you. Paul Gunter, Beyond Nuclear. it, while we're on the subject of supply chain David can you talk a little bit about fuel supply right now in the United States? It's my understanding that roughly 40% of US nuclear fuel right now is coming from Russia and Russia controlled Uzbekistan and Kazakhstan. Can, can you speak a little bit about where we're at right now, the status of US nuclear fuel?

David Durham, Westinghouse (01:10:13):

Yeah, I think if I could maybe distinguish though fuel from uranium, because I think I, I believe the, the, the facts you quoted are true for uranium, but not for fuel. I mean, you have to have uranium and then have it, you know, converted and enriched and then made into pellets and then fabricated into fuel. So there is that underlying issue with uranium, but from the standpoint of everything else, that's all that's, that's not coming from those countries. And so from that standpoint, you know, there, there're, there're different issues. I didn't explain that very well, but does that make sense?

Paul Gunter, Beyond Nuclear (01:10:57):

Well, they're related it and that's the, you know, particularly when we're talking about energy security and energy independence. Mm-hmm. it, it's my understanding that, and, you know, Congress right now is stalled on this. So and part of it is also that particularly Russia is selling uranium you know, it's and it's, it's also enriching it as well. And it currently the Nuclear Energy Institute is sort of captured by the low cost of Russian fuel. So in, in, you know, that situation's not exactly improving right now. And it does raise a concern not only for supply chain, but for energy security here in the United States.

David Durham, Westinghouse (01:11:48):

I, I mean, I agree with you. I don't see Kazakhstan as been, you know, totally a bad guy here. I mean, we, we have a good relationship with them. Our soon to be 49% owner, CAMCO, has a joint venture with them. And so we don't see that as being particularly at risk, but obviously buying from Russia is not something any of us wanna do going forward. I, you know, I guess I don't wanna get into US policy issues. Clearly we have work to do to develop additional capability. As far as the underlying uranium supply, there are other sources though than Russia. There's Australia, there's other countries in Africa, there's obviously Canada. There's some capability obviously here in the us. So I guess just my personal feeling, but I'm not a uranium mining expert, but my personal feeling is uranium isn't the issue as much as it is the higher enriched uranium that's coming from Russia, where we do not have a domestic source of enrichment right now. And that's gonna be necessary for the Gen IV reactors. that, you know, that you've been hearing about looking at some of the materials that, that are out there and some of the

others that have spoken to you. However, those reactors aren't gonna be on the market tomorrow. and some of them won't be on the market for 20 years. So it's

Rep Michael Harrington (01:13:16):

Follow up on that.

David Durham, Westinghouse (01:13:18):

Go ahead.

Rep Michael Harrington (01:13:19):

Yeah. On the HALEU is that sort of like no one can decide we going have the demand for it and then we're going to fabricate it? Or is it gonna have to be a fabrication facility first? It's sort of a chicken and egg situation. I know, I know. I don't really see you. Do you have any thoughts on how that's gonna play out? Because it's obviously a lot of those Gen IVs just about all of 'em require it and, you know, don't.

David Durham, Westinghouse (01:13:39):

And so does this eVinci micro reactor that's on the screen in front of you.

Rep Michael Harrington (01:13:42):

That's what I was thinking. Ok.

David Durham, Westinghouse (01:13:44):

And now, fortunately it's a smaller reactor. I mean, this thing fits on the back of a 40 foot truck, so it's not massive quantities, but it's still, it's still a lot of HALEU. and so we have a vest might, we're spending half a billion dollars developing this thing and having it ready for the market before the end of this decade, and we wanna make sure that there's enough fuel or enough, you know.

Rep Michael Harrington (01:14:07):

Yeah, you might just take a second to explain to everybody what HALEU is because I'm not sure everybody on the commission knows.

David Durham, Westinghouse (01:14:13):

If you think of a lightwater reactor, most lightwater, and I, again, I apologize, I'm not a fuel expert, but I know enough to be somewhat competent. Most lightwater reactors are using slightly enrich uranium, 5%, 4.5% in that range, sometimes up to six. HALEU fuel is a much higher degree of enrichment. As an example, the, the eVinci micro reactor that you're looking at right here is 19.75% enrichment. So it's a much higher degree of enrichment. It runs a lot hotter. That's typically true for I think just about all the Gen IV options that are, that are being worked on. and so that's, that's the difference is that, is that element of enrichment. And right now we do not have an enrichment source for this level of enrichment in the US right now. We can only buy it from Russia.

