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Committee on Environment
and Public Works

Subcommittee on Clean Air, Climate
And Nuclear Innovation and Safety

Washington, D.C.

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A LEGISLATIVE HEARING TO EXAMINE S. ___, BUILD NUCLEAR WITH LOCAL MATERIALS ACT, DISCUSSION DRAFT S. ___, RECHARGE ACT, AND DISCUSSION DRAFT S. ___, ENRICHMENT LICENSING MODERNIZATION ACT

Wednesday, May 20, 2026

United States Senate
Committee on Environment and Public Works
Subcommittee on Clean Air, Climate
and Nuclear Innovation and Safety
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:48 a.m. in room 562, Dirksen Senate Office Building, the Honorable Cynthia Lummis [chairman of the subcommittee] presiding.

Present: Senators Lummis, Kelly, Capito.

STATEMENT OF THE HONORABLE CYNTHIA LUMMIS, A UNITED STATES SENATOR FROM THE STATE OF WYOMING

Senator Lummis. Good morning. Welcome to the EPW Committee, and its Subcommittee on Clean Air, Climate and Nuclear Innovation and Safety.

Now, this hearing is entitled, A Legislative Hearing to Examine the Build Nuclear with Local Materials Act, the Discussion Draft RECHARGE Act, and Discussion Draft Enrichment Licensing Modernization Act.

Thank you to our witnesses and attendees. I am so grateful that Ranking Member Kelly, who is very conversant with these issues and very involved in this subject, is here today. Thank you, Senator Kelly.

I am going to begin with my opening statement, and then I have to go to another committee to introduce a colleague. Then I will be back. And Senator Kelly will take the gavel for that time.

Dr. Stein, I presume?

[Laughter.]

Senator Lummis. I am so sorry that you got waylaid in line. But we are delighted you are here.

I want to thank, again, all our witnesses for your willingness to inform our discussion today. We look forward to hearing the download of your expertise.

I will start with my opening statement. America must remain an economic superpower in the decades ahead, and that requires smart energy policy to ensure the United States, and States like Wyoming and Arizona, continue to lead the way.

For my State of Wyoming, we have fueled American prosperity through coal, natural gas, oil, and uranium production for decades. We even have a miner on our State seal. We have number one status in uranium reserves, and had a robust uranium industry for years before the technology fell asleep.

But like Rumpelstiltskin, isn't that who fell asleep for years? Rip Van Winkle, excuse me, it has awakened and is more robust than ever. Wyoming workers and producers strengthen our grid and support the reliable energy systems that make economic growth and national security possible.

We all know that our new embrace of technology, including artificial intelligence, the data centers that support them, the advanced manufacturing that comes from it, bitcoin mining, all of these demand reliable baseload power, and that is the key, the baseload power we need to continue to grow.

The United States needs more reliable generation, more infrastructure, and a diverse energy strategy that supports affordability, reliability, and long-term energy security. Advanced nuclear energy must be part of that future. We are so glad that Rip Van Winkle is awake, and alive and well, and

experts representing it are here today to help us understand it.

Senator Kelly and I have a bill that we are going to talk about today, the ADVANCE ACT, and it has bipartisan support, in addition to us. We need to discuss that bill today and work to build on the momentum that other bills before us help represent.

The Build Nuclear with Local Materials Act addresses unnecessary cost escalation in nuclear reactor construction by modernizing of the NRC rules governing commercial-grade steel and concrete in non-safety-related structures while preserving oversight of safety-critical systems.

That means more opportunities for local manufacturers, suppliers, and skilled workers to participate in nuclear projects, while reducing unnecessary costs.

We will also examine the RECHARGE Act. It is a discussion draft, and will focus on deploying advanced reactors at retired fossil fuel facilities and brownfield sites. These communities already have energy infrastructure and experienced workforces. Repurposing these sites for advanced nuclear development can attract long-term investment, strengthen local tax bases, and create new opportunities in energy communities.

Wyoming is already demonstrating how this model can work. TerraPower, which is a project going up in my State near Kemmerer, Wyoming, is being developed on a brownfield site. It is bringing new investment and development to an existing energy

experienced community.

Finally, we will examine the Modernizing Enrichment Facility Licensing Act. It also is a discussion draft. As the United States moves towards ending reliance on Russian uranium imports in 2028, which is a big deal, and we have to be ready for it, this is about strengthening domestic uranium conversion and enrichment capacity, which are very limited.

We only have one conversion facility, and perhaps only two enrichment facilities in the whole Country. So this is really important for both energy security and national security.

My State of Wyoming is excited about this technology. We are positioned to lead. Wyoming has uranium resources and uranium mines. A lot of them are in-situ mines, rather than open pit mines. It is a transformative technology in producing uranium out of the ground.

It is amazing. When you come upon it, it looks like you are looking at a bunch of beehives off in the distance. And it is a uranium field, so the surface disturbance is almost nil. It is just incredible. I just admire these brilliant minds that work in this area so much.

What America lacks, as we said, is the domestic enrichment capacity necessary to support a growing nuclear sector. This committee needs to explore and I am committed to fixing policies that limit the ability of Wyoming's and other States' resources

to power the world.

The discussion draft seeks to modernize portions of the licensing process while maintaining NRC oversight and operating license agreements. However, discussions on this proposal remain ongoing, and I trust today's hearing will inform negotiations with Senator Kelly moving forward.

If America intends to lead the future of advanced manufacturing, artificial intelligence, digital infrastructure, and emerging technologies, then we must also lead in reliable energy production, especially baseload. That future will require more power, more investment, and especially smarter policies that enable Wyoming and other American energy communities to continue to power this Country.

Again, I want to thank our witnesses and I look forward to your testimony. I am going to go introduce a friend in another committee who has been nominated for an ambassadorship.

You are now in the capable hands of Senator Kelly. Here is the gavel, and I will see you in a little bit. Thank you.

[The prepared statement of Senator Lummis follows:]

STATEMENT OF THE HONORABLE MARK KELLY, A UNITED STATES SENATOR FROM THE STATE OF ARIZONA

Senator Kelly. [Presiding.] Thank you, Madam Chair. Thank you for all the work you have done on this issue. Thank you to our witnesses for appearing before the subcommittee today to discuss nuclear deployment and the future of American energy security.

Energy demand is going up. We all see it. We know it. It is going to continue to grow in Wyoming and Arizona, across the Country. We are going to need more reliable, affordable and abundant power on the grid. That is clear.

Nuclear energy needs to be part of this solution. It is a proven technology. We have been building and operating nuclear reactors since the 1960s. And this is not an engineering problem. It is a regulatory problem. And if we are serious about expanding nuclear power, we need a regulatory framework that helps us build the fleet faster and more efficiently.

We can't afford to wait 10 or 15 years to bring a new nuclear facility online, not when families and businesses and the economy need clean and reliable power. But common sense regulatory reform should not mean cutting corners. We can streamline permitting and we can streamline deployment while maintaining the high standards that protect communities. That is what the NRC's job was set up to do.

So now more than ever, the NRC needs to keep the authority and independence given to it by Congress to oversee this industry and protect public health and protect the environment, and make sure reactors are being operated responsibly. That is how we move forward faster, bring down costs, strengthen our energy security and keep people safe at the same time.

One challenge we have to address here comes down to the very materials that we used to build these facilities from. Nuclear-grade construction standards and materials are important for safety, but NRC rules can still force their use in parts of a nuclear plant that do not perform a radiation safety function.

This broad, one-size-fits-all approach increases costs and extends project timelines without making nuclear plants any safer. That is why I was very happy to work with Chairwoman Lummis on the Build Nuclear with Local Materials Act. Our bill allows commercial grade materials to be used in parts of a nuclear facility where there are no radiological hazards.

But it also makes clear that the NRC has to certify where those materials are appropriate and where they are not appropriate. That is just one way we can speed up nuclear deployment without cutting corners.

Fuel supply is another critical part of this equation. As I discussed in this committee just last week, building more reactors won't mean anything if we don't have the fuel to

operate them. Nuclear power plants depend on a steady, reliable supply of enriched uranium.

