

AMERICAN NUCLEAR ENERGY EXPANSION: UPDATING POLICIES FOR EFFICIENT, PREDICTABLE LICENSING AND DEPLOYMENT

HEARING BEFORE THE SUBCOMMITTEE ON ENERGY, CLIMATE, AND GRID SECURITY OF THE COMMITTEE ON ENERGY AND COMMERCE HOUSE OF REPRESENTATIVES ONE HUNDRED EIGHTEENTH CONGRESS FIRST SESSION

JULY 18, 2023

Serial No. 118–55



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WASHINGTON : 2025

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¹Dr. Goff did not answer submitted questions for the record by the time of publication. Replies received after publication will be retained in committee files and made available at <https://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=116255>.

²The legislation has been retained in committee files and is available at <https://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=116255>.

H.R. _____, the Nuclear for Brownfields Site Preparation Act	
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³The report has been retained in committee files and is included in the Documents for the Record at <https://docs.house.gov/meetings/IF/IF03/20230718/116255/HHRG-118-IF03-20230718-SD028.pdf>.

AMERICAN NUCLEAR ENERGY EXPANSION: UPDATING POLICIES FOR EFFICIENT, PRE- SCRIPTIBLE LICENSING AND DEPLOYMENT

TUESDAY, JULY 18, 2023

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY, CLIMATE, AND GRID
SECURITY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:00 a.m. in the John D. Dingell Room 2123, Rayburn House Office Building, Hon. Jeff Duncan (chairman of the subcommittee) presiding.

Members present: Representatives Duncan, Burgess, Latta, Guthrie, Griffith, Johnson, Bucshon, Walberg, Palmer, Curtis, Lesko, Pence, Armstrong, Weber, Balderson, Pfluger, Rodgers (ex officio), DeGette (subcommittee ranking member), Peters, Fletcher, Matsui, Tonko, Veasey, Kuster, Schrier, Castor, Sarbanes, Cárdenas, and Pallone (ex officio).

Also present: Representatives Carter, Allen, and Trahan.

Staff present: Kate Arey, Digital Director; Sarah Burke, Deputy Staff Director; Marjorie Connell, Director of Archives; Sydney Greene, Director of Operations; Jack Heretik, Press Secretary; Nate Hodson, Staff Director; Tara Hupman, Chief Counsel; Sean Kelly, Press Secretary; Peter Kieley, General Counsel; Emily King, Member Services Director; Mary Martin, Chief Counsel; Jacob McCurdy, Professional Staff Member; Brandon Mooney, Deputy Chief Counsel; Kaitlyn Peterson, Clerk; Karli Plucker, Director of Operations (shared staff); Carla Rafael, Senior Staff Assistant; Emma Schultheis, Staff Assistant; Olivia Shields, Communications Director; Peter Spencer, Senior Professional Staff Member, Energy; Michael Taggart, Policy Director; Dray Thorne, Director of Information Technology; Kris Pittard, Minority Professional Staff Member; Emma Roehrig, Minority Staff Assistant; Kylea Rogers, Minority Policy Analyst; Medha Surampudy, Minority Professional Staff Member; and Tuley Wright, Minority Staff Director, Energy, Climate, and Grid Security.

Mr. DUNCAN. The Subcommittee on Energy, Climate, Grid Security will now come to order. The Chair recognizes himself for 5 minutes for an opening statement.

OPENING STATEMENT OF HON. JEFF DUNCAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF SOUTH CAROLINA

Today the subcommittee will continue its bipartisan work to develop legislation to help accelerate the expansion of American nuclear technology. We want to make sure the relevant laws and policies are up to date and enable the full promise of nuclear energy for the Nation and our commercial and strategic relationships around the globe.

The importance of American nuclear leadership and building our commercial relationships was underscored during our recent CODEL to Japan and Korea, with Ranking Member DeGette and several subcommittee colleagues. What we do here can help these relationships in the years to come, but our goal is to advance durable and bipartisan policies that will expand nuclear energy and its many benefits for the Nation, policies that make sense for the regulation of nuclear power today and the new technologies expected to seek licensing and deployment in the coming years.

This was the purpose of the bipartisan request for information to stakeholders that Chair Rodgers, Ranking Member Pallone, DeGette, and I made back this past April. In the responses we received and the hearings we have had to date, it has become clear, more clear, that more can be done to update how both the Nuclear Regulatory Commission and the Department of Energy implement their respective missions, and there is growing recognition of the urgency to implement reforms.

This discussion draft today and the bills up for review today seek to make changes in law and regulation to align agency actions with the Nation's broader goals for advancing nuclear energy. These also reflect several of the key recommendations from stakeholders. For example, in a draft I intend to introduce we would align in statute the mission of the NRC and the—with the policy goals of the Atomic Energy Act to expand nuclear to maximum—maximize the general welfare. They should help foster nuclear and not be an impediment to nuclear development in this country.

Several draft bills would improve the efficiency and predictability of NRC licensing by requiring more effective decision-making milestones, timeframes, and metrics to measure the performance and results. They should avoid duplicative analysis and citing environmental reviews and updating the reviews to reflect the realities of advanced technologies; seeking new regulatory processes for advanced manufacturing and technologies for more efficient and timely licensing; cutting the hourly fees the NRC charges in half for new advanced reactor applicants to reduce barriers to participation; and reforming a key advisory committee to the NRC to focus on new and novel technologies, and reduce unnecessary reviews.

Another bill, following recommendations made by the NRC itself, would eliminate a superfluous Commission hearing at the end of the licensing process that no stakeholders have requested.

An additional discussion draft aims to update NRC practices to incorporate more efficient oversight to free up resources to focus on safety-significant matters.

These are good examples of reasonable, widely supported improvements that will make more effective, efficient, and predictable regulations.

Other bills also involve the Department of Energy. For example, legislative provisions would update DOE's nuclear export reviews in its role to promote nuclear among our allies.

Other provisions would remove barriers to foreign investment in American projects by our allies and would extend the critical liability protections necessary for nuclear and many DOE operations.

I should note that not all the provisions today will make it forward in their current form in the process. That is why we have legislative process, hearings, information sharing. The goal today is to gather information and discussion, identify issues, and find improvements so we can ensure more efficient, predictable regulation and oversight. Today we will hear from two witnesses.

First we will take testimony from two top officials from the Department of Energy and the NRC. I am looking forward to their testimony and perspectives and information on current and future activity, and how reforms may assist the agencies.

Our second panel will include four representative stakeholders: the Breakthrough Institute, the Nuclear Energy Institute, the Good Energy Collective, and a former NRC Commissioner who is representing the U.S. Nuclear Industry Council. So welcome to you all. This is a solid lineup for what should be a very productive hearing.

Finally, let me remind people that modernizing the NRC and DOE authorities does not mean moving away from principles of safety. It means ensuring regulations are updated to reflect the advances and capabilities of the nuclear industry today. The United States has the technological and engineering talent and capabilities to be the global leader in nuclear energy. Our regulatory system must operate in reflection of this fact if we are to succeed in our nuclear goals.

[The prepared statement of Mr. Duncan follows:]

Chair Jeff Duncan
Subcommittee on Energy, Climate, and Grid Security
**“American Nuclear Energy Expansion:
Updating Policies for Efficient, Predictable Licensing and
Deployment”**
July 18, 2023
As prepared for delivery

Today, the Subcommittee will continue its bipartisan work to develop legislation to help accelerate the expansion of American nuclear technology.

We want to make sure the relevant laws and policies are up to date to enable the full promise of nuclear energy—for the nation and our commercial and strategic relationships around the world.

The importance of American nuclear leadership—and building our commercial relationships—was underscored during our recent CODEL to Japan and Korea, with Ranking Member DeGette and several Subcommittee colleagues.

What we do here can help these relationships in the years to come.

Our goal is to advance durable and bipartisan policies that will expand nuclear energy and its many benefits for the nation. Policies that make sense for the regulation of nuclear power today, and the new technologies expected to seek licensing and deployment in coming years.

This was the purpose of the bi-partisan request for information to stakeholders that Chair Rodgers, Ranking Members Pallone and DeGette, and I made this past April.

In the responses we received and in the hearings we have had to date, it has become clear more can be done to update how both the Nuclear Regulatory Commission and the Department of Energy implement their respective missions.

And there is growing recognition of the urgency to implement reforms.

The discussion drafts and bills up for review today seek to make changes in law and regulation to align agency actions with the nation’s broader goals for advancing nuclear energy.

These also reflect several of the key recommendations from stakeholders. For example:

In a draft I intend to introduce, we would align in statute the mission of the NRC with the policy goals of the Atomic Energy Act to expand nuclear to maximize the general welfare.

Several draft bills would improve the efficiency and predictability of NRC licensing by:

- requiring more effective decision-making milestones, timeframes, and metrics to measure performance and results;
- avoiding duplicative analyses in siting and environmental reviews, and updating the reviews to reflect the realities of advanced technologies;
- seeking new regulatory processes for advanced manufacturing and technologies, for more efficient and timely licensing;
- cutting the hourly fees the NRC charges in half for new advanced reactor applicants to reduce barriers to participation; and
- reforming a key advisory committee to the NRC to focus on new and novel technologies and reduce unnecessary reviews.

Another bill, following recommendations made by the NRC itself, would eliminate a superfluous Commission hearing at the end of the licensing process that no stakeholders request.

An additional discussion draft aims to update NRC practices to incorporate more efficient oversight to free up resources to focus on safety significant matters.

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Other provisions would remove barriers to foreign investment in American projects by our allies and would extend the critical liability protections necessary for nuclear – and many DOE operations.

I should note that not all the provisions today will make it forward in their current form in the process. The goal today is to gather information and discussion, identify issues, and find improvements, so we can ensure more efficient, predictable regulation and oversight.

Today, we'll hear from two witness panels.

First, we will take testimony from two, top officials from the Department of Energy and the NRC. I'm looking forward to their perspectives and information on current and future activity, and how reforms may assist the agencies.

Our second panel includes four representative stakeholders—the Breakthrough Institute, the Nuclear Energy Institute, the Good Energy Collective, and a former NRC commissioner who is representing the U.S. Nuclear Industry Council.

Welcome to you all. This is a solid lineup for what should be a productive hearing.

Finally, let me remind people that modernizing the NRC or DOE authorities does not mean moving away from principles of safety; it means ensuring regulations are updated to reflect the advances and capabilities of the nuclear industry today.

The United States has the technological and engineering talent and capabilities to be the global leader in nuclear. Our regulatory system must operate in reflection of this fact if we are to succeed in our nuclear goals.

I now recognize Ranking Member DeGette for five minutes.

Mr. DUNCAN. I will now recognize Ranking Member DeGette for 5 minutes.

OPENING STATEMENT OF HON. DIANA DEGETTE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Ms. DEGETTE. Thank you so much, Mr. Chairman, and I agree. One thing our Japan trip taught us is that the U.S. can be the leader in nuclear energy and safety, and I thought it was an important trip.

I also think that today's conversation is an important opportunity for us to learn and find ways to support a nuclear industry that emphasizes public health and safety. I have said this before in previous hearings: Nuclear energy has the potential to meaningfully drive down our emissions as we transition to zero-carbon energy.