(01:15:11):

And so we're working on that issue with the US government, with the British government, we have fuel manufacturing facilities in the US in, in England and also in Sweden. And the English government in particular is working hard at developing capability in country as well. So we're working with both the US

and the UK governments because we need it just like everyone else. I mean, and we are confident this reactor will be ready for market 2027, end of 2027. And so we need fuel. Right now we have line of sight to the first couple of units worth, if you will, from the d from the Department of Energy, but it's coming from the NNSA and there's only so much that the NNSA has in stock or that they're let up. So this is, that isn't a commercial solution, it's just a get started solution, if you will.

Rep Michael Harrington (01:16:06):

How long would it take? Excuse me. How long do you think it would take if someone made a decision, some company, through either through government funding or just by on their own, decide, okay, we're gonna make we'll have enrichment capabilities up to 20%. I know once you get over 10%, there's a whole new set of rules. But would that be five years before they could design and build a plant? Would it be 10 years?

David Durham, Westinghouse (01:16:28):

Well, the best person or the best company to answer that for you is Centrus here in the US. They used to be USEC, United States Enrichment Corp. And you know, we're very close with them and their leadership. I don't wanna speak for them. I think it's more like five, but that's just a off the top of my head. Okay.

Rep Michael Harrington (01:16:50):

Fair enough. Thank you.

David Durham, Westinghouse (01:16:52):

They are working on that and make it answer it much more definitively. Okay. Talk a little bit more about the the, eVinci, this is a very different reactor. There's only one operating piece of equipment. This reactor is a battery. It sits there and it generates heat, it generates hot air. It is a a heat pipe, TRISO fuel reactor. The one moving part is the drum that basically turns it off and on. it does not have any, you know, cooling water systems or anything like that. Basically, hot air comes out one end, it goes into a Brighton converter and, and generates electricity. it is either on or it's off. it will operate at eight plus years without refueling. It can be transported in three trucks, three different com components, one on one component on each truck or on train or on ship, whatever.

(01:17:55):

But just basically an 18 wheeler, three 18 wheelers, and then you bring it to a concrete pad and 30 days later you've got electricity because of the TRISO fuel. It's inherently safe. It will not meltdown. It only requires a very, very small EPZ around it. It is designed to compete against diesel, which I like to say is the worst or the worst from a carbon, you know, standpoint. And, you know, sitting in Concord, New Hampshire, you're probably not thinking about diesel generating your electricity. But if you're, if you live in Alaska, you sure do, or Northern Canada or remote islands or all sorts of industries that are kind of remote like mines. And this technology has the ability to have just unlimited applications. We're, you know, we are awarded a contract by the marine industry to study putting eVinci, and it will work very, very well on cargo ships, which burn diesel.

(01:19:02):

And you know, diesel is typically very expensive and very dirty, and this competes head-to-head from a cost standpoint. And obviously it's zero carbon standpoint with diesel. it can be it's, it's, it's getting a lot of interest from the US and, and other allied nations military, both for base application. We're bidding a

job right now for first deployment up in Alaska. They're in Air Force base to replace diesel but also for Ford deployment and, and smaller versions of this for weapons systems that require electricity. And we've also won a contract with NASA for a small power plant up on the, up on the moon as part of the, you know commitment to, to send live missions to Mars. So the, the applications of this are spa incredible. We're in active discussions. You'll probably see some press fairly soon with major high tech companies who have committed to be carbon free.

(01:20:07):

They don't wanna be on the grid. They need 24 7, like think of a data center. Data center can't shut down. It cannot have power interruption or else it just creates massive problems for whether it's consumers or governments or whatever. We're getting, so, you know, they could have an a Vinci or two operating and they got 24 7 electricity nonstop for the next eight plus years. And at the end of the eight years, you simply remove the reactor component that holds the fuel. One of the three components that I talked about. You remove it and you plug and play a new one. And then you take the reactor away, will not be stored on site long term. You take the reactor away with the cement fuel, you take it back to our facility, we refuel it, we refuel it, and then obviously the cement fuel has to be, has to be stored somewhere, but it will not be on the site where the reactor is generating electricity.