Yet today, in the United States, we import 80 percent of our enriched uranium supply, about 20 percent of that comes from Russia, who is an adversary. Not ideal. And we only have two operating enrichment facilities in the United States, and only one that can do this at commercial scale.

That leaves us short of the fuel capacity we need to protect against energy and economic and national security risks. We need more of these facilities.

But the licensing process had made this a lot harder than it needs to be. So right now, NRC requirements include well-intentioned but outdated procedural hurdles that create a lot of uncertainty. It also drives up costs, and it delays the projects that we need to get new production capacity online.

The licensing rules for new uranium enrichment facilities have not been updated in 40 years. Technology has advanced, the world has changed. So should the rules. If we want to expand nuclear power and strengthen our domestic fuel supply, reduce our dependence on foreign sources, we need a licensing process that moves faster while keeping the right kind of oversight in place.

My Enrichment Licensing Modernization Act would address this imbalance by creating a framework more consistent with the

process already used for other nuclear fuel facilities. It would allow certain construction activities to begin before an operating license is issued, while making clear that developers move forward at their own risk, and that early construction does not guarantee final approval.

The bill would also give the NRC authority to determine the appropriate level of environmental review, based on the specific facts and the risks of each application. This bill is included on the hearing agenda today as a discussion draft. I believe it is a more targeted, practical approach than the status quo, one that can reduce unnecessary delays while also preserving the safeguards we need and expect.

I look forward to getting the feedback from our witnesses today as we work to finalize and introduce this bill.

I also want to acknowledge the third bill on our agenda today, the discussion draft of the RECHARGE Act, introduced by Senator Lummis. This bill seeks to streamline the NEPA review requirements, renew advanced reactors build on brownfields, or other retired energy sites.

I think the concept of making it easier to build nuclear facilities where an older, dirtier energy facility existed has some merit. I hope the testimony we receive today helps us understand how we can advanced the concept

in a bipartisan way.

Taken together, the bills before us today move us toward more reliable, clean, and affordable power on the grid, while maintaining the strong oversight and accountability that the public deserves and expects.

I want to thank our witnesses for being here and taking the time to review this package of bills with us. Each of you brings real expertise and a range of perspectives that will help inform this discussion and improve the legislation before us. I am glad we have the chance to discuss these proposals today.

I also want to thank Senator Lummis for all of her hard work and the hard work of her staff to put this hearing together. This is a bipartisan topic, and I hope we can showcase that this is a space where we can reach some common ground.

As two western Senators, Senator Lummis and I have had the chance to work together a lot over the years, from truck parking to uranium cleanup, and so much more. Her commitment to finding areas of common ground is commendable. I want to thank her for that work. We will try to do that again when she gets back.

But I know we have a lot more ahead of us before the end of the year, including today's hearing, where we hope to find some areas of bipartisan agreement.

With that, I want to introduce our three witnesses, from left to right. Mr. Loris is the President of C3 Solutions. His work focuses on how a free market can signal for innovation and emerging energy technologies, like nuclear energy, to serve our communities with baseload power and lead in U.S. exports of advanced nuclear reactor designs. Welcome, Mr. Loris.

I am going to introduce all three witnesses, then we will start with Mr. Loris for opening remarks.

Our next witness this morning is Dr. Adam Stein, the Director of Nuclear Energy Innovation at the Breakthrough Institute. With over 20 years of experience in the energy sector, his advanced education at the intersection of engineering and public policy has led him to work in nuclear facility offsite risk analysis, publish work with Idaho National Laboratory, and lead the Breakthrough Institute's nuclear initiatives and engagement with the NRC. Dr. Stein, welcome.

Finally, we will hear from Dr. Patrick White, Group

Lead for Fusion Safety and Regulation at Clean Air Task Force. Dr. White's Ph.D. in nuclear engineering and work has focused on developing new licensing methods and regulatory frameworks for commercial advanced nuclear technologies. He also leads the Clean Air Task Force International Working Group, aimed at creating a globally harmonized regulatory framework for commercial nuclear technology in U.S. exports. Dr. White, welcome.

Let's start with Dr. Loris' five minutes of opening remarks.

STATEMENT OF NICK LORIS, PRESIDENT, C3 SOLUTIONS

Mr. Loris. Thank you, Chairman Lummis, Ranking Member Kelly and distinguished members of the subcommittee. Thank you for this opportunity to testify this morning.

My name is Nick Loris, and I am the President of the Conservative Coalition for Climate Solutions, and an Energy Fellow at the Abundance Institute.

After two decades of flat demand, power consumption is surging. Grid strategies forecast 5 percent annual growth over the next five years, and the peak demand could be equivalent to 15 times New York City's peak energy consumption.

Meanwhile, electricity prices are rising faster than inflation, and families and businesses across the Country are feeling the effects. It is clear we need more supply, and nuclear power can be part of the solution. It is safe, clean, dependable and scalable.

The key question for policy makers and ratepayers alike is, is it cost-competitive? While that is ultimately a question for the market to answer, there are reasons to be hopeful. The private sector is making big bets, investing across companies and technologies, directly financing

projects, and helping reduce the costs and risk premiums associated with advanced reactors.

Encouragingly, there has been bipartisan support and recognition that Federal policy has not kept pace with private sector innovation and investment. Bills signed by both President Trump and President Biden in recent years helped address some of the government-imposed regulatory burdens that increase costs and slow deployment.

This is a long-overdue shift, one toward a risk-informed performance based framework that preserves the Nuclear Regulatory Commission's core safety mission, while cutting unnecessary costs and delays elsewhere. And it is already paying dividends. TerraPower's Natrium Reactor in Kemmerer, Wyoming, received its construction permit nine months ahead of schedule, and 11 percent under budget.

In the coming months, the NRC will finalize several rules to further improve the licensing process and modernize outdated regulations. However, now is not the time to be complacent, and the bill and discussion drafts under consideration today would build on that progress.

First, the Build Nuclear with Local Materials Act addresses the cost premium for construction materials in

non-safety related areas of a nuclear plant. The concrete, steel and rebar used in nuclear power plants must meet strict quality assurance standards to be considered nuclear-grade.

These materials and components cost considerably more than alternatives, even when they are identical in performance and composition, because the approval requires extensive analysis, testing, and documentation. The cost of nuclear-grade concrete can be 50 percent higher than non-nuclear concrete, and in some cases, components can be 50 times more expensive.

Another reason for the higher costs is the shortage of suppliers and less competition. When nuclear-grade materials and components are required, nuclear energy companies are, in many respects, captive customers, paying stadium and airport level prices when suitable suppliers can offer grocery store prices for the same product.

Expanding the use of commercial grade materials will broaden the supplier base, increase competition, and enable local manufacturers and construction firms to participate in nuclear projects.

Second, the RECHARGE Act would accelerate the

deployment of advanced nuclear technologies at retired fossil facilities and brownfield sites by categorically excluding NEPA reviews, all while keeping the NRC licensing requirements intact.

These sites already have the grid connections, transmission infrastructure, skilled workforces, and communities that understand energy development. The RECHARGE Act eliminates redundant reviews where the environmental tradeoffs are already well understood.

In fact, we just saw a version of this this week, where the NRC issued a finding of no significant impact for the Dow and X-Energy's advanced nuclear project in Seadrift, Texas. The finding comes after an environmental assessment that took months rather than an environmental impact statement that would have taken years.

More efficient reviews like this will spur private investment, strengthen local tax bases, and position rural and industrial communities as hubs for the next generation of American energy and technology leadership.

The reality is that the Federal permitting system is overly complex, often redundant, and prone to litigation. While wholesale modernization is necessary, the RECHARGE

Act represents a step in the right direction.

Third, the Enrichment Licensing and Modernization Act addresses a vulnerability in our nuclear fuel supply chain. The U.S. imports roughly 80 percent of its enriched uranium, and despite efforts toward a complete ban by 2028, 20 percent still comes from Russia.

Enrichment is safe and it is well understood. America has the technology, capital, and human ingenuity to expand domestic enrichment capacity. Federal policy should help clear the path.

This draft would allow at-risk construction to begin while licensing continues entirely at the developer's own risk and with no taxpayer exposure. It would also allow tailored environmental assessments, rather than mandating full environmental impact statements, and eliminate hearings when no party has requested one.