We all know the statistics, but they are worth repeating. Currently, nuclear energy makes up nearly 20 percent of the electricity we generate in the United States and nearly half of the carbon-free electricity that we generate. And so, as we continue to move towards a clean energy transition, nuclear energy could supply a significant portion of the carbon-free baseload power we need in the future.

Now, I say "could" for a very important reason. We can only invest deeply in the nuclear industry if we continue to prioritize public health and safety before everything else. And so to that end, Mr. Chairman, I want to thank you for including my NRC workforce bill in this hearing, along with Representative Levin's bill.

As the lead safety regulator of nuclear energy and nuclear materials, the Nuclear Regulatory Commission has an incredibly important role in this prioritization. It is critical that the NRC has the staff, tools, and resources it needs to operate at the highest level possible—the staff component, especially.

Back in May, when we had our NRC oversight hearing, Chairman Hanson stated in his testimony that, to achieve its goals, the NRC must maintain a highly qualified workforce. But currently, one-third of the NRC staff is eligible for retirement. This expected attrition, in addition to the anticipated increase in reactor applications, creates a challenge for the NRC as it completes its work, and that is why I introduced the Strengthening the NRC Workforce Act of 2023.

This bill is simple. It gives the Chairman of the NRC direct hire authority during candidate shortages or when there is a critical hiring need for certain positions. The authority is similar to the direct hire authority that Congress gave to the Federal Energy Regulatory Commission in the Energy Act of 2020.

Additionally, it would allow the NRC to increase its existing employees' compensation, helping the NRC to retain staff. As the lead nuclear safety regulator, it is important that the NRC has the full workforce it needs to complete its work.

And as I mentioned, I was also pleased to see Representative Levin's NRC Office of Public Engagement and Participation Act of 2023, which would establish the Office of Public Engagement and Participation at the NRC.

One of the most important parts of any energy project is, obviously, community input. We can't act like public participation is inconsequential, especially in this arena. And in fact we know that a lack of public participation eventually slows projects down. But early, meaningful public engagement allows developers to avoid issues and make the changes that are necessary to stop unnecessary slowdowns.

Additionally, as we are all aware, nuclear energy is an incredibly complicated and sometimes contentious topic, to say the least. And the office established by Representative Levin's bill would give communities the support that they need to fully understand the impact of a project. We cannot sacrifice public health and safety, and we cannot ignore the voices of those most directly impacted by energy development, and I think that these two bills help address both of the issues.

Now, there are, of course, some bills that we are considering that concern me. Some of them would cut down on the review process, eliminate critical hearings, and expedite the licensing process. The highest standards of public safety and health can't be sacrificed for the sake of rushing projects through. And Mr. Chairman, I know that is not your intention, I just want to make sure these bills don't have that impact because it could be a recipe for careless mistakes that could lead to disasters.

And so I am looking forward to the conversation today, and I am hoping that the majority will work with us so that we can do what the chairman says, which is update our procedures, update our protocols, but at the same time not sacrificing any public safety or health.

[The prepared statement of Ms. DeGette follows:]

Committee on Energy and Commerce**Opening Statement as Prepared for Delivery
of
Subcommittee on Energy, Climate, and Grid Security
Ranking Member Diana DeGette*****Hearing on “American Nuclear Energy Expansion: Updating Policies for Efficient,
Predictable Licensing and Deployment”*****July 18, 2023**

Thank you, Chairman Duncan, for holding this hearing. I think this is an important conversation and opportunity for us to learn and find ways to support a nuclear industry that emphasizes public health and safety. As I have said in previous hearings on nuclear energy, nuclear energy has the potential to meaningfully drive down our emissions as we transition to zero-carbon energy.

We all know these statistics, but they’re worth repeating, currently, nuclear energy makes up nearly 20% of the electricity we generate in the United States, and nearly half of the carbon free electricity that we generate.

So, as we continue to move toward a clean energy transition, nuclear energy could supply a significant portion of the carbon-free base-load power we need in the future. Now, I say could for a very important reason. We can only invest deeply in the nuclear industry if we continue to prioritize public health and safety before anything else. So, to that end, I would like to thank the Chairman for including my NRC workforce bill in this hearing, along with Rep. Levin’s bill.

As the lead safety regulator of nuclear energy and nuclear materials, the Nuclear Regulatory Commission has an incredibly important role in this prioritization. It is critical that the NRC has the staff, tools, and resources it needs to operate at the highest level possible – the staff component especially. Back in May, when we held our NRC oversight hearing, Chairman Hanson stated in his testimony that, to achieve its goals, the NRC must maintain a highly qualified workforce. But currently, one-third of the NRC’s staff is eligible for retirement. This expected attrition, in addition to the anticipated increase in reactor applications creates a challenge for the NRC as it completes its work, and it is why I introduced the Strengthening the NRC Workforce Act of 2023.

My bill is simple. It would give the Chairman of the NRC direct hire authority during candidate shortages or when there is a critical hiring need for certain positions. This authority is similar to the direct hire authority that Congress gave to the Federal Energy Regulatory Commission in the Energy Act of 2020. Additionally, it would allow the NRC to increase its existing employee’s compensation, helping the NRC retain staff.

July 18, 2023
Page 2

As the lead nuclear safety regulator, it is important that the NRC has the full workforce it needs to complete its work. I was also pleased to see Rep. Levin's NRC Office of Public Engagement and Participation Act of 2023, which would establish the Office of Public Engagement and Participation at the NRC. One of the most important parts of any major energy project is community input. We cannot act like public participation is inconsequential. In fact, we know that a lack of public participation is what slows projects down. Whereas, early, meaningful public engagement allows developers to avoid issues and make the changes necessary to avoid unnecessary slowdowns.

Additionally, as we are all aware, nuclear energy is an incredibly complicated and sometimes contentious topic, and the Office established by Rep. Levin's bill would give communities the support that they need to fully understand the impact of a project on their community. We cannot sacrifice public health and safety, and we cannot ignore the voices of those most directly impacted by energy development, and I believe these two bills help address both of those issues.

Now, there are some bills we are considering that concern me. Some of these bills would cut down on the review process, eliminate critical hearings, and expedite the licensing process. The highest standards of public health and safety cannot be sacrificed for the sake of rushing projects through. This is a recipe for careless mistakes that could lead to unnecessary disasters. So, I look forward to the conversation before us today, and hope the majority will work with us to address some of our concerns and incorporate the feedback we hear today.

With that, I yield back.

Ms. DEGETTE. And with that, I yield back.

Mr. DUNCAN. And let me reiterate to her point safety and security—security of fuel spent, et cetera, some of the things we talked about in Japan. That was the focus of the CODEL, to look at safety and what Japan, Korea were doing to propagate nuclear power in a safe manner in the post-Fukushima world.

So with that, I will recognize the chair of the full committee, Chair Rodgers, for 5 minutes.

**OPENING STATEMENT OF HON. CATHY McMORRIS RODGERS,
A REPRESENTATIVE IN CONGRESS FROM THE STATE OF
WASHINGTON**

Mrs. RODGERS. Thank you, Mr. Chairman. Good morning, everyone.

Today we continue our work on restoring American leadership in nuclear technology and energy. It is critical to both our economic and national security. Expanding American nuclear energy and increasing deployment of American nuclear technology both here and abroad is essential for reducing emissions, providing reliable, affordable, clean energy to Americans, and for building durable economic and strategic relationships around the world.

In 1954 Congress established the Atomic Energy Act, which has been foundational to our nuclear leadership for nearly 70 years. Today the Atomic Energy Act remains a guide to us to build common defense and security, and to capture the peaceful benefits of nuclear technology. It states, “to make the maximum contribution to the general welfare” to “increase the standard of living, and strengthen free competition and private enterprise.”

This is the policy that has stirred the development of American nuclear leadership, incentivized our innovators, and enabled American industry to lead the world in nuclear energy for more than 40 years. As a result, American innovation and nuclear energy deployment remains the dominant design around the world. We set the global standard for safety and security that continues to this day.

America must continue to lead, especially as our adversaries actively challenge our nuclear leadership. China and Russia seek to dominate emerging nuclear markets and control supply chains for these technologies and for fuels. In recent years their influence in these markets has grown. Energy and Commerce must lead the way to reverse this trend.

Fortunately, we know our allies are eager for American nuclear leadership and technology. We saw this on recent visits to the Czech Republic and Poland, nations who have embraced the promise and security of nuclear technologies, seeking American know-how and support.

The American nuclear energy is ready to lead from NuScale, TerraPower, GE–Hitachi, X–Energy’s small nuclear reactors to OKLO and Project PELE’s microreactors, and the new operating AP–1000 reactors at Plant Vogtle in Georgia. These are the kinds of innovative technologies that Poland and other U.S. allies are looking for to win the future.

In order to restore American leadership and unleash these new technologies, both at home and abroad, there is an urgent need to make sure the licensing, regulation, and oversight of the nuclear

industry is predictable and efficient, is risk-informed, performance-based, and protective of health and safety, and serves the foundational policies that Congress has established. This was the clear message from many of the stakeholders who responded to our bipartisan request for information this April.

Many of the bills we discuss today reflect an effort to meet the needs expressed by nuclear policy thought leaders. Several bills refocus the Nuclear Regulatory Commission and the Department of Energy to ensure they are carrying out the foundational nuclear policies that have been established by Congress. These bills would update how agencies implement their responsibilities to be sure they will be efficient, predictable, and risk-informed. They will also ensure that the agencies will not get away—not get in the way of innovation and deployment but instead serve the national interest by providing for the safe, reliable deployment of nuclear energy.

Today we will examine in more detail what these bills will do and discuss how they have been enhanced, how can—how they can be enhanced. And, you know, while we may have some differences on some of the legislation with my colleagues on the other side of the aisle, I am hopeful this hearing can help us address those differences and continue the process for developing bipartisan legislation.

This is how we win the future, restore American nuclear leadership, strengthen our energy security. So I thank the witnesses, all the witnesses, for being here today.

[The prepared statement of Mrs. Rodgers follows:]

Chair Cathy McMorris Rodgers
Subcommittee on Energy, Climate, and Grid Security
**“American Nuclear Expansion: Updating Policies for Efficient,
Predictable Licensing and Deployment”**
July 18, 2023
As prepared for delivery

Thank you, Mr. Chairman. And welcome everyone.

Today, we continue our work on restoring American leadership in nuclear energy and technology.

It’s critical to both our economic and national security.

Expanding American nuclear energy and increasing deployment of American nuclear technology both here and abroad...

...is essential for reducing emissions...

...providing reliable, affordable, clean energy to Americans.

...and for building durable economic and strategic relationships around the world.

In 1954, Congress established the Atomic Energy Act, which has been foundational to our nuclear leadership for nearly 70 years.

Today, the Atomic Energy Act remains a guide for us to build common defense and security, and to capture the peaceful benefits of nuclear technology:

It states: “to make the maximum contribution to the general welfare...”

To “increase the standard of living and strengthen free competition and private enterprise.”

This is the policy that has steered the development of American nuclear leadership...incentivized our innovators...

...and enabled American industry to lead the world in nuclear energy for more than forty years.

As a result, American innovation and nuclear energy deployment remain the dominant designs around the world.

We set the global standard for safety and security that continues to this day.