(01:21:04):

So this is, this is designed to be operated remotely with not a single person on site. Now, will regulators agree to that? Probably not. We probably have some minimal operational capability and some minimal security capability. But the worst thing you could do to this would be, you know, for the high explosive to blow it up. And all that would do would be to spread the, the pellets, the fuel pellets around in the immediate area around the reactor and you cleaning this up and the area's clean and this cannot melt down like a, you know, like you think of Fukushima or something like that. So this is a game changer for us. This is a very, very exciting app. new technology. it is a gen four, but it's in a microversion. And we're on track to have this to the market by the end of 26, 27, I believe we'll be signing our first contract for the first unit in Canada which I hope will be within the next year. Any questions? Okay, why don't we go to the next page, please? I'm almost done.

Rep Michael Harrington (01:22:20):

One, one last question on that micro reactor. Sure. Yeah. sorry, I was a little, just having some button problems. what are we looking at for a, a delivered price on that? What's the range about?

David Durham, Westinghouse (01:22:33):

Well that's not something we're, we're still, that's not so something we would talk about, but it is more competitive from a LCOE standpoint than diesel. And, and if you look at where diesel is now, I mean, right now diesel is in the hundreds of dollars per megawatt. but you know, we, when we first started committing to this, over the last several years, we're thinking, well, it's gotta be, it's gotta be diesel diesel's, typically $300 to $400 a megawatt. It's gotta beat that. It's gonna beat that, gonna beat it by a lot. But this is not competitive with a large reactor or a gas plant. I mean, you're never gonna get that economy of scale, but it will compete absolutely with diesel. I mean, I want it to be in the $200 ish megawatt kind of thing and that's what we're shooting for.

Rep Michael Harrington (01:23:24):

Okay. So it would be there would be upfront cost associated, but the operational cost would be extremely low.

David Durham, Westinghouse (01:23:30):

That would be the LCOE, the levelized cost of electricity, over the eight year period. Yeah. The, the business model here is gonna be kind of interesting. I believe we'll have two different business models. I believe that when, for some customers we'll have a business model like you do now you're selling them a power plant, they operate it and they have the big capital cost up front, and then they have very, very, very inexpensive operations. And that's true for large reactors. It's just, obviously it's a much smaller, I mean, you're talking less than a hundred million dollars to buy one of these things. But you'll, I think you'll also have another model though, because you think about a mining operation in remote Canada or remote United States, they don't wanna own a nuclear battery. They're not, they're not nuclear operators. They want to buy electricity. So the other model, I believe will be one or two parties who own and operate these all over the place and have long-term power purchase agreements with customers who are buying clean electricity. So I think you'll see both of those business models and we're working towards both of those. They, you know, a lot of customers, they just want electricity. And so that's, that's what we'll give them for capital cost, they'll, they'll just pay for electricity every month.

Rep Keith Ammon (01:25:00):

We have a question from Paul. Paul, would you unmute and one more time, state your name and where you're from for the record? Hey, Paul

Paul Gunter, Beyond Nuclear (01:25:10):

Paul Gunter. Paul Gunter be on Nuclear and Tacoma Park, Maryland. again, we're a, Hey

Rep Keith Ammon (01:25:16):

Paul, can I, yeah. Are you a resident of New Hampshire?

Paul Gunter, Beyond Nuclear (01:25:21):

I used to be. I'm not, I'm not any longer.

Rep Keith Ammon (01:25:25):

Okay, thanks. Go ahead with the question.

Paul Gunter, Beyond Nuclear (01:25:30):

You know, I'm wondering if Mr. Durham could give us some insight on the upcoming congressional renewal of the Price Anderson Act in 2025. It's up for review and renewal. are these gen four reactors? Is there an interest in, on the part of Westinghouse to have limited liability covered by the federal taxpayer?

David Durham, Westinghouse (01:26:02):

Well, I'd say that there's, there's interest on behalf of every player in the industry that Price Anderson Act protections remain basically the same. That's a different way of answering your question, but I think I answered it. I mean, the, the liability is channeled to the operator. I mean, that's standard around the world because, you know, we, we can design and build a reactor, but the minute we sell it to someone, we have no control over how they operate it. So Price Anderson Act, you know, and all the other international liability regimes channel the the liability to the operator. And then there were various insurance and other regimes that kick in.