These are common sense reforms that improve timelines without touching the NRC's core mandate.

In conclusion, if the U.S. wants to be a leader in nuclear energy to meet rising demand, revitalize industrial communities and deliver clean, reliable power, we must build. And to build on time and on budget, we must fix the

rules that make permitting and construction unnecessarily expensive and slow.

The reforms under consideration today will empower the industry to invest with certainty and to build with efficiency, all while maintaining strong public safety and environmental safeguards.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. Loris follows:]

Senator Kelly. Thank you, Mr. Loris.

Dr. Stein, you are recognized for five minutes.

STATEMENT OF ADAM STEIN, PH.D., DIRECTOR, NUCLEAR ENERGY INNOVATION, THE BREAKTHROUGH INSTITUTE

Mr. Stein. Thank you. Chair Lummis, Ranking Member Kelly, and members of the subcommittee, thank you for the opportunity to participate in this hearing today.

My name is Dr. Adam Stein, and I am the Director of Nuclear Energy Innovation at the Breakthrough Institute.

We work on continued use and safe use of nuclear and clean energy. We act in the public interest and do not align or receive funding from the industry.

Nuclear power continues to simultaneously contribute to reliability, energy security, national security, emissions and pollution reduction, and long-term electricity price stability. Reliable and affordable electricity underpins advanced manufacturing, defense readiness, artificial intelligence infrastructure, industrial production, and economic competitiveness.

The United States needs a nuclear regulatory system that protects health and safety in a way that is credible, predictable, timely, and proportionate to actual risk. Such a system is necessary not only to maintain safety but to ensure that nuclear energy can benefit society.

The central challenge facing nuclear regulation today is an implementation and decision architecture problem. Congress has already provided substantial direction to modernize the NRC through legislation, including NEIMA and the ADVANCE Act. The NRC has begun to make visible progress.

But modernization will ultimately be judged by implementation. Nuclear deployment exists in an ecosystem. Nuclear projects are simultaneously satisfying financing requirements, customer demand, supply chain readiness, public acceptance, permitting systems, environmental review and regulatory approval. Any mono-causal explanation of nuclear costs or delay is incomplete.

One challenge facing the NRC is a decision architecture problem to truly consider benefit to society, as defined and reinforced under the ADVANCE Act. This committee, the subcommittee and larger committee, endorsed the ADVANCE Act and reported it. Two, adjust the NRC's mission to align with the Atomic Energy Act to ensure that bipartisan support of the NRC's actions continues.

Considering actual benefits to society in decision architecture is imperative to continue implementation that

remains that remains in the best interests of society. There are currently approximately 70 ongoing rulemakings at the NRC, and although it is impossible to say exactly what is going on in those rulemakings, many of them relate to bills in front of the subcommittee today. There may be some overlap, but due to reduced transparency by the engagement with OIRA at this point, it is unclear whether these bills will be duplicative or exactly the direction the NRC needs in this moment.

Implementation of both statute and rulemaking is critical and significantly dependent upon the predictability and governance of the NRC's commission decisions.

Another challenge is radiation protection coherence. This committee has stressed that reducing safety would be counterproductive to the bills at hand. Safety must be maintained while streamlining the rulemaking process.

Environmental review of fuel facility licenses faces a similar challenge. While it has already been mentioned that the U.S. imports about 80 percent of its enriched uranium, what hasn't been mentioned is that to increase demand, we would need to increase enrichment production

domestically if we move away from Russian capacity by two to five times, about 70 million to 150 million SWU, or separative work units. That is a significant increase compared to the status quo, and will require streamlining and logical expansion of environmental reviews

The committee is currently evaluating three specific bills that have been introduced to help address these implementation challenges. All of them work to enable smarter, risk-informed and performance-based regulations, reducing the costs associated with nuclear-grade concrete and steel to use commercial when available and appropriate, without compromising public health and safety.

The NRC has said in its own rulemaking that increased quality assurance costs add about 35 percent to a nuclear power plant's costs.

Enabling appropriate environmental review of brownfield sites can significantly reduce the time to deploy new nuclear energy, while still protecting the environment. Reforming regulatory barriers to enriching facility licensing can make them more aligned with other fuel facilities and other nuclear power production facilities.

Ultimately, successful NRC modernization will be

measured by whether the United States has created a regulatory system capable of enabling the safe deployment of nuclear technology at scale required for the Nation's future.

Thank you.

[The prepared statement of Mr. Stein follows:]

Senator Kelly. Thank you, Dr. Stein.

Dr. White?

STATEMENT OF PATRICK WHITE, PH.D., GROUP LEADER FOR FUSION, SAFETY, AND REGULATION, CLEAN AIR TASK FORCE

Mr. White. Great, thank you. Madam Chair Lummis, Ranking Member Kelly, and distinguished members of the subcommittee -- oh, Madam Chair Lummis. That is good timing.

My name is Patrick White, and I am the Group Lead for Fusion, Safety and Regulation at the Clean Air Task Force and an advanced nuclear technology and regulation expert. I cover both fission and fusion technology, but really with a focus on regulation, safety, and licensing, how do we get these processes right.

The Clean Air Task Force is a non-profit organization that is really focused on all clean air energy solutions and how we can deliver abundant, affordable, and clean energy at scale in the United States and around the world.

In my work, I lead CATF's work on licensing and regulation, and I think anyone who knows me, my friends, and unfortunately my colleagues, will say nuclear regulation is one of my favorite topics to talk about. So I am really excited to be here with the subcommittee today to provide testimony on these bills and discuss it with the

committee.

At a very high level, nuclear energy has this great potential to help us meet our growing energy and climate needs, how we provide the affordable, reliable and clean energy that we need to ultimately see the continued growth of society.

Efficient, effective and predictable regulation for these technologies is going to be absolutely critical to ensuring investment, helping facilitate new projects, build out supply chains, build out order books, and maintain trust in nuclear technologies. So I am really interested in the work that the committee has been doing over the last several years, and that we expect the committee and Congress to do over the next several years to ultimately create this predictable regulatory framework.

The proposed legislation that is under discussion today during the hearing really helps to address some of the outstanding gaps and weaknesses that I think we see in the licensing, the environmental reviews and the construction requirements for both new nuclear reactors and for uranium enrichment facilities.

While I agree with the intent of the bills under

discussion today, I think there are some specific, targeted changes we can make to the draft legislation to ultimately provide greater clarity on kind of the technical and legal justification for some of these changes, help enable more robust public engagement with stakeholders during public comment processes, and really help ensure that these regulatory changes don't have any inadvertent effect on ultimately other licensing processes that we are going to need to complete to get nuclear energy deployed at scale in the United States.

So the first bill, the Build Nuclear with Local Materials Act, will direct the NRC to initiate a rulemaking on the use of commercial grade concrete for non-safety related structures.

While NRC regulations already enable the use of commercial grade concrete for many non-safety related structures, both this legislation and recent experience by the Natrium Reactor in Wyoming highlight potential gaps and weaknesses in some of the existing regulation and guidance. I believe that an NRC rulemaking on this topic can provide an opportunity for the NRC, private companies and public stakeholders to provide input to update this regulation and

guidance on the topic, and ultimately help accelerate and lower the costs of new nuclear reactor construction.

The second piece of legislation under discussion today, the Revitalizing Energy Communities by Hosting Advanced Reactors and Generating Energy, or the RECHARGE Act, will really focus on licensing and deploying new nuclear reactors at brownfield sites and those retired fossil fuel sites that can ultimately become the hub for the next generation of energy technology.

By streamlining the environmental reviews, I think there is a really unique opportunity to try to accelerate the deployment of new nuclear energy technology with a specific focus on, again, repowering those sites where we have had energy produced for decades.

While I believe that the environmental reviews that are completed to meet the NEPA requirements can be streamlined for both nuclear energy and for all energy technologies, I don't believe that a legislative categorical exclusion for all advanced reactors is necessarily the most effective way to address licensing timelines. Instead, creation of a legislative categorical exclusion for these projects would risk limiting public engagement and input, and that

potentially applying the categorical exclusion to all advanced reactors at any covered site could be overly broad.