America must continue to lead, especially as our adversaries actively challenge our nuclear leadership.

China and Russia seek to dominate emerging nuclear markets, and control supply chains for these technologies and for fuels.

In recent years their influence in these markets has grown.

Energy and Commerce must lead the way to reverse this trend.

Fortunately, we know our allies are eager for American nuclear leadership and technology.

We saw this on recent visits to the Czech Republic and to Poland, nations who've embraced the promise and security of nuclear technologies, seeking American know-how and support.

The American nuclear industry is ready to lead...

...from NuScale, TerraPower, GE-Hitachi, and X- Energy's small modular reactors to OKLO and Project PELE's [*pronounced PAY-LAY*] micro-reactors...

...to the new operating AP-1000 reactors at Plant Vogtle [*VO-GULL*] in Georgia.

These are the kinds of innovative technologies that Poland and other U.S. allies are looking for to win the future.

In order to restore American leadership and unleash these new technologies, both at home and abroad, there is an urgent need to make sure the licensing, regulation, and oversight of the nuclear industry is predictable and efficient...

...is risk-informed, performance based, and protective of health and safety...

...and serves the foundational policies that Congress has established.

This was a clear message from many of the stakeholders who responded to our bi-partisan requests for information this past April.

Many of the bills we will discuss today reflect an effort to meet the needs expressed by nuclear policy thought leaders.

Several bills refocus the Nuclear Regulatory Commission and the Department of Energy to ensure they're carrying out the foundational nuclear policies that have been established by Congress.

The bills would update how agencies implement their responsibilities to be sure they will be efficient, predictable, and risk informed.

They'd also ensure the agencies will not get in the way of innovation and deployment...

...but instead serve the national interest by providing for the safe, reliable deployment of nuclear energy.

Today we will examine in more detail what these bills will do and discuss how they can be enhanced.

While we may have differences on some of the legislation with my colleagues on the other side of the aisle, I'm hopeful this hearing can help us address those differences and continue the process for developing bi-partisan legislation.

This is how we win the future, restore American nuclear leadership, and strengthen our energy security.

I'd like to thank our witnesses for being here today.

And I yield back.

Mrs. RODGERS. And I yield back.

Mr. DUNCAN. Thank you, Madam Chair. I will now recognize Mr. Pallone, the ranking member of the full committee, for 5 minutes.

OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. Thank you, Mr. Chairman.

Nuclear power plays an important role in producing carbon-free power for the electric grid. In April this subcommittee held a hearing examining the current and future nuclear energy landscape. And just last month we had all five Commissioners from the Nuclear Regulatory Commission before us to talk about the NRC's vital work. Those hearings have been the most bipartisan hearings we have had this Congress on the Energy Subcommittee, and I certainly hope today's hearing continues that tone as we examine ideas to improve America's nuclear power policies.

The NRC has done an admirable job over the years of ensuring nuclear power is safe and secure. We must now find ways to make the NRC's work more efficient without compromising on the high safety standards that it has held for itself and the nuclear industry as well. And I look forward to hearing from our witnesses across both panels on how the 15 bills included in today's hearing advance that goal, and where they fall short and need to be improved.

I think there are some good bills before us today, while some need improvement. And I am hopeful that we can work together on these bills so we can enable the NRC to safely and efficiently license our nation's nuclear reactors for the future. I want to briefly highlight a few of the bills.

I am particularly interested in Ranking Member DeGette's bill, the Strengthening the NRC Workforce Act, which would allow the NRC to enjoy the alternative compensation authority we granted to FERC back in the Bipartisan Energy Act of 2020, as well as direct hire authority. This would allow the NRC to attract and retain talent and expertise, something that will be critical as we ask it to license advanced reactors.

And then there is Representative Levin's bill, the NRC Office of Public Engagement and Participation Act. It would create an Office of Public Engagement and Participation at the NRC, modeled off FERC's Office of Public Participation. Last month in our hearing with the NRC Commissioners I asked Chairman Hanson about the concept, and he indicated that he would be supportive of it. The purpose of an Office of Public Engagement and Participation would be to demystify the NRC and increase the ability of communities impacted by its decision to access its proceedings. And I look forward to getting feedback on this bill today, and I am working with the majority to find a way forward on it.

I would also like to mention the discussion draft based on Representative Latta's bill, the Nuclear Fuel Security Act. I support this bill so much that I offered it as an amendment during subcommittee and full committee markups of H.R. 1042, and I am pleased to see that it has been included in this hearing with relatively few changes. I hope my Republican colleagues have reconsidered voting no on it twice. Nuclear fuel security is a vitally im-

portant issue, but we can't just ban Russian uranium without ensuring that there will be an American supply chain to replace it.

While I support all three of these bills, there are some bills I have concerns with and would like to see changes to.

The Nuclear Advisory Committee Reform Act would potentially diminish the Advisory Committee on Reactor Safeguards by only requiring the committee to weigh in when requested by the NRC. I am afraid this could create another layer of unintentional bureaucracy, or sideline the ACRS altogether.

The Efficient Nuclear Licensing Hearings Act would remove the requirement that NRC hold hearings on new reactors, which could diminish public confidence that the NRC is holding nuclear power plants to a sufficient level of scrutiny.

And finally, the NRC's—the NRC Mission Alignment Act would change and codify the mission of the NRC. It is a substantial expansion of the NRC's authority that I do not believe is necessary, and could undermine its independence. It could also send a bad signal to countries working to set up nuclear power regulatory regimes overseas who often look to the NRC as a model of an independent nuclear regulatory—or regulator.

Now, over the last 4 years Democrats passed major legislation like the Energy Act of 2020, the Bipartisan Infrastructure Law, the Inflation Reduction Act, all to support safe and clean nuclear power, including investments at the Department of Energy. These laws included historic climate investments to help us lead the rest of the world in the transition to clean energy, while also creating millions of good-paying, clean energy jobs and lowering energy costs for Americans. So I am hopeful that we can now work together to build on these successes.

[The prepared statement of Mr. Pallone follows:]

Committee on Energy and Commerce

**Opening Statement as Prepared for Delivery
of
Full Committee Ranking Member Frank Pallone, Jr.**

***Hearing on “American Nuclear Energy Expansion: Updating Policies for Efficient,
Predictable Licensing and Deployment”***

July 18, 2023

Nuclear power plays an important role in producing carbon-free power for the electric grid. In April, this Subcommittee held a hearing examining the current and future nuclear energy landscape, and just last month we had all five commissioners from the Nuclear Regulatory Commission before us to talk about the NRC’s vital work. Those hearings have been the most bipartisan hearings we’ve had this Congress on the Energy Subcommittee, and I certainly hope today’s hearing continues that tone as we examine ideas to improve America’s nuclear power policies.

The NRC has done an admirable job over the years of ensuring nuclear power is safe and secure. We must now find ways to make the NRC’s work more efficient, without compromising on the extremely high safety standards that it has holds itself and the nuclear industry to.

I look forward to hearing from our witnesses – across both panels – on how the 15 bills included in today’s hearing advance that goal, and where they fall short and need to be improved. I think there are some good bills before us today, while some need improvement. I’m hopeful that we can work together on these bills so we can enable the NRC to safely and efficiently license our nation’s nuclear reactors for the future.

I want to briefly highlight a few of the bills I am particularly interested in. Ranking Member DeGette’s bill, the Strengthening the NRC Workforce Act, would allow the NRC to enjoy the alternative compensation authority we granted to FERC back in the bipartisan Energy Act of 2020, as well as direct hire authority. This would allow the NRC to attract and retain talent and expertise, something that will be critical as we ask it to license advanced reactors.

Representative Levin’s bill, the NRC Office of Public Engagement and Participation Act, would create an office of public engagement and participation at the NRC, modeled off FERC’s Office of Public Participation. Last month, in our hearing with the NRC Commissioners, I asked Chairman Hanson about the concept, and he indicated that he would be supportive of it. The purpose of an office of public engagement and participation would be to demystify the NRC and increase the ability of communities impacted by its decisions to access its proceedings. I look forward to getting feedback on this bill today, and on working with the majority to find a way forward on it.

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While I support all three of these bills, there are some bills I have concerns with and would like to see changes to. The Nuclear Advisory Committee Reform Act would potentially diminish the Advisory Committee on Reactor Safeguards (ACRS) by only requiring the Committee to weigh in when requested by the NRC. I am afraid this could create another layer of unintentional bureaucracy or sideline the ACRS altogether.

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Finally, the NRC Mission Alignment Act would change and codify the mission of the NRC. It is a substantial expansion of the NRC's authority that I do not believe is necessary and could undermine its independence. It could also send a bad signal to countries working to set up nuclear power regulatory regimes overseas, who often look to the NRC as a model of an independent nuclear regulator.

Over the last four years, Democrats passed major legislation like the Energy Act of 2020, the Bipartisan Infrastructure Law, and the Inflation Reduction Act to support safe and clean nuclear power, including investments at the Department of Energy. These laws included historic climate investments to help us lead the rest of the world in the transition to clean energy, while also creating millions of good-paying clean energy jobs and lowering energy costs for Americans. I'm hopeful that we can now work together to build on those successes.

Thank you, and I yield back.

Mr. PALLONE. And with that, Mr. Chairman, I yield back.

Mr. DUNCAN. Mr. Pallone, that is a very southern suit you have got on this morning, so looking good.

Mr. PALLONE. Jersey Shore.

Mr. DUNCAN. We now conclude with Members' opening statements. The Chair would like to remind Members that, pursuant to the committee rules, all Members' opening statements will be made part of the record.

I want to thank, and we want to thank all of our witnesses for being here today and taking time to testify before the subcommittee. Each witness will have the opportunity to give an opening statement, followed by a round of questioning from Members.

And there is a panel of lights in front of you. You have 5 minutes. I ask you to stay within that. It is going to go green, yellow, red. Just keep in mind that.

Our witnesses for the first panel are Dr. Michael Goff, Principal Deputy Assistant Secretary for the Office of Nuclear Energy at the Department of Energy, and Daniel Dorman, executive director of operations for the U.S. Nuclear Regulatory Commission.

Again, we appreciate you being here today. I will now recognize Mr. Goff for 5 minutes for an opening statement.

STATEMENTS OF K. MICHAEL GOFF, Ph.D., PRINCIPAL DEPUTY ASSISTANT SECRETARY, OFFICE OF NUCLEAR ENERGY, DEPARTMENT OF ENERGY, AND DANIEL H. DORMAN, EXECUTIVE DIRECTOR OF OPERATIONS, NUCLEAR REGULATORY COMMISSION

STATEMENT OF K. MICHAEL GOFF, Ph.D.

Dr. GOFF. Good morning and thank you, Chairman Duncan, Ranking Member DeGette, Chair McMorris Rodgers, Ranking Member Pallone, and the distinguished members of the committee. I am honored to appear before you today representing the Department of Energy, and I look forward to discussing the nuclear energy issues and legislation under consideration by this committee.

The Department does not have an official position on the bills you are considering today, but we appreciate the committee's long-standing bipartisan support for the Department's civil nuclear activities and the broader civil nuclear industry.

Mr. DUNCAN. Can you pull that mike a little closer to—or straight on?

Dr. GOFF. Sorry.