Paul Gunter, Beyond Nuclear (01:26:53):

It's just that the you know, again, the promise of inherent safety is undermined by the fact that it, the, the industry is protected from full liability and, and that, that remains a concern for these generation four reactors as well as we can see it.

Rep Keith Ammon (01:27:22):

Okay. Thank you. Let, let's keep going with the presentation, just doing a time check.

David Durham, Westinghouse (01:27:31):

Yep. I'll, I'll just a couple more minutes. I mean, this is, this is our, our, our new smr. This is basically, like I say, it's a miniature AP 1000. It's 300 megawatts instead of almost 1200. It is, everything else is virtually identical. The safety basis is the same, the licensing basis is the same. The components are the same, the suppliers are the same the all the same principles. So from that perspective, this isn't a first of a kind SMR, like everything else you've heard of you know, this is in operation and proven today it's just smaller. And so from that perspective, you know, we see a lot of interest in this, particularly from customers who are buying a one thousands because, you know, the same operators can go from facility to facility with only minimal, minimal retraining on, on this one. and so I just, you know, I don't have to go into a lot of details because I spent a lot of time talking about the AP 1000, but we're, we're excited about this and we have not been issuing press releases all over the place every time we talk to a utility.

(01:28:39):

So you haven't seen a lot about this in the press and you won't for a while. We'll start making noise when we hire, when we sign our first contract, but you know, it's, I just didn't wanna le a lot of people don't think that we're involved in the SMR application and we clearly are and we're working with a couple of customers extremely closely and I think we'll be signing our first customer fairly quickly as well. So I just wanted to share that.

(01:29:07):

Last page. I just wanted to spend a couple minutes because it's, it's about New Hampshire and you know, one of the things that New Hampshire does has a tremendous highly skilled facility in Newington that Westinghouse has had for a long time. you can see a couple of pictures, some very impressive machinery. Every AP1000 we sell generates a lot of jobs in Newington.

(01:29:41):

You can see all the reactor vessel internals come from Newington, the control ride drive mechanisms. our project in the Middle East on another technology that we license to the Koreans, the reactor cooling pumps came from Newington. this is a fantastic facility. It serves customers all around the world. and you know, we, we intend to hold this for the long run. And, and with the growth that I talked about in AP1000 program alone, much less eVinci, much less smr. we think Newton's got a bright future. So I just wanted to share that, just so, so that you're aware that's it for me and unless happy to answer any other questions.

Rep Michael Harrington (01:30:25):

Keith, I had another question. This is Mike. just as far as marketing goes, you mentioned various reactors you was discussing with various groups. Let's just

David Durham, Westinghouse (01:30:38):

Lost you Mike

Rep Michael Harrington (01:30:39):

... deregulated market like we have in a restructured market like we have in New England, or would these be going to vertically integrated utilities where the still they're not it's not merchant plants.

David Durham, Westinghouse (01:30:55):

Mike, I lost about half of what you said at the beginning. I heard the ending.

Rep Michael Harrington (01:31:00):

Would you, when you say you're talking to other utilities and utilities about the possibility of looking into building some of these plants mm-hmm. <affirmative> would you, those basically limited to vertically integrated utilities in the old style markets, not like New England where we have the merchant plants?

David Durham, Westinghouse (01:31:18):

You know, I think, I think we see the most interest in regulated states because you have regulators who are taking the long view and are willing to make a tough decision regarding a big investment for an 80 to a hundred year benefit.

Rep Michael Harrington (01:31:37):

You don't do they still, they still

David Durham, Westinghouse (01:31:40):

In a non-regulated market.

Rep Michael Harrington (01:31:42):

All right. Thank you. Do they still test react to cooling pump motors down at Newington?

David Durham, Westinghouse (01:31:47):

Yes, they do.

Rep Michael Harrington (01:31:48):

Okay, thank you.

David Durham, Westinghouse (01:31:52):

Sure.

Rep Michael Harrington (01:31:54):

Alright, and Sarah, you have your hand up again?