Instead, however, I again really support the intent of this bill and think that leveraging existing NEPA reforms that are underway at the NRC and other Federal agencies could be used to accelerate licensing reviews in the near-term, and that the proposed legislation potentially could be refocused to direct NRC rulemaking on the use of environmental assessments or to develop more specific or targeted categorical exclusions for certain advanced reactor projects, ultimately, meeting the intent of this bill, of figuring out how can we get more nuclear energy on the grid, and how can we really prioritize some of the existing communities and existing sites.

Finally, the Enrichment Licensing Modernization Act would update the statutory licensing requirements to help accelerate and expand U.S. domestic uranium enrichment capacity. I think, like Senator Kelly said, a lot of these requirements were really created in 1990 when we updated the NRC regulations for commercial enrichment facilities. There is an opportunity to go back and figure out how can

we modernize those statutory requirements that we made.

While again I agree with the need to enable certain pre-license construction activities and remediation plans can be really useful at kind of ensuring public trust in these, I do think that there are changes that we can potentially look at in regulation instead of legislation that provide for a more streamlined approach, and ultimately gives opportunity for the agency to incorporate best practices on nuclear licensing, and provide opportunities for stakeholder engagement.

With that, again, I thank you all for the opportunity to testify on these bills under discussion. I look forward to the questions from the committee.

[The prepared statement of Mr. White follows:]

Senator Lummis. [Presiding.] Thank you for your testimony.

I am going to begin with Senator Kelly's questions, so he can get them in and then he has to go to another committee. You are recognized, Senator Kelly.

Senator Kelly. Thank you, Madam Chair. And thank you, all three of you, for your opening remarks and for being here today.

Dr. White, I want to start with you and get to a topic that you mentioned at the end of your opening remarks, and that is the Enrichment Licensing Modernization Act. As I mentioned in my opening remarks, we need to rebuild this Country's capacity to enrich uranium. That is critical for our existing nuclear fleet, and it is going to be even more important if we are serious about bringing more reactors online in the years ahead.

So the Enrichment Licensing Modernization Act makes significant reforms to streamline licensing. But here is the thing: each reform is balanced with a safeguard. For example, the bill eliminates the requirement for a hearing when nobody asked for one. Makes sense. I mean, why would we hold a hearing when nobody is asking for a hearing?

But when the public does request a hearing, the bill makes that hearing mandatory. So we preserve the public's ability to weigh in on this kind of development without adding more bureaucracy for no reason.

Similar to that, the bill changes when a developer is allowed to begin building an enrichment facility. So under current law, the NRC has to review the application and issue a construction license before any work begins. Then the NRC has to issue a second license for operation. This causes months of delay, it drives up costs, and it creates a kind of uncertainty that holds back investment in these facilities.

So my bill changes the law to simply require an operating license. That is a real change. But at the same time, we shouldn't allow a developer to start building something as sensitive as a uranium enrichment facility on the basis of an application alone. We can't break ground without any protections in place for the community.

So that is why the legislation includes a requirement that developers submit a remediation plan in case construction stops or is not completed or the operating license ultimately is not issued. So the community is not

just stuck with this facility. It also gives the NRC the authority to require implementation of that plan.

So, Dr. White, do you believe this type of remediation requirement is appropriate to ensure the responsible development of enrichment facilities?

Mr. White. Yes, I do, Senator. I think it is an opportunity to provide essentially an additional public check on the creation of any potential new uranium enrichment infrastructure.

Senator Kelly. And is it within the NRC's purview to require this type of remediation?

Mr. White. Yes, Senator, I do. And I think there are some really interesting opportunities to look at other licensing activities that the NRC completes, and kind of see this precedent for trying to provide additional assurances to the public on the creation of new facilities.

The best example that I will go to is the requirements that the Nuclear Regulatory Commission has for what we call limited work authorization, or LWAs, for essentially early construction of new nuclear reactors. It is a very similar process, where you look at trying to propose, what are your construction activities, and then you provide a redress

plan as part of that application to demonstrate that if your facility is not ultimately completed, what activities will you take to help kind of return that site back to its original condition, or another suitable condition for development.

Senator Kelly. So there are similar requirements in place for other regulated facilities?

Mr. White. There are similar regulations that are in place for other facilities like commercial nuclear reactors. They are not necessarily the same exact requirements for other uranium facilities, such as conversion plants or fuel fabrication facilities. They are subject to different regulatory requirements.

The one difference that I would highlight, though, is that those regulatory requirements are implemented entirely through regulation and not through statute.

Senator Kelly. And can you speak briefly to why maintaining NRC authority and independence over enrichment licensing is critical, especially if we allow pre-license construction of these facilities?

Mr. White. Yes. I think as we start talking about the deployment of nuclear energy at scale, it is going to be

something that requires really societal acceptance and societal demand. We don't necessarily want to create nuclear technologies that communities are scared of, that they are skeptical of or that they don't feel that they had a voice in actually the siting and licensing of.

So I think by maintaining NRC public trust, by maintaining NRC independence, and by providing opportunities for public engagement with the NRC, it helps build the societal trust and continues, essentially, the momentum that we have on nuclear energy as something that is broadly bipartisan supported, as opposed to potentially creating gaps in public support or public trust in nuclear technology, more broadly.

Senator Kelly. Thank you, and thank you for working with my staff and this committee to draft legislation that is both practical and responsible.

Senator Lummis. I am going to take the liberty to ask both of you a question. So I have a question. I don't obey the rules of chairman and so, you will have to forgive me for being the way I am.

Senator Kelly and Dr. White, if a nuclear facility of some sort or nuclear-related facility is built on a

brownfield site, does that relieve the initial polluter of liability? So, does the liability for cleanup shift entirely to the nuclear facility?

Senator Kelly. I don't know.

[Laughter.]

Mr. White. First, I would have to say, Chairman Lummis, this is a place where I am but a humble nuclear engineer, not a lawyer. So I will definitely defer to my colleagues who have a little bit more expertise on the specific legal nuances of liability associated with it.

Senator Lummis. Do any of our witnesses know the answer?

Mr. Stein. Chair Lummis, the liability could or could not be transferred, depending on how the remediation plan would be defined.

Senator Lummis. Thank you. And thanks, Senator Kelly, for your involvement in this topic. I have always enjoyed working with you on this topic. It is a very productive working relationship. If you choose to come back when your next hearing is completed, we would love to see you again.

While you are gone, I am going to take the liberty to take more than five minutes.

[Laughter.]

Senator Lummis. Again, thanks, witnesses, for being here.

Mr. Loris, I am going to start with you. One of the goals of the RECHARGE Act discussion draft is to create a strong incentive for private industry to invest in retired fossil fuel sites and brownfields, instead of leaving those communities behind. In many cases, these communities are already dealing with declining tax bases, stranded infrastructure and costly cleanup needs.

So how can advanced nuclear development leverage private capital to accelerate site remediation, restore long-term economic activity, and bring new investment into communities that have powered this Country for generations?

Mr. Loris. Thank you for the question. I think it is critical, and there is, just given the infrastructure in place, the understanding of what energy means to these communities, as well as environmental protection, if you look at places like Alaska, who very much understand the benefits of energy production as well as environmental protection, a lot of the States in the west, in Wyoming.

This represents just really critical opportunities to

be new hubs of technological growth. Given the data center demand that we are already seeing, I know there is a lot of skepticism and hesitancy, but the amount of additional revenue that can be generated for tax bases, not just from the energy investment itself, but all of the additional investment that comes with it.

Loudon County, right outside of here in D.C., is a tremendous example of kind of what that has built. Because these data centers, while they don't employ a lot of people, they bring in a lot of revenue. And that is almost a sweet spot for a lot of these communities, because that doesn't mean a huge influx of people for the schools, for the roads. But it does mean a lot of investment in the roads and the schools and all of the businesses.

So having affordable, reliable, clean energy infrastructure as the kind of driving force for that is really essential. That is why I think places like Kemmerer, Wyoming and Texas and other places are really starting to get off the ground for what we can hope to continue to see across the Country.