Mr. DUNCAN. Thank you so much.

Dr. GOFF. To swiftly reduce our carbon emissions and rebuild U.S. leadership globally, the Biden-Harris administration is prioritizing activities that keep the existing fleet of nuclear power plants in operation, that deploy advanced reactor technologies, that secure and sustain the nuclear fuel cycle, and that expand international nuclear energy cooperation.

Nuclear energy provides emissions-free, firm power necessary to underpin the transition to a carbon-pollution-free electric grid by 2035. New reactor deployments also have the potential to decarbonize industrial applications in support of the net-zero-by-2050 goals set by the United States and our partners around the

globe. Ensuring this future for our Nation and our allies must include a secure and reliable source of fuel for today's nuclear power plants and those of tomorrow.

The Department is working to address these energy security challenges in the face of ongoing global events. In 2022 the United States purchased 24 percent of the enriched uranium for commercial nuclear reactors from Russia. We cannot continue to infuse the Russian state with this source of income.

As you know, there is no quick, easy path to reduce our dependance on Russian-supplied fuels. Expanding our domestic fuel capacity will require strategic investments coupled with import restrictions that protect those investments well into the future. We must act swiftly to support domestic enrichment capabilities and prepare our industry for this transition. The Department welcomes the opportunity to work with Congress to address this national security vulnerability.

The United States and our allies share common visions of democracy, as well as safe and secure global economic and energy systems. In the June 2022 Group of Seven Leaders communique, the United States and our G7 partners made clear our collective intent to reduce reliance on civil, nuclear, and related goods from Russia, including working to assist countries seeking to diversify their nuclear fuel supply chains.

To this end, the United States, Canada, France, Japan, and the United Kingdom have identified potential areas of collaboration on nuclear fuels to support the stable supply of fuels for the operating fleets of today, and to enable the development and deployment of fuels for advanced reactors of tomorrow, and to achieve reduced dependance on Russian supply chains. This multilateral effort would aim to leverage the unique resources and capabilities possessed by each country's civil nuclear sectors to establish a global commercial nuclear fuel market.

Collaborating on strategic opportunities in the uranium extraction, conversion, enrichment, and fabrication supports our collective energy climate goals and economic resilience objectives. This multilateral cooperation would enable us to strengthen our domestic sectors and establish a level playing field to compete more effectively against predatory suppliers.

Thank you for the opportunity to appear before the committee today. I appreciate the important items such as implementing long-term power purchase agreements, supporting initial licensing of new reactor technologies, addressing fuel needs, and focusing on U.S. exports that you are considering to ensure that nuclear energy is a critical part of our energy mix to meet our climate goals and our energy and national security needs. Those actions have the potential for the Department of Energy to further enhance licensing activities, deployment activities, and the export of U.S. advanced nuclear technologies.

I look forward to continuing to work with you toward a more sustainable, equitable, reliable, affordable, safe, and secure energy system for our Nation, and I also look forward to addressing your questions. Thank you.

[The prepared statement of Dr. Goff follows:]

Testimony of Dr. K. Michael Goff
Principal Deputy Assistant Secretary for Nuclear Energy
U.S. Department of Energy
Before the
Committee on Energy and Commerce
Energy, Climate, & Grid Security Subcommittee
U.S. House of Representatives

July 18, 2023

Introduction

Thank you Chairman Duncan, Ranking Member DeGette, Chair McMorris Rodgers, Ranking Member Pallone, and distinguished Members of the Committee. I am honored to appear before you today representing the Department of Energy (DOE), and I look forward to discussing the nuclear energy issues and legislation under consideration by this Committee. The Department does not have an official position on the bills you are considering today but appreciates the Committee's longstanding bipartisan support for the Department's civilian nuclear activities and the broader civilian nuclear industry.

To swiftly reduce our carbon emissions and rebuild U.S. leadership globally, the Biden-Harris Administration is prioritizing activities that keep the existing fleet of nuclear power plants in operation, deploy advanced reactor technologies, secure and sustain the nuclear fuel cycle, strengthen nuclear safety, security, and safeguards, and expand international nuclear energy cooperation and nonproliferation. Nuclear energy provides emissions-free, firm power necessary to fundamentally underpin the transition to a carbon-free energy electric grid by 2035. New nuclear reactor deployments also have the potential to decarbonize industrial applications in support of the Net Zero by 2050 goals set by the United States and our partners around the globe. Ensuring this future for our nation and our allies must include a secure and reliable source of fuel for today's nuclear power plants and those of tomorrow. As prioritized by President Biden in his recently released National Security Memorandum on Countering Weapons of Mass Destruction Terrorism and Advancing Nuclear and Radioactive Material Security, the United States is committed to lead the way in the responsible development and deployment of advanced nuclear reactors by championing the development and export of technology that incorporates the highest standards of safety, safeguards, and security by design while minimizing the use and accumulation of weapons-usable nuclear materials.¹ I greatly appreciate the Committee's attention today on the programs and policies that shape our nation's nuclear energy objectives.

¹ [FACT SHEET: President Biden Signs National Security Memorandum to Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security | The White House](#)

Civilian Nuclear Supply Chains

The Department appreciates the Committee's continued attention to supply chain concerns that affect the civilian nuclear industry.

In particular, the Russian Federation's brutal invasion of Ukraine has demonstrated the grave threat to global energy security posed by dependence on Russian-supplied fuels. Russia, the largest global enricher of uranium, currently supplies a significant portion of the nuclear fuel supply chain to the United States and our international allies and partners. In particular, conversion and enrichment services from trusted sources are insufficient to replace current U.S. imports from Russia. Without expansion of domestic and international allies' and partners' fuel cycle capacity, the United States cannot reliably make sufficient low enriched uranium (LEU) or high-assay LEU (HALEU) available to support the needs of today's power reactor fleet, advanced reactors, research reactors, and medical isotope production facilities. This strategic vulnerability is unsustainable.

In addition, Russia's military attacks at, and subsequent seizure of, Ukraine's Zaporizhzhya Nuclear Power Plant (ZNPP) and the associated heightened risks of a nuclear incident underscore the nuclear safety, security, and nonproliferation concerns of doing business with Russia in the nuclear energy area.

The Department is working to address these energy security challenges in the face of ongoing global events. As noted, the United States currently purchases a significant amount of enriched uranium from Russia. In 2022, 24% came from Russia. We cannot continue to infuse the Russian state with this source of income and must begin to reduce and ultimately eliminate U.S. reliance on Russia in the nuclear energy area, especially as Russia irresponsibly engages in strikes that disregard nuclear safety and security and a nuclear incident in Ukraine.

As you know, there is no quick, easy path to reduce our dependence on Russian-supplied fuels. Expanding our domestic fuel capacity will require strategic investments coupled with import restrictions that protect those investments well into the future. We must act swiftly to support domestic enrichment capabilities and prepare our industry for this transition. The Department welcomes the opportunity to work with Congress to address this national security vulnerability.

Working with Allies

The United States and our allies share common visions of democracy as well as safe and secure global economic and energy systems. In the June 2022 Group of Seven Leaders' Communique, the United States and our G7 partners made clear our collective intent to reduce reliance on civil nuclear and related goods from Russia, including working to assist countries seeking to diversify their nuclear fuel supply chains.

To this end, the United States, Canada, France, Japan, and the United Kingdom have identified potential areas of collaboration on nuclear fuels to support the stable supply of fuels for the operating reactor fleets of today, enable the development and deployment of fuels for the advanced reactors of tomorrow, and achieve reduced dependence on Russian supply chains. This multilateral effort, as outlined in the Statement on Civil Nuclear Fuel Cooperation on April 17,

2023, would aim to recognize and leverage the unique resources and capabilities possessed by each country's civil nuclear sectors to establish a global commercial nuclear fuel market. Collaborating on strategic opportunities in uranium extraction, conversion, enrichment, and fabrication supports our collective climate, energy security, and economic resilience objectives. This multilateral cooperation would enable us to strengthen our domestic sectors and establish a level playing field to compete more effectively against predatory suppliers.

Part 810

In accordance with § 57 (b)(2) of the Atomic Energy Act of 1954 (AEA), persons may engage, directly or indirectly, in the production or development of special nuclear material outside the United States upon authorization by the Secretary of Energy, with the concurrence of the Department of State (DOS) and after consulting with the Departments of Defense (DoD) and Commerce (DOC), and the Nuclear Regulatory Commission (NRC). Part 810 of Title 10, Code of Federal Regulations (Part 810) implements AEA § 57(b)(2), pursuant to which the Secretary has granted a "general authorization" for certain categories of activities which the Secretary has found to be non-inimical to the interest of the United States – including assistance or transfers of technology to the "generally authorized destinations" listed in Appendix A to Part 810. Other activities within the scope of Part 810 -- including transfers of technology or provision of assistance to destinations not listed in Appendix A ("specifically authorized" destinations) – require a "specific authorization" from the Secretary. A specific authorization also is required for any assistance involving sensitive nuclear technologies (including enrichment, reprocessing, plutonium fuel, and heavy water production, regardless of the destination's status under the regulation).

Most major international nuclear import/export markets are "generally authorized" under Part 810. As such, U.S. industry can quickly and efficiently engage in most civil nuclear-related business with foreign clients that require access to Part 810-controlled technology. Earlier this year, Mexico was generally authorized, bringing the total number of generally authorized destinations to 48. DOE continues to evaluate and improve the Part 810 process with the goal of reducing the average processing time for approval of specific authorization requests. However, thorough consultations and concurrences, both intra-departmental and interagency, remain imperative to maintaining strong nonproliferation controls. There are several key challenges to achieving further reductions in processing times, including the time it takes for the proposed recipient country to provide assurances and unforeseen or ongoing foreign policy considerations, both of which can result in delays and take significant amounts of time to resolve. **Price-**

Anderson Report

As noted in the Department's 2023 Price-Anderson Report, we recommend that the broad and mandatory coverage of the DOE indemnification remains unchanged and undiminished with respect to contractual activity within the United States and be expanded to include additional contractual activity by DOE contractors on behalf of DOE outside the United States to reflect changed circumstances.² The Price-Anderson Act (PAA) has been a cornerstone of nuclear

² https://www.energy.gov/sites/default/files/2023-02/PAA%20Report%20January%202023_0.pdf

activities in the United States since the 1950s. In particular, the DOE indemnification of its contractors pursuant to the PAA has been a longstanding and critical component of DOE's ability to achieve its statutory missions. The PAA provides a comprehensive and equitable system of financial protection to address the concerns of both participants in nuclear activities and persons who may be injured by a nuclear incident. The PAA expires on December 31, 2025. In its recent Report to Congress on the need for continuation or modification of the PAA, the Department recommended that:

- (1) the PAA should continue;
- (2) the DOE indemnification should continue and expand upon its broad and mandatory coverage; and
- (3) the PAA should continue in effect in a manner compliant with the Convention on Supplementary Compensation for Nuclear Damage.

The Report found that renewal of the PAA would be in the best interests of DOE, its contractors, its subcontractors and suppliers, and the public. I would be happy to work with you as you consider renewal of this important Act.