Sarah Abramson, C-10 Foundation (01:31:59):

I do. Sarah Abramson from C 10 Research and Education Foundation. I'm also a resident in Stratham, New Hampshire. Okay. I wanted to ask you David, when you talked about that there wouldn't be an EPZ

required for the even G model, I believe it was. is that something that you are sort of estimating or something that's been confirmed with you regulatorily?

David Durham, Westinghouse (01:32:22):

Good. There will be an EPZ, it'll just be very small, we believe, but it has not been approved by the regulator,

Sarah Abramson, C-10 Foundation (01:32:28):

The size of which?

David Durham, Westinghouse (01:32:29):

Which that is what we believe.

Sarah Abramson, C-10 Foundation (01:32:31):

Okay.

David Durham, Westinghouse (01:32:32):

Thank you. But yes, it has to be approved by the regulator we are in. just to share with you, we, we've shared all of our white papers with, with the nrc, so we're actively engaged in the beginning of the licensing process. We'll be submitting our design certification application, I think at the end of next year. So we anticipate having the design certified by, you know, the end of 2027. So then we'll know the answer to that question. Sarah,

Sarah Abramson, C-10 Foundation (01:32:59):

Thank you.

David Durham, Westinghouse (01:33:01):

Sure.

Rep Keith Ammon (01:33:04):

All right. Thank you. no questions in the room here. Any other questions online? Especially commission members, you have any questions? I'm looking for your hands. Just one final question from me. The AP1000, what percentage of the power plant is manufactured on site versus in a facility like Newington?

David Durham, Westinghouse (01:33:29):

Well, I guess it depends on what you mean by manufactured on site. I mean, we have, and I don't know the exact percentage just to share with you, but it, it is a, it is a reactor that unlike the traditional stick-built units and like the French are still building stick-built. And so the Koreans, we, we have over 200 very, very large modules. Some of these modules come complete from the manufacturing facility, and that could be in Japan, Korea, us, Canada, or they come in pieces and then they're fabricated together on site. So that's why it's, it's hard to give you an exact number, but it is not the, the, the old way of stick building where every single, you know, widget is welded on and every pipe is welded on, all on site. There is substantial amount of this that's, that's done in modules. I mean, some of these are the biggest

lifts in the world, like 2 million pound. That's, so we, we use the largest crane in the world for for building an AP1000 for these, the heavy modules.

Rep Keith Ammon (01:34:40):

And so that, that increases and improves quality control, I guess, to have standards in the manufacturing.

David Durham, Westinghouse (01:34:46):

Absolutely. It's either manufactured in shop in a, in a closed environment and much, much better quality control and safety control, or it's manu or it's fab or various or, or sub, you know, sub assemblies are assembled and fabricated together in a module assembly building on site, which is a great big huge butler building with a big, big crane. And so again, protected from the weather, better quality, better safety.

(01:35:17):

Helps schedule safety and quality more than anything doesn't make that big of a cost difference, but definitely helps in the safety schedule and quality standpoint.

(01:35:28):

I think, you know I didn't mention this before, I did mention that there are four AP one thousands under, under construction in China right now. The Chinese schedule calls for these to go from first concrete to fuel load in 52 months, and they're targeting 48 months. So that's the, that's the beauty of the modular approach. Once you've got it down and your and your suppliers have their quality down and your, your local construction staff have done it a couple of times, these things can come out in much more of an assembly line kind of timeframe. So we're very optimistic for our next projects that you'll see similar kinds of timings for construction. I mean, we, we understand the challenges that Vogtle had, you're well documented. but like I mentioned before, we learned our lessons and now these things are going up very, very quickly.

Rep Keith Ammon (01:36:25):

Alright, and Sarah, you have one final question?

Sarah Abramson, C-10 Foundation (01:36:30):

I do. in, in speaking with that Vogtle construction and you mentioned some of the issues being perhaps the contractor wasn't the most competent, but you felt a little put in a corner, you had to select them. I had it sudden in the beginning that, you know, we have seen a lot of challenges with the Seabrook plant and the unique concrete issues that it faces when you're looking at construction. Have there been a lessons learned about alkali-silica reaction and its effect on the long-term operability of, of nuclear plants and the types of aggregates selected for concrete? Is that, has that been factored into some of your designs?