Senator Lummis. It is my experience that the people of Kemmerer, a town that would have dried up but for

TerraPower's involvement in that community, is very supportive of its presence there. It was very welcoming.

Because Wyoming has a history of uranium mining, you don't have some of the same fears of the unknown, because it is a known in Wyoming. So the reemergence of this new technology is something that we have a tendency to welcome, especially those of us who are native to Wyoming and have that legacy history with this industry.

Mr. Loris, opponents of permitting reform sometimes argue that additional process automatically produces better environmental outcomes. But under the RECHARGE framework, we are specifically incentivizing private investment into already disturbed industrial sites and brownfields, instead of pushing development onto undeveloped land.

One of the things I have seen with TerraPower, for example, is their initial permitting process was completed in 19 months, rather than the projected 27 months, which I saw as an indication that permitting is working. But others, I think, fear that because the time spent on that initial phase of the evaluation was shortened that maybe steps were missed.

So how can we assure people that permitting that is

expedited can still produce a complete, thorough, safe permit process?

Mr. Loris. Yes, well, it has to for these projects to have an opportunity to move forward. And you see what companies do with pre-application processes and as Dr. White mentioned, it is incumbent upon not just industry but also the permitting process to assure the public to engage communities, for sure.

We just can't get into a system of kind of analysis paralysis or subject these projects to endless litigation and these kinds of litigation doom loops that energy projects of all stripes face.

So I think that there is a kind of Goldilocks scenario here where, yes, you can have the public engagement, you can ensure that we are not duplicating efforts, if there is a reactor technology that has already been reviewed by the Department of Energy or the NRC or there is these brownfield sites, that there are opportunities to just make a more efficient process.

And also, again, kind of rein in some of this excessive litigation that we have seen. Sometimes it is just a few bad apples that can upset the cart. We have seen this,

again, not just with nuclear, but with energy projects across the board. And even more industrial projects, one example in New York with a semiconductor fab, this is in more upstate New York, had acceptance from the community, the public, a lot of investment in jobs were coming. But there were six people in the community who didn't want it, resulting in trying to litigate it out of existence.

So, yes, we can have more efficient processes and reduce duplication, but we also need processes that allow these projects to move forward once the community accepts them, once the investment is there.

Senator Lummis. Are there currently overlapping Federal reviews in the case of brownfields remediation processes?

Mr. Loris. Yes, and I think just with the process generally, I think that is one of the hopes of reforming the National Environmental Policy Act, or NEPA, is to reduce some of the redundancies, not just at the Federal level, but also at the Federal and State level, and not allow for some of the abuses of these laws for litigation.

So looking at kind of what previous analyses have already done, what previous engagements with communities

and tribes have already been accomplished, those are things that we can learn from and we should build up, so we are not doing it over and over again.

Senator Lummis. Well, as we all know, reforming the way NEPA is implemented transcends so many sectors.

Mr. Loris. For sure.

Senator Lummis. Hopefully that can benefit this sector as well.

Again, Mr. Loris, does codifying a clear rulemaking standard provide more certainty for regional manufacturers and fabricators and construction firms than otherwise might cause them not to participate in nuclear projects because of that kind of regulatory ambiguity?

Mr. Loris. It does. And Dr. Stein talked about this in his remarks, that the NRC already has the ability for permitting commercial-grade concrete, steel, rebar. But based on the NRC's report to Congress after the ADVANCE Act, it does seem like this is complex. It is unclear for both the developers of the power plant, but also for these companies.

So having the NRC provide just more simplicity and more clarity about what can be done and what can't be done opens

up that opportunities for more local manufacturers, construction firms to participate and engage with nuclear companies, not be kind of frozen out, thinking that because they don't want to go through the quality assurance checks or there is a constrained supply. If there is more clarity on that, that is going to open up this for more opportunities. That ultimately means more competition, more choice, and lower prices.

Senator Lummis. Thank you. You mentioned Dr. Stein, and Dr. Stein, I am sorry I missed your opening statement, but I understand that you have noted that the NRC is beginning to adopt right-sized environmental reviews in cases where impacts are limited. So what would it signal to private capital markets if Congress codified that kind of streamlined review for redevelopment on previous energy sites?

Mr. Stein. It would be a signal that one, the history of building nuclear power projects shows that the impacts are commensurate to other industrial sites, therefore disturbing the same land that has already been disturbed would not increase and may actually leave the site better than found.

It would also signal that the process should be scaled relative to the size. An environmental impact statement, as Mr. Loris mentioned, does become disrupted by litigation at times. But having an environmental assessment when an environmental impact statement is not necessary because the site impacts would be minimal would also streamline the entire overall process, and reduce NRC resources that would be necessary to complete such a study.

Senator Lummis. Are there capital markets that are reluctant to engage in nuclear projects in the U.S.? Is it a problem? Is it hard to get money?

Mr. Stein. Absolutely.

Senator Lummis. And is it because it is nuclear?

Mr. Stein. It is in part because it is nuclear, yes. The capital markets understand that the cost for nuclear materials alone, because of regulation or because of siting costs, because of regulatory uncertainty, all increases the uncertainty of the project being completed. That puts their capital at risk. That would be more at risk, simply due to regulatory risk, than it would be to invest in other projects.

Senator Lummis. Thank you.

You emphasized that credible nuclear development depends on a credible fuel strategy and reduces exposure to foreign supply chains. The U.S. has longstanding uranium resources in places like Wyoming, yet domestic production is not consistently translated into fuel security.

So, again, Dr. Stein, from your perspective, what is the missing link between domestic uranium resources and a fully resilient nuclear fuel supply chain?

Dr. Stein. That is an interesting question. I think there are a few missing links. The first would be a clear, streamlined process for licensing fuel facilities and enrichment facilities and conversion facilities.

The standards that we currently have are more restrictive than even licensing for reactors that utilize those facilities, instead of commensurate to the risk of the fuel facility itself. This is in part because they were last modified many, many years ago. But the deterministic standard is that they now need to be reconsidered.

The second is the cost of uranium production in the U.S. is simply much higher than in some other countries where the uranium is easier to get to than in the United

States. Therefore, the market itself exposes the developer to more risk.

But to have national security and energy security, we need to have prioritized further exploration of uranium production in the U.S., so we can move away from other countries that put the entire supply chain at risk.

Senator Lummmis. Madam Chairman has arrived. I am going to ask one more question of Dr. Stein, and I have questions for Dr. White. But I will postpone those so our chair has a chance to ask questions.

I have had the wicked indulgence of having this entire witness panel to myself.

[Laughter.]

Senator Lummis. So I have used more time than that to which I am entitled. But I am going to take another question with Dr. Stein before you ask your questions, if that is okay.

Senator Capito. Okay, sure.

Senator Lummis. Okay. Dr. Stein, in your testimony, you outlined a number of reforms that are already underway with NRC processes and rulemaking. Where do you see the remaining friction points that are sitting outside the

agency's control, the NRC's control? And how does today's hearing fit into addressing those constraints?

Mr. Stein. Thank you for that question.

There are several constraints, particularly inside the Atomic Energy Act, that are outside the agency's control, and the agency's current responses, even to modernize their own regulations, are confined by what they can accomplish under the Act.

One example would be, an enrichment facility is required to have an environmental impact statement in the Atomic Energy Act, which is unique and exceptional compared to other industrial or even other nuclear facilities. The Advisory Committee on Reactor Safeguards is required to review every license application where, instead, if we had, for instance, 100 applications under review in a year, that would simply become a bottleneck.

Senator Lummis. Yes.

Mr. Stein. I believe the Advisory Committee on Reactor Safeguards is important, but should focus on new, novel constraints instead of reviewing the tenth or seventieth of the exact same license.

I also believe, as Senator Kelly mentioned earlier

while you were out, that we should not necessarily require a hearing for a license where nobody requests a hearing. That was a remnant of the transition from the Atomic Energy Commission, AEC, to the Nuclear Regulatory Commission in the 1970s. It should be reconsidered as well.

And there is a definition between a research and test reactor and commercial or industrial reactor between Section 103 and 104. It is unclear why that, the basis used there, where that line is, is the line in the sand, and why research and test reactors under that are subject to only the regulations necessary to protect the health and safety of the public and the environment, while commercial and industrial facilities can be required to have regulations far beyond what is necessary to adequately protect the health and safety of the public and the environment.