Additional Policy Considerations – Fuel Supply Chains

We have developed an acquisition strategy for HALEU pursuant to Section 2001 of the Energy Act of 2020 within the context of a broader uranium strategy for the Department. The investments provided in the *Inflation Reduction Act* for HALEU are allowing the Department to begin helping the private sector establish a commercial U.S. HALEU production and supply chain capability for the long term, and thus begin mitigating U.S. reliance on Russia for various uranium products, including both low enriched uranium (LEU) and potentially HALEU needed to support the current fleet and future advanced reactors. The nuclear industry's response to the Department's proposed acquisition strategy and financial assistance opportunities under development has helped inform the Department's uranium acquisition strategy. We are now considering feedback received from industry as we prepare the final funding announcement. In addition, we have initiated the National Environmental Policy Act (NEPA) review process for the program to support the domestic commercialization of HALEU production and to acquire HALEU for ultimate commercial use or demonstration projects. The Department supports the continued safe operation of our existing reactors, and we support a very robust and aggressive uranium strategy for LEU and HALEU. We appreciate the Committee's leadership on this issue.

Conclusion

Thank you for the opportunity to appear before the Committee today. I look forward to continuing to work with you toward a more sustainable, equitable, reliable, affordable, safe, and secure energy system for our nation. I look forward to your questions.

Mr. DUNCAN. Thank you, Dr. Goff, and I will say I am thankful for the engagement we have had with Assistant Secretary Huff as well on these issues.

I will now recognize Mr. Dorman for 5 minutes.

STATEMENT OF DANIEL H. DORMAN

Mr. DORMAN. Thank you, Chairman, Chair Duncan, Ranking Member DeGette, Chair McMorris Rodgers, Ranking Member Pallone, and distinguished members of the subcommittee. My name is Dan Dorman, executive director for operations at the NRC. I welcome this opportunity to provide the staff's views on bills under consideration. I will briefly address our regulatory framework for new and advanced reactors, the environmental review process, and international cooperation.

As industry is developing new and advanced reactor designs, our staff is reviewing preapplication materials and submitted applications commensurate with the risk and safety significance of the proposed technology. NRC has worked hard to modernize its existing licensing processes to support the deployment of new and advanced reactors through the application of risk-informed and performance-based techniques and regulatory guidance.

Our streamlining and efficiency efforts include extensive preapplication interactions, regulatory audits to enhance communication with applicants and licensees, and early engagement with the NRC's Advisory Committee on Reactor Safeguards.

In addition, we are ahead of schedule in developing a new optional regulatory framework for licensing new reactors in accordance with the Nuclear Energy Innovation and Modernization Act, or NEMA. In March the staff submitted a draft framework known as the Part 53 Rule to the Commission for its consideration. The rule would establish a technology-inclusive, risk-informed, and performance-based regulatory framework for licensing and oversight of new commercial nuclear power plants.

NRC is also looking at how it assesses fees for reviewing new and advanced reactor applications to ensure they are fair and equitable. NEMA requires NRC to build entities for regulatory activities performed. The fees incurred for any given project will vary based on the type and quality of the application, the novelty of the technology, and the complexity of the proposed design.

NRC clarified the applicability of its variable annual fee structure for Small Modular Reactors, or SMRs, to make it clear that nonlight-water SMRs are included. This clarification allows the agency to be technology inclusive and establish a fair and equitable approach for assessing annual fees to all new and advanced reactors, which would lower fees for many of these applicants.

The NRC continues to assess and implement processes to streamline our environmental reviews while still complying with the National Environmental Policy Act and related laws. We are working aggressively to implement the Commission's direction to ensure that NRC's environmental regulations supporting analyses and guidance fully support the subsequent renewal of nuclear power plant operating licenses from 60 to 80 years.

We are also aware that industry is interested in using so-called brownfield sites such as former coal plants or shuttered nuclear

power plants to use the existing infrastructure and workforce. If we receive applications for new nuclear plants at these types of sites, existing data about the sites could be leveraged to support improving the efficiency of our environmental review.

The NRC's international portfolio includes import and export licensing obligations and a broad range of international cooperation and assistance functions. To prepare for the export of advanced reactor technologies, NRC has initiated a rulemaking to clarify that its export regulations include nonlight-water reactor technologies, reducing potential regulatory uncertainty in our licensing reviews of export applications.

NRC engages with its international partners to collaborate on a wide range of regulatory topics, including licensing and oversight of SMRs and advanced reactors. We have had noteworthy success in performing joint technical reviews with the Canadian regulator on highly complex areas of interest for SMRs and advanced reactors, including fuel qualification.

NRC also complements broader U.S. Government nuclear energy outreach by providing targeted regulatory capacity development to countries with growing regulatory programs to ensure they are prepared to provide appropriate oversight of nuclear power or material use within their borders. NRC recently renewed its cooperation agreement with Poland's National Atomic Energy Agency that enables the exchange of information to support Poland in expanding its regulatory program to license both large light-water and small modular reactors.

Chair Hanson is not at this hearing today because he is in Senegal and Ghana this week. Ghana is embarking on a nuclear power program to meet its electricity needs, and signed an agreement with the United States to strengthen economic and diplomatic ties. The Chair expects to deepen the relationship and emphasize the importance of an independent, technically competent, and adequately funded regulator.

There has been a marked increase in the demand for regulatory support in international capacity-building efforts, and we are actively engaged with our Federal partners to ensure these efforts are coordinated and prioritized consistent with U.S. Government's strategic objectives.

I appreciate the subcommittee's interest in NRC's mission and the work of our dedicated staff. We look forward to continued engagement with Members of Congress as the legislation under consideration advances, and I look forward to your questions.

[The prepared statement of Mr. Dorman follows:]

WRITTEN STATEMENT
BY DANIEL H. DORMAN
EXECUTIVE DIRECTOR FOR OPERATIONS
UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE
HOUSE COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON ENERGY, CLIMATE AND GRID SECURITY
JULY 18, 2023

Chair Duncan, Ranking Member DeGette, Chair McMorris Rodgers, Ranking Member Pallone, and distinguished members of the Subcommittee. My name is Dan Dorman. I am the Executive Director for Operations at the Nuclear Regulatory Commission (NRC). I appear before you today representing the NRC staff. As you know, the NRC is an independent Federal agency with a mission to license and regulate the use of radioactive materials to provide adequate protection of public health and safety, promote the common defense and security, and to protect the environment. Within the NRC, the Executive Director is responsible for overseeing the agency's operational and administrative functions and serves as the chief operating officer. I welcome the opportunity to provide the Subcommittee the NRC staff's views on the bills under consideration as they move through the legislative process. Today, I will address three specific areas I believe are of interest to this Subcommittee, specifically, our regulatory framework for new and advanced reactors, the environmental review process, and international cooperation.

REGULATORY FRAMEWORK FOR NEW AND ADVANCED REACTORS

Industry is developing new and advanced reactor designs, and the staff is reviewing pre-application materials and submitted applications commensurate with the risk and safety

significance of the proposed technology. Over the past several years, the NRC has been working to modernize its existing licensing processes to support the deployment of new and advanced reactors through the application of risk-informed and performance-based techniques and regulatory guidance. Additionally, the NRC has streamlined its licensing review process by using a "core team" approach to complete reviews of applications we have received so far.

Other streamlining and efficiency efforts include extensive pre-application interactions, regulatory audits to enhance communication with applicants and licensees, and early engagement with the NRC's Advisory Committee on Reactor Safeguards.

In addition, the NRC staff is developing a new optional regulatory framework for licensing new reactors in accordance with the Nuclear Energy Innovation and Modernization Act or NEIMA. In March, the NRC staff submitted this draft proposed framework, known as the Part 53 rule, to the Commission for its consideration. The rule would establish a technology-inclusive, risk-informed, and performance-based regulatory framework for licensing and oversight of new commercial nuclear power plants. Part 53 will reflect best practices and lessons learned from new and advanced reactor licensing reviews conducted under the existing regulations. The NRC expects to issue the final rule in 2025, well ahead of the NEIMA requirement of December 31, 2027.

The NRC is also looking at how it assesses fees for the review of new and advanced reactors applications to make sure they are fair and equitable. The NRC is required by NEIMA to bill entities for the regulatory activities that we perform. The fees incurred vary based on the type and quality of an application, the novelty of the technology, and the complexity of the proposed design. The NRC clarified the applicability of its variable annual fee structure for small modular reactors, or SMRs, to make it clear that non-light water reactor SMRs are included. This

clarification allows the agency to be technology inclusive and establish a fair and equitable approach for assessing annual fees to all new and advanced reactors, which would result in lower fees for many of these applicants.

ENVIRONMENTAL REVIEW TRANSFORMATION

The NRC continues to assess and implement processes to streamline our environmental reviews, while still complying with the National Environmental Policy Act and related laws. Currently, we are working aggressively to implement the Commission's direction to ensure that the NRC's environmental regulations, supporting analyses, and guidance fully support the subsequent renewal of nuclear power plant operating licenses from 60 to 80 years. To that end, the staff expects to finalize by 2024 a rulemaking to update the license renewal Generic Environmental Impact Statement to explicitly address subsequent license renewal.

The NRC is aware that the industry is interested in using "brownfield" sites, such as former coal plants or shuttered nuclear power plants, to use existing infrastructure and workforce. If we receive applications for new nuclear plants at these types of sites, existing data about the sites could be leveraged to support our environmental review of such requests.

INTERNATIONAL COOPERATION

The NRC's international portfolio includes import and export licensing obligations as well as a broad range of international cooperation and assistance functions. To prepare for the export of advanced reactor technologies, the NRC has initiated a rulemaking to clarify that its export regulations include non-light-water reactor technologies. This work will reduce potential regulatory uncertainties related to the deployment of equipment and substances associated with

advanced reactors and improve predictability and efficiency in the NRC's licensing reviews of export applications.

With respect to international cooperation and assistance, the NRC engages with its foreign regulatory counterparts and other international partners to collaborate on a wide range of regulatory topics, including licensing and oversight of SMRs and advanced reactors. For example, we have had noteworthy success in performing joint technical reviews under our Memorandum of Cooperation with the Canadian regulator on highly complex areas of interest for SMRs and advanced reactors, including fuel qualification. The NRC staff is also engaged in multilateral collaboration through the International Atomic Energy Agency on efforts such as the development and harmonization of safety standards. Collectively, these efforts demonstrate the value of international cooperation in advancing the regulatory review of SMR and advanced reactor designs.

The NRC also complements broader U.S. Government nuclear energy outreach by providing targeted regulatory capacity development to countries with growing regulatory programs to ensure they are prepared to provide appropriate oversight of nuclear power or material use within their borders. For example, Chair Hanson recently signed a five-year cooperation agreement renewal with the President of Poland's National Atomic Energy Agency that enables the exchange of information to support Poland in expanding its regulatory program to license both traditional large light-water reactors and SMRs. And Chair Hanson is not at this hearing because he is in Senegal and Ghana this week. Ghana is embarking on a nuclear power program to meet its electricity needs and signed a Memorandum of Understanding Concerning Strategic Civil Nuclear Cooperation with the U.S. to strengthen economic and diplomatic ties. The Chair is there deepening the relationship and emphasizing the importance of a regulator that is independent, technically competent, and adequately funded. In addition, the NRC

continues to host foreign regulatory staff through personnel exchanges to share information and experiences regarding our regulatory processes. We have seen a marked increase in the demand for regulatory support in capacity-building efforts internationally and are actively engaged with our Federal partners to ensure these efforts are coordinated and prioritized consistent with U.S. Government strategic objectives.