David Durham, Westinghouse (01:37:08):

We have a, we have a lessons learned database for the AP1000 that has like 17,000 items. Sarah, I'm not a concrete expert. I can find out the answer to that question. I've got to believe that the answer to that is yes particularly because it is a well-documented issue. But I don't, I don't have the specific answer on the top of my head. I'm just not a concrete guy.

Sarah Abramson, C-10 Foundation (01:37:30):

Very few people are <laugh>, so I didn't expect you to know the signs of it. But you, you mentioned an 80 to 100 year kind of operation timeframe, a payoff for the initial investment. And of course, in order to achieve that type of long-term offerability, you'd wanna make sure that the concrete doesn't crack after 30 years.

David Durham, Westinghouse (01:37:47):

Sure, absolutely. And, and I will point this out. Unlike, unlike the rest of the US fleet who were originally licensed for 40 years, the AP1000 initial license is for 60 years and we're confident it'll go to a hundred. So it is a different, totally different pedigree from the standpoint of taking everything learned in the past and, and the regulator agreeing that yes, this should last a lot longer.

Rep Michael Harrington (01:38:15):

I'll ask one off the topic question here. In your travels, have you ever come across at Westinghouse, Carrie Hanahan? I know there's a lot of people that work there, but he was someone that I dealt with quote a lot in the past.

David Durham, Westinghouse (01:38:29):

I don't know the name sounds familiar. I've got a couple of colleagues listening, I'm gonna have to find out. I don't think I have, but the name sounds familiar for some reason. So maybe I saw something.

Rep Michael Harrington (01:38:39):

He was in the spare parts part program, but if you do run into him or know anybody, tell him Mike Harrington said hi. He'll know who I am.

David Durham, Westinghouse (01:38:46):

I'll do that. I'm gonna look for him on the, on our employee listing right after we hang up. Thanks.

Rep Michael Harrington (01:38:52):

Thanks.

Rep Keith Ammon (01:38:54):

All right. Thank you very much David. And if we need to get a hold of you if we have any questions, future what's the best way to do that?

David Durham, Westinghouse (01:39:02):

Absolutely. two different ways. My cell number is [removed] and my email is Durham, D as in David, C as in charlie @ westinghouse.com. And hopefully there'll be another occasion to get together and I can do it in person.

Rep Keith Ammon (01:39:27):

That would be great. I'm thinking the Science Technology and Energy committee takes field trips periodically and that newington facility. I don't know if they've been there recently, but that seems like a good opportunity for a field trip.

David Durham, Westinghouse (01:39:42):

Absolutely. We'd love to host them.

Rep Keith Ammon (01:39:44):

And Mike Harrington, you I'm sure you could facilitate that if you want to. Alright, great. That, that was a great

Rep Michael Harrington (01:39:52):

Presentation, Thomas.

Rep Keith Ammon (01:39:54):

Yeah,

Rep Michael Harrington (01:39:56):

I just said I'll bring it up to Doug Thomas. He schedules that stuff, but I'm sure it sounds like a good place to go. Yep, yep. I haven't been there in a long time, so.

Rep Keith Ammon (01:40:05):

Alright. Right. Excellent. Thank you Mr. Durham. And we really appreciate you taking the time and it's nice to know that you're next door in Maine currently, <laugh>, hopefully you're not, hopefully you can get out your front door with the snow.

David Durham, Westinghouse (01:40:18):

<laugh>. Thanks all very much. take care.

Rep Keith Ammon (01:40:21):

Okay, you too. Thank you. Bye.

(01:40:25):

All right. Time check, it's 3:15. We'll spend another five minutes just going over some of the, the less items on the agenda. we have a, an item for additional public input. Is it anything left unsaid? Raise your hand now if you're on the Zoom meeting. Okay. We have any, any discussion from the committee the commission members. one item that we have is Matt Lavander sent around this Virginia Innovative Nuclear hub document. And, and it's available on energy, sorry, https://nuclearnh.energy. If you go to today's meeting page, you can download it there if you're online I could pull it up here, we could talk about it for a minute if that suits everyone. And Matt, if you have anything to, to add on that? Can you see the document here? I think it's, no, maybe it's not screen shirt here. Lemme see.