Senator Lummis. I want to thank the witnesses. Now, Madam Chairman, you are recognized for as long as you want to talk. But don't use as much time as I did.

[Laughter.]

Senator Capito. Thank you, Senator Lummis. Thanks for your leadership here. Thank you to all the panel for being

here.

Over recent years, Congress has actively focused on addressing outdated statutory requirements that has limited the safe deployment of nuclear power. The cornerstone of those was the enactment of the bipartisan ADVANCE Act, the bill that I sponsored with help from members of this committee, including Ranking Member Whitehouse, Senators Lummis and Kelly.

So while we focused on ensuring that the NRC implements the bill as we intended, there are discrete and targeted legislative changes that need to be addressed, as the subject of this discussion, obviously. Those issues include eliminating what is known as the mandatory hearing, I don't know if that is what you were just talking about? Yes. Modernizing the Advisory Committee on Reactor Safeguards, and building on previous efforts to provide sufficient compensation to NRC leadership to compete with the private sector.

So, I appreciate you, Senator Lummis, for calling this hearing on this conversation.

We had a hearing last week, I think it was, although the weeks are starting to move together, recently, I will

just say that, with all the NRC commissioners. I was very encouraged in that hearing, because having sat in past hearings, oversight hearings with the NRC, there had been previously been a lot more tension, I felt like, and a lot more disagreement among commissioners, and therefore, a lot of stagnation.

And this particular commission that has been put together, while there are differences, they are gliding, it appeared, and I think it is, and I will ask you your opinion, as though they are kind of cleaning out the cobwebs here, and moving toward where they have like and possibility of reaching agreements to pick up speed and to implement the ADVANCE Act at the same time.

That, to me, is encouraging. So, I would be interested to know, we will just kind of go through the panel here. Mr. Loris, would you agree with that, with the implementation of the ADVANCE Act and the EO 14-300, how has the NRC been moving forward, in your opinion, on that?

Mr. Loris. I think very well. And kudos to you for the passage and ultimately signing ADVANCE into law, as well as NEIMA. I think it builds a foundation that so many proponents of nuclear energy have been talking about for so

long, which is how do we reform and modernize the NRC, and how do we reform a lot of outdated rules and regulations.

I think what the NRC is doing now is making progress on that. And one thing I noted in my oral remarks is that there has been talk about transitioning to this risk-informed, performance-based standard for how we approach different technologies and licensing. We are finally on the path to actually getting there, and there has been a few kind of hiccups along the way.

But I think now is the time we are actually seeing the fruit borne of all of the work that has gone into what the NRC is now doing.

Senator Capito. Dr. Stein?

Mr. Stein. Yes, I agree with that. I think the Commission is working well together at this point, and they all are, and mentioned in the last hearing, to my recollection, that they are all focused on enabling nuclear technologies for the benefit of society. That difference has shifted how they are approaching what needs to be done, and the timeliness of how it needs to be done. There are around 70 rulemakings ongoing right now, which is a huge change from the past.

As Mr. Loris mentioned, we are moving to a risk-informed, performance-based standard. And they have been doing that since the 1990s. But they previously were taking one step at a time, and every rule that they changed, they were hesitant to change the next one in line.

They wanted to have licensees to come in and test to see if that was the right change to move forward. And that would require us to have dozens of licensees over the years, just to see if the regulations were appropriate, where it is the regulators' job to define what the regulations should be, not the applicants that test them.

Senator Capito. Dr. White?

Mr. White. I agree with both Mr. Loris and Dr. Stein, the pace of change at the NRC over the last few years really pushed by Congress, and by the administration, has been unprecedented. I think if we had discussions about how quickly the NRC is completing some of these new rules, people that have been in the industry for years wouldn't have believed it.

So I think it is a really exciting time to see how the NRC is updating its processes, updating its internal culture, and really moving quickly on these things.

The two items I would just note, though, is that I think with the excitement that we have around the pace of this regulatory change, let's make sure that we are not just rushing for the sake of rushing, and we are still ensuring that the regulations we are developing are effective and efficient.

To the point that Dr. Stein made, with 70 rulemakings that are ongoing right now, there is a lot to review, both for NRC staff, for the Commission and for public stakeholders that really want to provide the input from their own perspective, whether it is members of the public, or companies. How do we make sure that the rules that are moving through ultimately meet the need of the industry and of the Nation?

I think the other thing to just keep in mind is, let's not lose sight of the licensing reviews that are underway right now at the NRC. I think sometimes there can be a bit of a distraction on, okay, what is the new thing that we are working through, what are the rules. But let's not lose track of the companies that are actually making progress and make sure they are getting the resources.

Senator Capito. Right. As I recall from the previous

meeting that we had, I think as part of my remarks it was noting that one of the license reviews had moved through in a much more timely previous license, much more timely than it had been in the past.

And the other thing is obviously, the first thing, number one is safety all the way through, no matter. And if you could say, oh, we are rushing 70 regulations through, it could appear that you are forsaking safety. They made it all clear, all through the panel, that safety is number one and remains number one. So I was pleased with that.

I just have one last question, well, actually I have another comment on workforce, because they all expressed, a lot of people left, and then how to replace, and the competition in the private sector, because there is so much more interest and actually people are seeing a little bit of light at the end of the tunnel, and we are actually going to be building these things.

This is a challenge that we are well aware of, so we may have to do something there to help incentivize that young talent to not just come to the NRC but to stay there for a period of time to help move through what I think is

an exciting time.

Last question I wanted to ask is, the Department of Energy launched an initiative to use a previously unused authority to allow for construction and operation of privately owned and privately funded nuclear reactors. This was undertaken in part because of the historic challenges we just talked about, about slow and expensive licensing.

Dr. Stein, what is your view of these respective tools for the DOE? If you have already talked about this, I am sorry for being repetitive.

And the roles of each DOE and NRC in terms of licensing test reactors and commercial power plants, and do you think any limits should be placed on DOE's authority and how to make sure that the current initiatives don't sacrifice long-term durability?

Mr. Stein. Thank you, Senator, for the question. I think that the NRC has jurisdiction over commercial and industrial applications of reactor and nuclear power technology under the Atomic Energy Act, pretty clearly. That was not removed from the NRC's purview when the Energy Reorganization Act split the Atomic Energy Commission into

the NRC and what became DOE.

DOE has authority to develop technologies and test and research technologies. But their authority is limited to what is under contract for the Department of Energy. It is not primarily supposed to be for commercial or industrial uses.

And the Atomic Energy Act, under Section 104, gives the NRC the authority for research and test reactors for a reason. So research and test reactors can be properly licensed for long-term use, and the NRC has used that authority for both research and university and other test reactors in the past.

So for durability, my view is that we need to fix the NRC, not bifurcate the licensing between DOE to NRC process. That is not to say that there is no pathway between the two. Technologies that are developed under DOE should have a path to commercialization, ultimately. There shouldn't be a barrier there.

But I don't think that that should be the primary pathway.

Senator Capito. Dr. White, do you have an opinion on that?

Mr. White. Yes, I do. And it always great when I have a colleague like Dr. Stein who can quote chapter and verse from the Atomic Energy Act, so I don't have to.

[Laughter.]

Mr. White. I appreciate that.

Senator Capito. Well, we already knew it, anyway.

[Laughter.]

Mr. White. Yes, speaking to the choir here on that one.

I would actually, I completely agree with Dr. Stein here in terms of how do we think about the Atomic Energy Act and how do we think about really the role and regulatory jurisdiction of the Department of Energy and the NRC when it comes to these facilities.

I think it is really important to keep in mind when Congress in 1974 ended up splitting the Atomic Energy Commission, the focus really was to say, one organization should be primarily looking at commercial applications, licensing different activities, and that the Department of Energy should be supporting these research and development activities.

So I think as we are trying to think about how to

accelerate, I completely agree with Dr. Stein that the focus should really be on continuing the progress that we have seen at the NRC and not trying to create alternative shortcuts or pathways around kind of the original intent of the Atomic Energy Act and the amendments in 1974.