CONCLUSION

I appreciate the subcommittee's interest in the NRC's mission and the work of its dedicated staff, as well as the opportunity to address you today. We look forward to continued engagement with members of Congress as the legislation under consideration today advances. I look forward to your questions.

Mr. DUNCAN. You all did great on time. I don't think we have had witnesses stay within the 5 minutes in a while. So I want to thank you for your testimony, and we will now move into the question-and-answer portion of the hearing. I will begin questioning, recognize myself for 5 minutes. Let me begin my questions on a high level.

One of themes of our nuclear policy work reflected in the bipartisan letter we wrote in April is to restore agency alignment with the policy goals of the Atomic Energy Act. These policies, I think it is fair to argue, helped the United States for several decades lead the world in nuclear technology to spread the peaceful benefits of nuclear power. We want to recapture the focus of these policies going forward.

Mr. Goff, you spent 30 years at Argonne and Idaho National Labs, two of the Nation's key nuclear technology labs. From your experience and in your current position at DOE, do you see the value of reasserting the principles of the Atomic Energy Act to promote and deploy American nuclear technologies, especially given competition with Russia and China?

Dr. GOFF. Yes. I mean, I view that we operate under the Department of Energy under the Atomic Energy Act. That provides most of our authorities. And we view those things as very critical. We do need to be, you know, the leaders, you know, reestablish the U.S. leadership in nuclear technology, both domestically and for export.

We need to make sure that we, the United States, are setting the standards for safety and security and nonproliferation around the world. And the way we do that is through the international engagement, and be able to export of our technologies. So I do view the, you know, us reestablishing that leadership that is—you know, and through the directions of the Atomic Energy Act is, you know, critical for us moving forward. We have to be the leaders in this space.

Mr. DUNCAN. Yes. Just as a sidebar question, Do you think the Chinese operate with that same mentality for safety and security?

Dr. GOFF. I think they operate under different—yes, somewhat different standards. I think, you know, they have operated some of the reactors safe and all, but as far as the overall security and the process that they go about, no, I would—I think we should be the ones that should be working with our partners and allies, as opposed to Chinese companies coming in and doing that. And we have reflected that in some of our export relationships with the Chinese.

Mr. DUNCAN. Yes, thank you for that. I think we can be the leader. We have been. We can be.

Mr. Dorman, you began your career in the nuclear Navy before moving to the NRC. At the hearing with the Commissioners last month, it was stated that when the Navy approves a nuclear submarine it is a dual mission, which is safety but also to enable the mission.

It is not at all clear the NRC is performing its safety mission and service to the broader mission to enable nuclear energy. How are you, as executive director of operations, working to ensure NRC staff have a view in all their activities to this broader mission?

Mr. DORMAN. Thank you, Chairman. Broadly, I think in—within the walls of the NRC we talk about our mission as enabling safe and secure use of nuclear technology. So we are focused on reaching technically sound safety conclusions that support the applications that come before us.

We also over recent years have focused on broader application of risk insight, in particular applying risk insight at the beginning of our review process to make sure that our activities are appropriately scoped and focused on the most risk-significant activities as we develop the basis for our safety decision making.

Mr. DUNCAN. Yes, thank you for that. Let me stay with you, Mr. Dorman. Last month I discussed with Chairman Hanson the issue of subsequent license renewals taking significantly longer and costing more, which he agreed was a problem. This does not reflect an agency learning, improving, and getting a more efficient mindset. I understand inventory of the NRC's licensing actions have declined steadily over the last 20 years, from 1,600 in 2003 to 800 today. And today, according to your data, 80 percent—only 80 percent of this smaller amount of actions is completed within the budget.

Mr. Dorman, something isn't right here, either in budget or staffing priorities. What can you do to improve efficiency and put in place lasting measures so we can see performance improvements?

Mr. DORMAN. Thank you, Chair. We are focused on, again, at the beginning of our—any application that is before us, defining a scope of the staff's review and a schedule for that review, and managing to those plans. So I think that is gaining us some benefits in the focus and the level of effort in a number of reviews.

The decrease in the number of reviews that you refer to also comes with an increase in the complexity of many of the reviews that the staff is looking at. So it is—I would say more—many of the more mundane and administrative tasks that were undertaken 20 years ago have been resolved through standardization of tech specs across licenses and so forth.

On the specific issue of the subsequent license renewal, coming back from the hearing last month we have had conversations to focus on using risk insights, again, to look at the scope of the work that the staff is doing on subsequent license renewal applications. There are a number of attributes of aging of the plants that come into play in the 60-to-80-year period that we are not focused on because they had adequate margin already in the 40-to-60-year period.

So there are some additional elements that we look at, but we are looking at where we can use risk insights to sharpen our focus and reduce the level of effort that we need to do to get to a sound safety decision.

Mr. DUNCAN. Thank you for that. My time is up, and I will now recognize the—Ranking Member DeGette for 5 minutes.

Ms. DEGETTE. Thank you so much, Mr. Chairman.

As I mentioned in my opening statement, I introduced the Strengthening the NRC Workforce Act because one of the most critical ways we can ensure that the NRC maintains the highest levels of public safety is by making sure they are fully staffed. But the

other thing is, if you want to ensure timely consideration of applications, you have to have the NRC be fully staffed, too.

And so, Mr. Dorman, I want to ask you. I mentioned—and you were shaking your head, so I know your answer already—roughly one-third of the NRC staff is eligible for retirement, is that right?

Mr. DORMAN. Yes, ma'am.

Ms. DEGETTE. And so, with increased interest in nuclear energy and advanced reactors, NRC is expecting a significant increase in applications for new reactor licenses. Is that right?

Mr. DORMAN. Just to clarify, in the near term we are expecting several applications for new reactor licenses—I think those we call first-of-a-kind. As those become demonstrated, we are hearing from the industry that there are many people who want to be next in line. So I think it is—we are seeing a modest increase in the near term, with the potential for a fairly significant increase in the not-too-distant future.

Ms. DEGETTE. And so you are going to really need to have a robust and highly educated staff. I guess that would be safe to say, right?

Mr. DORMAN. Yes, ma'am.

Ms. DEGETTE. How would the use of direct hire authority prepare the NRC for this anticipated increase in workload?

Mr. DORMAN. It would be a great assistance. I think the—we have—over the last decade, the staffing of the NRC was reduced by about a third. We have kind of turned that corner and leveled it off in the last year or two. And that—as you noted, the age demographic of our workforce has resulted in increased attrition. And so we are hiring, really, to offset that attrition. We are kind of just starting to make progress to increase, to get closer to our allotted FTE.

Ms. DEGETTE. OK.

Mr. DORMAN. As we do that, the industry is also expanding. And so we are competing in a very competitive market right now.

Ms. DEGETTE. Yes. And so if you could increase compensation for the existing workforce, that would ensure that NRC would remain fully staffed as well, right?

Mr. DORMAN. It would be a great help, yes, ma'am.

Ms. DEGETTE. And if you had the staff and the funding, then the NRC would be able to be more expeditious in reviewing the licenses, especially the wave that you are anticipating. Is that right?

Mr. DORMAN. Yes, ma'am. It will be essential that we are able to fully staff the core teams for multiple applications.

Ms. DEGETTE. Now, I want to ask you quickly about another bill, the Efficient Nuclear Licensing Hearings Act, because you talked in your testimony about one thing we could do about siting new reactors and so on. You talked about brownfields and other sites.

How would removing the requirement that NRC hold hearings on new reactors threaten public safety and shake public confidence in the NRC?

Mr. DORMAN. Thank you, Ranking Member DeGette.

I think the—there is a substantial amount of information that is available to the public today that was not available routinely or easily in the period when that requirement was established. Our public-facing, web-based records management system has been in

place for over a quarter of a century now, and we have upgraded it with improved search engines to really make information available to the public.

Ms. DEGETTE. OK, I think that is great. But what would happen if you removed the requirement that the NRC hold hearings on new reactors?

Mr. DORMAN. I think it is important to note that that would not in any way affect the interests of any party who would seek a hearing. So we still have the safety evaluation and the environmental review done by the staff—

Ms. DEGETTE. OK, so you don't think it would make any difference?

Mr. DORMAN. It would not impact our safety conclusion. It would have perhaps one less—

Ms. DEGETTE. Do you think it would impact the public's confidence in the facility if you didn't have hearings?

Mr. DORMAN. We have significant engagement with the public throughout our process. So I think it would not—

Ms. DEGETTE. So yes or no will work.

Mr. DORMAN. No, I don't believe it would—

Ms. DEGETTE. OK.

Mr. DORMAN [continuing]. Significantly degrade public confidence.

Ms. DEGETTE. Thank you.

Now I wanted to ask you, Dr. Goff, very briefly, in the Strengthening American Competitiveness Act there is a section—part 810, where one—where it talks about our exports of nuclear materials.

Do you think this would impact our ability to export nuclear materials to, say, places like Japan and other countries?

Dr. GOFF. I mean, we do have to abide by the 810 process. For countries like Japan and—a number of those countries already have general authorization, so it is much easier to, you know, transfer standard technologies to them.

Countries that have—there are certain countries, though, that require specific authorizations, and those—there is much more of a review on that.

Ms. DEGETTE. Great, thank you.

I yield back.

Mr. DUNCAN. The gentlelady yields back. I will now go to Mr. Latta for 5 minutes.

Mr. LATTA. Well, thank you, Mr. Chairman, and thanks for holding this legislative hearing today. And also, thanks for our witnesses for being with us today.

Nuclear power offers the United States a reliable, carbon-emissions-free source of energy. While I am happy the subcommittee is looking at a host of legislative proposals to accelerate the deployment and utilization of nuclear energy, I am especially grateful that we are examining the discussion draft of my updated Nuclear Fuel Security Act.

And Mr. Chairman, before getting to my question, I ask unanimous consent to submit into the record this letter of support for my bill from the Uranium Producers of America.

Mr. DUNCAN. Without objection, so ordered.

[The information appears at the conclusion of the hearing.]

Mr. LATTA. Thank you, Mr. Chairman.

Dr. Goff—and again, thank you very much for being with us—I hope you share my sense of urgency regarding the United States’ dependance on Russia for nuclear fuel, especially considering Russia’s invasion of Ukraine. We currently rely on Russia, Kazakhstan, and Uzbekistan—two nations within Russia’s sphere of influence—for nearly half of our natural uranium purchases.

Will you address the importance of ensuring that the U.S. has robust domestic capabilities at each step in the fuel cycle, including the production of natural uranium through conversion enrichment?

Dr. GOFF. Yes. Based on Russia’s unprovoked and unjustified invasion of Ukraine, I think that does highlight that Russia is not a reliable supporter of energy security for any nation. So, yes, I share your concern that, you know, we do have a significant reliance, especially on enrichment and conversion activities from Russia, and we need to be able to work—and working with our allies, replace that with, you know, a more assured supply, you know, preferably domestic, additional domestic capacity here in the United States for enrichment, but also we could be working with our allies.

So, yes, I do share that concern, and that is a very important issue that we need to move forward on in a very timely manner here.