Matt Levander, Seabrook (01:41:49):

I can't see it. I don't have a whole lot to share on it. I will say, you know, Virginia is a regulated market versus us being de regulated, so it is, it is a pretty big difference as far as what it's gonna take to get nuclear in the state. It, it does do a good job outlining all the things that are gonna be required if a state wants to build nuclear. It's not just the, the construction of the plant itself, it's the workforce, it's the education. it is a pretty unique skillset for a lot of the folks that work at these plants. So I I thought it was

a pretty, pretty inclusive document of all the things that you know, need to be considered if we're gonna move forward with Nuclear in New Hampshire.

Rep Keith Ammon (01:42:32):

And it outlines sort of like a, a partnership between universities in Virginia. There's a lot of focus on workforce development in the documents. And they're looking for federal funding as well as like residual income from potential patents that the group might come up with. And they have a governance board and an advisory committee. So it's pretty well thought out approach. I don't know if it's good fit for our state, but it's interesting to see that a place like Virginia is making it a priority as far as developing and, and exploring these different technologies that are coming. All right. So it's available on the webpage for this meeting, nuclearnh.energy. You can download it and review it if you'd like. Any other comments on that document?

(01:43:34):

All right. I think we'll have discussion offline as far as topics for the next meeting. I'm open to suggestions for future presentations. We're still in the information gathering stage. I do have four SMR manufacturers sort of lined up for potential presenters. And those are BWXT, Terra Power X-Energy and Terrestrial Energy. So we, we have at least four manufacturers that we haven't heard from. So I guess we'll take that discussion offline for the topics for the next meeting with the commission members, unless anybody has any comments to make now.

Rep Michael Harrington (01:44:22):

My only comment, Keith, would be that looking ahead to the next meeting on the 27th, I won't be available if we're gonna stick with Monday scheduling. Okay. So 27th of February I won't be available and the 20th is a holiday. So

Rep Keith Ammon (01:44:36):

So 20th and 27th are out.

Rep Michael Harrington (01:44:39):

Yeah. And I think wife hearing, yeah.

Marc Brown (01:44:42):

And NARUC is the 13th.

Rep Keith Ammon (01:44:46):

Say that again? NARUC. Okay. So 13th is out.

Rep Michael Harrington (01:44:51):

Maybe, maybe March or whatever that would be March 6th. Just it's a potential for the next meeting.

Rep Keith Ammon (01:45:00):

Science and tech, are they meeting Mondays? Is that right?

Rep Michael Harrington (01:45:03):

They're meeting Mondays, but I I think by March 6th we probably will have most of them outta the way. I'm not sure. I can't, I can't be positive, but that is the day we meet so Mondays, so.

Rep Keith Ammon (01:45:14):

Okay. I, I think Mondays

Rep Michael Harrington (01:45:19):

As, as soon as I hear anything more, I'll let you know. Yeah. All right. It's just tough because you know, normally Mondays and Fridays were always open in the past, but now they're not, not so.

Rep Keith Ammon (01:45:27):

Right, right. Alright. And Chris McLarnon is that, does Monday work okay for you? I, I know we had some issues in the past with scheduling.

Chris McLarnon (01:45:38):

Monday's difficult for me because I have class both at 10 and at one.

Rep Keith Ammon (01:45:44):

Okay.

Chris McLarnon (01:45:45):

Then I have to be on campus.

Rep Keith Ammon (01:45:47):

10 at one on campus. So Monday's,

Chris McLarnon (01:45:50):

Monday, Monday's not a good, great day for me. so

Rep Keith Ammon (01:45:54):

Friday would be the only other day because the statehouse things happening Tuesday through Thursday at least for the next couple of months. So Friday,

Chris McLarnon (01:46:04):

Yeah,

Rep Keith Ammon (01:46:04):

For me Friday works better. Okay. Yeah. All right, so we'll we'll we'll take a poll and set the next meeting that way. That seems to be working out pretty well. alright. So unless there's anything else to cover, just give everyone one last second. If you'd like to chime in we'll call the meeting adjourned. And I thought we had two great presentations today, so thank you for attending everyone. Hopefully it gave you something to do on a snow day and we'll try to get back more in person the next meeting. Okay. Meeting adjourned.

Marc Brown (01:46:51):
Thanks Keith. Take care everybody.

Chris McLarnon (01:46:55):
Thanks.