I think there are opportunities to think about how do we leverage lessons learned from projects that are licensed under the Department of Energy to subsequent commercial activities. But we shouldn't necessarily look for ways to get around that essentially separation of the Department of Energy and the NRC.

Senator Capito. So would you say, are the lines blurred there, or are they pretty clear?

Mr. White. My personal opinion is that kind of in statute the lines are very clear, with the way Congress has essentially separated out the Department of Energy's authority and the NRC's authority. But I think as we start talking about projects that are trying to move quickly, how do we make sure that there is still that clear division of responsibilities and authorities?

Senator Capito. Yes. Thank you all very much.

Thank you, Madam Chair.

Senator Lummis. Thank you.

I will let you know that if, I am going to ask some questions of Dr. White. When I am done, if Senator Kelly has not returned to ask more questions, I will ask one final question of all of you. And that question is, is there something that you want to say on the record that you weren't asked, but were dying to talk about today?

[Laughter.]

Senator Lummis. So, thank you, Madam Chairman.

Dr. White, thanks for being here. We are in a moment where demand for electricity is rising quickly. It is almost insatiable at this point.

And some day, we may find a way to utilize the facilities that are being built right now more efficiently, so they produce more energy. But until that day comes, what do you see as the biggest practical bottlenecks to deploying nuclear energy faster at scale in our Country?

Mr. White. Thank you so much, Senator. I would say my biggest, my opinion on kind of the biggest bottleneck is really the economic questions that we are facing, and how do we create kind of the demand signal and order books for new nuclear technology.

The history of nuclear energy in the United States shows that if you keep building first-of-a-kind projects and one-off nuclear reactors, they are going to have schedule and cost challenges. They are going to take too long, and they are going to cost too much.

But if we look both in the United States and internationally, if we could start to build out order books of standardized technologies and get companies to not just build one reactor, but 10, 20, 50 or 100, we can come down the cost curve and deliver nuclear energy affordably, reliably and on time.

So I think as we start talking about nuclear energy in the next 5, 10, 25 years, how do we create the conditions where companies are willing to make the investments in new nuclear energy and build out these standard designs?

Some of the work the Clean Air Task Force does as party of the Nuclear Scaling Initiative is trying to identify what are the company conditions, what are the government policies, and how do we ultimately kind of get nuclear deployed at scale, so we are not just building one or two of these reactors, but we can build hundreds of these reactors to meet some of the demands of energy that we have

seen, and hit the goals of quadrupling nuclear energy by 2050.

Senator Lummis. Do you think that is an attainable goal?

Mr. White. I think it is a really important and ambitious goal. As we start looking at how we are going to need to power the United States by mid-century, we are going to need more energy than we can even possibly imagine. I think we would want that energy to be clean and affordable.

So, I think it is really important to set these ambitious goals, then to say, what are the policies and what are the processes and partnerships that we can really look at to hit that goal.

Again, if you only set your sights of, oh, maybe we can build five reactors by 2050, are we really dreaming big enough? Or do we want to figure out, what does it mean for nuclear energy to continue to play a really meaningful role as part of our future energy mix?

Senator Lummis. I appreciate that response very much.

You have discussed the importance of expanding domestic enrichment, and HALEU, the low-enrichment uranium. What do

you see as the most immediate step needed to reduce reliance on foreign supply chains?

Mr. White. Great, thank you, Senator. Yes, the HALEU, the high assay, low enriched uranium, it is a heck of a term that the nuclear engineers came up with. I think I can blame them for that.

But yes, I think as we start talking about building out domestic uranium enrichment capacity in the United States, there are kind of two big steps that we really look at.

The first is, how do we create essentially the market conditions necessary for companies to come in and make major investments in uranium enrichment facilities. I think a lot of the work that Congress has done to put in the Russan uranium ban, for example, is a really good way to say, we want to prioritize uranium production from the United States and its allies, and not just rely on Russia in the future.

So I think that helps create a really strong demand signal in the future, because we know we are going to have to make up that 20 percent of Russian uranium enrichment capacity. And as we look forward to things like HALEU, we need to actually set up the opportunity and the

infrastructure in the United States to produce it domestically. So I think that is a really important first step.

I think the second step is overcoming a little bit of the chicken and the egg program that we have seen historically around this. Companies are unwilling to make investments in new nuclear energy, uranium enrichment infrastructure, until they know there is a demand signal. And companies can't make contracts for this fuel until they know the fuel is going to be there.

So I think there has been really important work by the Department of Energy to try to create, through things like the Advanced Reactor Fuels Program, to try to provide economic support and contracts to companies to help facilitate that first investment.

So I think it is going to be really interesting over the next couple of years, as we see some of these private enrichment companies try to stand up new infrastructure. Companies like Orano in Tennessee, we have had conversations about companies like Global Laser Enrichment, GLE, in Paducah, Kentucky, General Matters, Urenco, Centrus, there are a lot of companies that are doing really

interesting work.

I think resolving those economic barriers is going to be the real key to get this going.

Senator Lummis. A question for anyone on the panel who wishes to answer: is the fact that we only have one facility to accomplish conversion in the U.S. now a bottleneck?

Mr. Stein. Not for the current fleet. But for expanding capacity, absolutely.

Senator Lummis. Anyone else?

Mr. Loris. Yes, I was just going to say, not just like, for marginal expanded capacity yes, and then if we are talking about Dr. White's wish and goal, which I share, of building hundreds of reactors or even dozens of reactors, then it really becomes a challenge.

Senator Lummis. Dr. White?

Mr. White. I would agree with that as well. I think right now, there probably is sufficient conversion capacity for the fleet we have today. But if we want to actually build nuclear energy out at scale, we are going to have to talk about where those different steps of the supply chain are going to come into play.

So coming up with a plan now of how we are going to have those facilities ready in 10 years of 15 years is really important.

Senator Lummis. What is government's role in that? Is this something that the private sector is contemplating and can respond to? Or does the government need to be involved in those discussions?

Mr. White. I think my personal perspective on that, Senator, is really that the government can help kind of serve as a catalyst for private investment. If companies have uncertainty around what the demand is going to be like in the future, they might want to hold off on a major capital investment in something like a uranium enrichment facility or a uranium conversion facility until they know there will be demand for the next 40 years on this. They might be hesitant to make those investments early.

Where the United States government and other policies can come into play is to help kind of kick start that process, because we know this is a goal for the Country, this is something we want to see for U.S. energy production.

So let's get that infrastructure going today, so it is

ready when we need it, as opposed to in 10 years, when we suddenly see a huge demand spike in nuclear technology going, wow, I really wish we had started that in 2026, because that facility would be ready today. I think that is where government policy can be most effective.

Senator Lummis. Thank you so much.

Dr. Stein?

Mr. Stein. If I may add, I think that Congress has already sent this clear signal by providing up to $2.7 billion for enrichment and conversion facilities, and for what was at the time termed a HALEU bank to have an early off-take agreement for HALEU production.

Because early developers in projects, it is difficult for a utility to allocate capital to a project when they don't think they can get fuel for 40 years at a reasonable price. And it is difficult for an enricher to build a whole facility for a one-off reactor.

So they need a large-scale procurement to justify the investment, and you need to invest five or ten years before building an enrichment facility. So we need an order book more to have enrichment facilities than we even need for one-off reactors. This is more long-term thinking that the

government would be the appropriate source from, instead of industry.

Senator Lummis. Thank you.

Mr. Loris. I would also just quickly add that we don't need to be self-sufficient. Imports in and of themselves are not necessarily a bad thing. They are bad if they are coming from Russia. But if they are coming from Canada or our allied countries, we can rely on imports to some extent. Building up that domestic capacity is critically important, but we should still maintain that open and free trade.

Senator Lummis. Thank you.

Senator Kelly is in another committee. There are multiple hearings going on this morning, so we apologize for coming and going.

I do want to ask the panel this final question. And that is, what do you wish to put on the record, the written record of this hearing, that we didn't ask? What do you want the U.S. Senate to know about the status of this industry, areas where Congressional involvement could spark some progress? And the floor is yours.

Mr. Loris, would you share that with us, please?