Mr. LATTA. Well, you might agree that it is important to increase our domestic capabilities. The speed with which DOE is acting tells another story. DOE is moving especially slow in implementing HALEU availability program, which Congress directed through the Energy Act of 2020. Perhaps this is why companies like Centrus and TerraPower are moving forward with their own plans to collaborate on domestic production of HALEU, given DOE’s absence.

What are you doing to accelerate implementation of HALEU availability program?

Dr. GOFF. We did just complete the review—well, the comments are just in from the draft review, for the draft RFP that was issued. Yes, it did take a while to get that draft RFP out. There was a lot of interagency review to make sure that we got that right.

We have now gone through the comments, and are working to address those comments in what will be the final RFP to, again, incentivize them moving forward on the HALEU activities. But yes, we share your concern that we need to be moving rapidly, especially on that activity, to provide high-assay, low-enriched uranium to be able to support especially those advanced reactor demonstration programs moving forward here.

Mr. LATTA. OK, let me follow up, because it sounds like there is a lot of interagency discussion going on. But will the proposed Nuclear Fuel Security Act help speed up the program’s rollout?

Dr. GOFF. It does provide—yes, highlights a number of things that, you know, the Secretary could get involved in to be able to make sure we have assured LEU supply and high-assay, low-enriched uranium supplies.

We are working already, though, I will note, on trying to within the Department find as much material that we can to provide for those companies as well. So many of those actions would, yes.

Mr. LATTA. Well, let me just—not that I am picking on you—let me ask another question.

You know, after reviewing the public comments, it is clear that the nuclear industry has deep concerns with DOE's draft HALEU request for proposals. How does DOE plan on addressing these concerns?

And will you commit to further outreach with the industry prior to the finalization of the RFP?

Dr. GOFF. We do commit to further outreach to the industry as part of that, and, yes, we are working now to see how we want to address some of those comments that came in to make it an effective program. We want it to be an effective program that will incentivize that new capacity. So we appreciate the comments that we got from the stakeholders in the industry and we are—you know, have just gone through the review of those and are working to see how we can address those and incorporate them in a final RFP.

Mr. LATTA. Well, I appreciate your comments because, again, it is—for me and for members of this committee and others, it is very important that we do go forward because, again, we want to make sure that the United States is not dependent with over 50 percent of our uranium out there coming from pretty much, you might say, untrusted sources. So it is essential, and I hope that carries over to the Department.

And Mr. Chairman, my time is expired, and I yield back the balance.

Mr. DUNCAN. I thank the gentleman from Ohio, and I recognize the gentleman from California, Mr. Peters, for 5 minutes.

Mr. PETERS. Thank you very much, Mr. Chairman, for this hearing, and thank you to the witnesses for being here.

I also want to thank Congressman Carter for his leadership and partnership on the Global Nuclear Energy Assessment and Cooperation Act. That bill would include the training of foreign nuclear energy experts in the establishment of a U.S. international nuclear reactor export and innovation branch, which would help ensure we remain the world's leading developer of nuclear energy.

From climate change to energy security, bipartisanship will be essential to tackling our most pressing energy challenges. And I just want to add, for purposes of context, how important transmission will be. And I know the chairman wants to get at hearings. I think that is going to be in the fall. The sooner we can get that conversation going about a strategy for promoting interregional transmission across the country, I think the better off we will be in deploying energy security and efficiency and better climate policy. So I appreciate the chance today to operate in a bipartisan way, and I hope that we can keep it up.

The other point I would raise is, you know, we have done a yeoman's job in this country about decarbonizing our—planning to decarbonize our economy and to transition to a new energy supply and cleaner energy supply. But we have to recognize in context that we are 10 percent of worldwide emissions and that, if we don't keep cheap coal in other places in the ground, then we will lose this battle for this planet. And that is why there is growing bipartisan support for increasing U.S. exports of nuclear energy tech-

nologies and expertise, because that offers a real possibility for the development of the—or for the developing world to avoid using that really dirty and dangerous fuel.

Mr. Goff, what are the current roadblocks to exporting U.S. nuclear technologies and expertise, and what reforms could help address those roadblocks?

Dr. GOFF. Well, we need to have certain agreements in place for different countries. So for countries that we already have a 123 Agreement, you know, we can export those technologies.

Then it is making sure that we have the right support mechanisms to be able to export those. Do we have the right financing packages? We have—the Export-Import Bank can help with financing, but there are certain things we still can't do, necessarily, that other countries can do when they are going to export, especially, say, equity. We don't have a good way for the U.S. Government to provide equity financing for some of those exports to different countries that are very important for—you know, it is very important for those countries to have some equity financing. So making sure we have the right financing packages, I think, is very important.

I think we also need to make sure that we deploy successfully in the United States. It is very—you know, most countries don't want to build first-of-a-kind. They want to see it operating in the country of origin first. So we have got to make sure that we can deploy successfully but also make sure that we have right financing packages, as well, internationally.

Mr. PETERS. Are you aware of existing proposals to deal with the—our inability to provide equity in the way you describe?

Dr. GOFF. Could you say that again? I am sorry.

Mr. PETERS. Are you aware of existing proposals to address this issue about providing equity that you described?

Dr. GOFF. I have heard of various things being bounced around, but not aware of a specific proposal out there.

Mr. PETERS. That is very helpful to me, and I will look for one myself.

There is bipartisan recognition in both chambers of Congress that commonsense permitting reforms are needed to boost energy security and reduce pollution. While nuclear energy has been a clean, secure, reliable, maybe the safest source of energy for decades, and helps to stabilize our energy systems, the NRC's legacy environmental review processes have contributed to excessive process to build new nuclear.

Dr. Goff, the draft Modernized Nuclear Reactor Environmental Reviews Act takes steps to reform the process for conducting environmental assessments to allow broader usage and potentially add new categorical exclusions. Do you believe these are good approaches? Would they be effective?

And what else needs to be done to enable more rapid environmental reviews?

Dr. GOFF. I think we do need to make sure that we have a process that is in place—you know, we have the National Environmental Policy Act—that we are addressing the environmental impacts, but make sure that we do it in a process that is very efficient, not too duplicative, so that it doesn't become the, you know, the slowest portion of the process. So things that we can do to, you

know, to make sure that we are doing that process efficiently and effectively, I think, are very important.

It is not—the Department of Energy doesn't control that aspect of it, so I guess I won't necessarily speak on——

Mr. PETERS. Yes. I will share, one of my frustrations is that, you know, we do the same analysis on the same process in every single district court in the country. It doesn't make any sense, and it really handcuffs us. I am looking for ways to make sure that we don't do that anymore, not with just respect to nuclear but with respect to deploying all energy in the country.

So thank you, Mr. Chairman, for the hearing, and I yield back.

Mr. DUNCAN. The gentleman yields back. I will now go to Texas.

Dr. Burgess is recognized for 5 minutes.

Mr. BURGESS. Thank you, Chairman.

Dr. Goff, just on that same line for a second, in the debt limit that was recently passed by the House of Representatives there was some streamlining in NEPA that was provided. Is that helpful at all in this venue?

Mr. DORMAN. Yes, I am thinking I might jump in here.

Mr. BURGESS. Sure.

Mr. DORMAN. So thank you, Congressman. Yes, we are looking at the provisions in that bill as well as the provisions in the proposed bill.

We are also taking actions to—through an advanced reactor generic environmental impact statement, the Commission has asked us to look at our categorical exclusions that exist in the Commission's regulations of part 51.

We are also looking at process improvements in the staff process, and particularly reducing the level of detail in our documentation to really focus it on the key elements supporting the environmental decision to help work towards streamlining our process. But we welcome the committee's interest in further efforts.

Mr. BURGESS. So just to distill it down a little bit: The language was helpful that was passed.

Mr. DORMAN. Yes.

Mr. BURGESS. OK.

Mr. DORMAN. Thank you.

Mr. BURGESS. Thank you for saying so.

And Dr. Goff, I have a couple of questions on the power purchasing agreements. This committee has found successful collaboration between NRC, DOE, and private companies is vital if America is to usher in a new era of nuclear innovation. Can you share with the committee the scope of the power purchasing agreements that DOE has entered with advanced nuclear reactor companies?

Dr. GOFF. At this point, unfortunately, we have not entered into power purchase agreements for advanced nuclear.

One of the issues in that area is the Department of Energy doesn't have authorization for long-term power purchase agreements. We can do more in the 5-to-10-year range. For most of the—for a large investment like a nuclear power plant, they are looking at more power purchase agreements in the 20 to 30 years. So that is something we do not have that could be advantageous to help those first movers provide assurity of, you know, selling their power, and it is something that we would be interested in, espe-

cially as we are looking at using Department of Energy sites for some of the initial deployments of advanced reactors.

It would be nice if we could be one of the purchasers for that, but right now I would say we don't have the authorization to be able to do long-term power purchase agreements from the Department of Energy. Other agencies like Department of Defense do—

Mr. BURGESS. So let me just be sure I understood that. You said if you could be the purchaser of those long-term agreements?

Dr. GOFF. For the Department of Energy, yes. I thought that was what the question was, that—

Mr. BURGESS. Yes.

Dr. GOFF. Yes, that right now we have not signed any because we are limited, and only—really, about 5 to 10-year power purchase agreements. Most companies, if they are going to make that investment, they are looking at more of a 30-year power purchase agreement. We do not have that authority right now in the Department of Energy.

I think one of the pieces of legislation would potentially extend that out, but that would be a beneficial—

Mr. BURGESS. So that would be helpful.

Dr. GOFF. Yes, that would be helpful.

Mr. BURGESS. Thank you.

Mr. Dorman, back to you. Ranking Member Pallone mentioned in his opening statement about demystifying the NRC, which seems like a laudable goal. You began your career as an officer in the nuclear Navy, is that not correct?

Mr. DORMAN. Yes, sir, that is correct.

Mr. BURGESS. And the safety record with the nuclear Navy is really unparalleled. It is something that should be—every American should be aware of that, yet most aren't. When we talk about nuclear power, most people think of Three Mile Island and Homer Simpson. They don't think about the nuclear Navy. Are there ways that you can identify that that would be helpful for people to begin to think about the nuclear Navy as the model for how we—what the future is in nuclear energy?

Mr. DORMAN. I think the nuclear Navy is a model. I think, you know, you mentioned Three Mile Island. It has been over 40 years since that event, and the record of nuclear safety in the United States is well established.

From our part, as the safety regulator, we provide information to the public on our website of the performance of each nuclear power plant in the country on an ongoing basis. But I think one of the things that is challenging to connect with the average member of the public is it is a complex issue. We have some really smart people who are probably not the best people to be explaining it, but others who have that skill.

So I think, as we engage public stakeholders, we need to make sure we are putting the message out in as understandable a way as we can of the work that we do in our licensing and oversight processes to ensure the safety and what we are seeing as the safe operation of the facilities.

Mr. BURGESS. Thank you, Mr. Chairman. I will yield back.

Mr. DUNCAN. The gentleman yields back. I now go to Mr. Tonko for 5 minutes.

Mr. TONKO. Thank you, Mr. Chair, and I appreciate the subcommittee working on nuclear energy issues and hosting this hearing today. It should be an area where we can find bipartisan agreement.