Mr. Loris. Sure. Thank you for this opportunity, again, to testify. To build off Dr. White's one comment, my hope is really that we don't have an industry where we are just building a handful of reactors that are dependent on tax credits and loan guarantees, but we are actually reforming and creating a framework that allows nuclear plants, advanced reactors, large light water reactors, to be cost-competitive with other sources of energy and technology.

That is critically important, because affordability is what matters most. These reactors are not going to get built if they can't compete on cost with solar and storage or with natural gas.

The framework that we are building off of from the ADVANCE Act and what the NRC is doing and what this bill and discussion drafts are going are great steps in the right direction. My hope is that we continue to build on that and expand and think creatively. I am more open to alternative licensing processes and maybe the NRC can devolve even more responsibilities down to the State through the Agreement State program when it makes sense to do so.

Because if we are building hundreds of reactors, that could create a huge bottleneck at the NRC. And we need to expand and build the resources at the NRC. But I don't want that necessarily to be the choke point for all of these reactors trying to get built.

So I think this is great, positive momentum in the right direction. I think there is a lot more to do and explore, to how we can truly have that nuclear renaissance.

Senator Lummis. Thank you, Mr. Loris.

Dr. Stein?

Mr. Stein. Thank you, Chair Lummis. I believe that the bill on categorical exclusions for existing or old industrial sites has an opportunity to significantly streamline licensing. The review of the TerraPower Natrium EIS found only small impacts, except for in two cases, for historical preservation and for socio-economics.

Socio-economics was actually a positive impact, even thought it was moderate. And historical preservation, while it is important, is not as much of a factor for a previously disturbed old industrial site, which would have either been already damaged or remediated previously.

In terms of actions that only Congress can take, there

is a, what I will call a tangled web of radiation standards across multiple agencies in the U.S. Government with a 100,000 factor difference between the radiation standards and what is deemed acceptable.

Senator Lummis. Wow.

Mr. Stein. And these agencies are implementing different statutes in different ways that were set up at different times. And because they are mostly in statute or derived from the language in the statute, only Congress can help untangle some of these challenges.

And the final thing I would like to say is that I completely share with Dr. White's vision that we need more nuclear energy for the future, and that to get there, it should be a national priority, for multiple reasons.

But the NRC is being more efficient, they are acting more appropriately, particularly since the ADVANCE Act. The TerraPower application that you mentioned in Wyoming, and that Senator Capito mentioned was more efficient, it was more efficient by 30 percent than originally estimated under the existing regulations.

So even before all of the rulemakings that are going on right now. That meant there was always efficiency to be

had. NRC just needed to take the stance that they wanted to be more efficient.

That being said, with the ongoing rulemakings, their implementation and the Environment and Public Works Committee's oversight of the NRC's implementation will be important to make sure that the public benefits are protected in this significant but important change.

Senator Lummis. Thank you, Dr. Stein.

Dr. White?

Mr. White. Thanks so much for the opportunity, Senator Lummis.

I think kind of just four quick topics I would love to get on the record. The first is I think just a recognition of the NRC and the work that has been done there over the last several years. A lot of this has come through the direction of Congress, through the direction of this committee.

But there have been real changes that have been made at the NRC. I think we are already starting to see the benefits of those changes in terms of how quickly they are able to review and approve some of these advanced reactor licenses that we are seeing today.

I think if you had gone back and had this conversation in the committee 10 years ago, how long will it take the NRC to license a first-of-a-kind sodium fast reactor or high-temperature gas reactor, people would have said, 48 months minimum, at least four years. The NRC is doing it in less than two. I think that really reflects a lot of the changes that we have seen, both with direction from Congress, a better focus on licensing modernization, and then the great work that the NRC staff and Commission have done to really implement these changes.

I think while we are always talking about how we can improve regulation, I think there is a good opportunity to celebrate what is already being done there and what is continuing to go on.

The second is that I think as we talk about trying to meet some of these deployment goals for nuclear energy, really recognizing that a lot of the great work that this committee and Congress have done have made it so that nuclear regulation isn't the bottleneck that we should be talking about. We have resolved a lot of the regulatory issues.

There are still things we need to work on, and we need

to make sure that regulation is implemented correctly. But ultimately, it is starting to address now the policy and economic challenges laid to deploy nuclear technology in scale. So let's not always think, oh, regulation is stopping us from deploying nuclear energy, let's talk about the bigger suite of policies and opportunities to get us to deploy nuclear at this hundreds of gigawatts that we think we need by mid-century.

The third is just to touch on something Dr. Stein said around environmental reviews. I think with both nuclear energy technology and other energy technologies broadly, let's always keep kind of the original intent of NEPA in mind, that it wasn't to try to figure out if something is good or bad, but it is really to try to document what are the potential environmental impacts of a major Federal action, and that the process should ultimately resolve in a record of decision or other kind of reports, to allow people to understand, what is this project going to mean for the human environment.

So I think there is sometimes a little bit of a desire to figure out, okay, how can we shorten this process as quickly as possible, because we have seen it start to grow

out of hand in some cases, with the EIS it has taken years to develop.

I guess my thinking would be, let's just not throw the baby out with the bathwater. Let's go back and think about how we can really meet the original intent of NEPA and perform meaningful environmental reviews that produce that public record, that enable public engagement, but also don't inhibit the development of the clean energy technology that we need.

The final point, if you will grant me the moment, is to really just kind of emphasize the importance of NRC independence and NRC transparency in a lot of these discussions. I think the NRC is a regulatory agency that has just an incredible history, especially since the Energy Reorganization Act of 1974, of really showing their thinking of how they reach the decision on regulatory topics.

As someone who is a complete nerd for regulatory history, I love that I can go to the NRC's library and actually go out and see, what was the NRC and the staff thinking about in the 1990s when they approved facilities, and how are some of those lessons and best practices still

applicable today, or what things have changed?

I think as we talk about the NRC moving forward, to try to kind of meet the needs of the moment, I want to make sure that we are maintaining that independence and maintaining that transparency.

When I start to see some of the changes at the agency around, for example, not publishing all the Commission votes for certain activities, as someone who is outside and trying to understand what is going on at the agency, it makes it harder to understand, what is the Commission doing? And while I would love to trust that the NRC is doing great work, and I do, it is always good to be able to verify that.

So I think more opportunities to provide that independence and that view into what the Commission is doing and what the Commission decides is a really effective way to both get good regulatory outcomes, but then also maintain the public trust that we have in the NRC as that kind of independent nuclear regulator.

Senator Lummis. Well, I must say, it warms my heart to know that there are people that actually go and read the 1990 minutes of the Nuclear Regulatory Commission. Because

that just tells me that there are Americans that albeit nerds --

[Laughter.]

Senator Lummis. -- are really watching out for what these agencies do, how they can do it better, what our history has been in areas like this that are critical to our energy future, but that the American people want to know, go forward with confidence that they are being done safely, efficiently, and that our communities are going to enjoy, not only the benefits of having things like brownfield sites revitalized and communities revitalized with jobs and opportunities in 21st century nuclear energy, but that it is being done more safely than ever before.

And the transparency that you advocated for is something that government owes its people. So I appreciate your bringing that up.

I appreciate all three of you and your testimony. I appreciate your willingness to respond to an open-ended question like, what do you wish you could have said.

I can assure you, Dr. Stein, you may be hearing from one of my staffers with regard to the tangled web of definitions regarding -- whatever my notes say.

Mr. Stein. Radiation protection.

Senator Lummis. That was it. That was it, thank you.

[Laughter.]

Senator Lummis. I didn't bring my reading glasses, but I have very good handwriting, so I will be able to replicate this.

Witnesses, thank you so much. With no further questions, I thank you all, and I thank my colleagues for their participation in today's subcommittee hearing.

Senators who wish to submit written questions for the record have until 5:00 p.m. on Wednesday, June 3rd to do so. The witnesses' responses to those questions are due back to the subcommittee no later than 5:00 p.m. on Wednesday, June 17th, and will be submitted for the record.

So with that, with my thanks to our witnesses, this hearing is adjourned.

[Whereupon, at 11:16 a.m., the hearing was adjourned.]