Our existing reactors are essential to our Nation's successful clean energy transition, and I am hopeful that several of the bills before us today will help with the deployment of new and advanced reactors. But as we think about how the Nuclear Regulatory Commission can support the industry's efforts to develop and deploy advanced reactors, we shouldn't lose sight of the needs of the Commission to continue to be a successful and independent regulator of the industry.

So with that in mind, I would like to express my support for the bills introduced by Ranking Member DeGette and Congressman Levin. The NRC has awesome responsibilities, and we have a responsibility to ensure that the Commission has the expert personnel necessary to carry out its duties.

Mr. Dorman, I heard the earlier discussion you had with Congressman DeGette about recruiting and retaining its staff. But how difficult is it for the industry's regulator to compete with the private sector for a limited number of qualified candidates?

Mr. DORMAN. Thank you, Congressman. I think our advantages in that marketplace is a clear safety mission and the history of the NRC as a great place to work.

I have actually had a new employee recently that reached out to me 2 weeks after coming to the agency and expressed how pleased he was because he had been wanting to come to the NRC for a long time. That said, when we have 17 technology developers on top of the operating industry, we are competing in a tight marketplace.

And we have our attrition this year. Other than retirement, attrition is running about 2 percent, which is a little higher than our historical rate. And we are seeing good people make transition mid-career to some of these technology developers, and they have the ability to offer them pays that we don't—are not able to offer.

So I think additional tools to help us particularly with the critical skills that we need for the innovations that are happening in the industry will be helpful.

Mr. TONKO. Thank you. And Mr. Dorman, again, if the bills and discussion drafts under consideration today were to be enacted, how would that increase the Commission's workload?

Mr. DORMAN. I am not sure I see anything in the bill that directly—in the bills that directly increase the workload. I think what I alluded to earlier is we are anticipating 4 applications for construction authorization for 2 light-water and 2 nonlight-water power reactors in the next 12 months. If those projects move forward successfully, then I think we will see a substantial increase in the following years.

Mr. TONKO. Thank you, Mr. Dorman.

Mr. Chair, the ranking member's bill is an important and needed addition to any legislation that provides NRC with additional workload requirements. I similarly believe we should be looking to provide our Nation's other energy regulator, FERC, with similar hiring authority to ensure they have the technical and legal and other expertise necessary to carry out its responsibilities.

In the past there has been bipartisan support to streamline the NRC processes. Mr. Doorman, does the Commission have any views on the proposed bills to further streamline licensing hearings and other proceedings?

Mr. DORMAN. I can't speak for the Commission. I would say that we are happy to work with the committee on any and all of those proposals.

Mr. TONKO. Thank you. And were these bills to move forward, I believe it would be important to provide greater opportunities for the broader public and host communities to participate in Commission proceedings. Over the past couple of years, we have seen FERC's Office of Public Participation have success, and I hope we can do more to guarantee that streamlined regulatory processes do not result in fewer opportunities for the public to have their voices heard.

So with that, I thank you, Mr. Chair, and I yield back.

Mr. DUNCAN. The gentleman yields back. I will now go to the chair of the full committee, Mrs. Rodgers, for 5 minutes.

Mrs. RODGERS. Clearly, NRC has the vital mission to assure adequate safety of nuclear technology. Yet it also works in service to the policies laid out by Congress, especially in the Atomic Energy Act.

This past Friday my colleagues and I introduced a bipartisan, bicameral letter to the NRC, and we urged the Commission to resolve issues associated with the development of new, risk-informed regulations for advanced reactors. Congress wants a regulation that will be workable for the most efficient licensing of advanced technologies, and we said so much in legislative reforms in 2019 to set the Commission and industry up for success.

Mr. Dorman, as you heard me say last month to the Commission, it is disappointing that, after 2 years, all the staff was able to produce for the—for Commission review was a rule that stakeholders said for almost 2 years was unworkable. We are trying to set the Commission up for success on these challenging issues, and we want to see results. We want more efficient licensing and responsive regulations.

So how are you working to instill in the NRC staff under your management a results-oriented culture?

Mr. DORMAN. Thank you, Madam Chair. A number of things.

First, I mentioned earlier a focus on risk insights. And so we historically have been risk-informed in the sense of taking risk studies of reactor technologies and applying those at the decision point at the end of our process. Over the last several years, we have been focused on taking that risk insight to the front end of our process and being very focused on our work planning and making sure that we are applying the right level of resource to the significant issues that come before us, that we are focused on the right significance issues—

Mrs. RODGERS. OK, so—

Mr. DORMAN [continuing]. So that our process becomes more efficient.

Mrs. RODGERS. OK, thank you. So with that in mind, I wanted to ask about—and when it comes to this efficient licensing and developing regulations, certainly, communications is key. And I un-

derstand that agency staff states to applicants seeking clarifications on rules, guidance, expectations that NRC can't act as a consultant due to its independence and does not informally provide advice.

So I wanted to ask if that really is the case. And how can you improve efficiency if you aren't communicating?

You know, they need to have—stakeholders need to have that communication regarding the licensing and—along the way.

Mr. DORMAN. Yes, I appreciate that perspective, Madam Chair. And having been at the NRC 32 years, I experienced that a long time ago.

I would say that we have been promoting and encouraging preapplication discussions with technology developers early in the process, and the two benefits that accrue to that—the benefit to the staff is understanding the technology that is being developed and making sure that we have the right skills in place when the application comes in. The benefit that accrues to the developer is to hear the types of questions that the staff are asking, and anticipate those and prepare a more complete application, which would also help in the efficiency of the review.

So I think we are better in that regard, but I am always open to feedback on that.

Mrs. RODGERS. Well, do you have plans for measuring and verifying progress on more efficient licensing decisions like metrics that stakeholders can track?

Mr. DORMAN. Yes, we have—as I mentioned, when we receive an application and determine that the application is complete, sufficiently complete for the staff to begin its review, we establish a review schedule, and we establish a level of effort for the staff for that, and we track those to ensure that we are meeting that, that we are identifying issues early in the process, elevating them as necessary for resolution so that we achieve the efficiencies that we are looking for.

Mrs. RODGERS. Mr. Goff, let me turn to you. You have long experience in nuclear at DOE, National Labs. Are there lessons from how DOE regulates and collaborates with innovators that could be shared with NRC to improve the regulatory interactions?

Dr. GOFF. I mean, yes, we do have the ability to authorize nuclear facilities and nuclear reactors as well. So we have a process that has been set up. It benefits from the fact that we almost always license first-of-a-kind. So we have to have a fairly flexible process in doing that, and part of that flexible process is there is a lot of communication between the independent authorizer and the entity that is trying to deploy a nuclear facility.

So some of the things that we have done is we don't do a lot of written requests for information back and forth. Most of the—if you have an issue, they typically call or have a discussion fairly quickly on it. So they minimize a lot the request for information until the very end of the process, and it is only major issues that come up there.

We also—and I will say in this case, this is Idaho, and, you know, we operate the Idaho National Lab, the Office of Nuclear Energy is the landlord for Idaho National Lab—in our contract for Battelle Energy Alliance that operates that laboratory we do actu-

ally put in metrics for the review process. So if the laboratory submits something for—a safety document for review, the contract that we have between DOE Idaho and the laboratory says DOE Idaho has to turn that around in 90 days.

Similarly, we have also, for the reviewers themselves, we actually have set up metrics. So the metrics for the reviewer as far as their performance review requires a slightly shorter turnaround. Like, they are required to turn it around in 70 days or so.

So those are some of the things that we have done to make sure that, again, we have an efficient process for authorizing nuclear facilities and—we haven't authorized a reactor again in a while, but hopefully authorize reactors here in the near future as well.

Mrs. RODGERS. Thank you, thank you.

Thank you, Mr. Chairman, and I really appreciate the bipartisan focus on this issue. I yield back.

Mr. DUNCAN. Absolutely. The Chair will now recognize the ranking member of the full committee, the well-dressed man from New Jersey, Mr. Pallone, for 5 minutes.

Mr. PALLONE. Thank you for your comments on my jacket.

Anyway, last month the NRC's Commissioners testified before this subcommittee. When I asked Chairman Hanson and then-Commissioner Baran about the potential for NRC to establish an Office of Public Participation similar to that at FERC, both of them indicated that they thought it was a good idea and they would support it. And we have Congressman Levin's bill before us today that would require the NRC to establish a similar office.

So 2 years ago the NRC created also an environmental justice review team to review how the agency's programs, policies, and activities address environmental justice. And the resulting assessment made 6 formal recommendations, including that the NRC enhance its environmental justice-related outreach activities and that the Commission implement formal mechanisms to enhance how environmental justice is addressed.

So I have 2 questions. Maybe 2 minutes each here, if you will.

Mr. Dorman, could you talk about how the NRC is implementing those recommendations in both—you know, and how the potential Office of Public Participation might be able to help with the environmental justice?

And talk a little bit about where the NRC staff currently sees gaps in the Commission's process in engaging communities impacted by NRC decisions.

Two minutes.

Mr. DORMAN. Thank you, Ranking Member Pallone.

We have stakeholder confidence as one of the goals in our strategic plan, and it is dispersed by project, I would say, through the organization. We have agreement State officers and State liaison officers in our regional offices. We have a Tribal program in our materials program office. So I think an office such as proposed by Congressman Levin could potentially integrate that and bring focus.

But stakeholder engagement and stakeholder confidence is an important strategic goal of the Commission, and the staff is focused on that every day. We have over 1,000 public meetings a year.

Mr. PALLONE. And then, what about implementing the recommendations on environmental justice?

Mr. DORMAN. Those recommendations still sit with the Commission. So we are awaiting Commission direction on that.

Mr. PALLONE. OK. All right, so let me go to Dr. Goff.

When Secretary Granholm appeared before this subcommittee, she expressed conditional support for a ban on Russian uranium if we could develop our own nuclear fuel cycle supply chain. So do you agree with Secretary Granholm that, if we are going to ban imports of Russian uranium, it is important we also ensure our Nation has the fuel cell—the fuel cycle infrastructure needed to support our nuclear power reactors?

And can you talk about the benefits that the Department sees in a program to ensure fuel security, such as the one authorized in the Nuclear Fuel Security Act that we have before us today?

Dr. GOFF. Yes, I, of course, agree with the Secretary in this case that, you know, the—you need to have both of those things moving forward. You know, it is hard to put a ban in place and not have something also to make sure that we are incentivizing the replacement.

You know, right now we don't have enough enrichment capacity outside of Russia to support the reactors operating outside of Russia. So we have got to make sure we add new capacity. We have things that can make sure we have fuel for the existing fleet for, you know, a few years to come here, but at some point in the near future there will be a gap. So you need to make sure that we are incentivizing that new capacity at the same time, if you were trying to do a ban. They need to come hand in hand.

Mr. PALLONE. So at what point would we be able to say there should be an absolute ban because we have the capacity?

Dr. GOFF. Well, you could go ahead—if you start working forward—I mean, it is going to take a certain number of years to deploy new capacity, four years, five years, something along those lines. So, you know, once you have actions moving forward to have that new capacity being built out, then you could look—a ban would not negatively impact the continued operation of the reactors.

Mr. PALLONE. And you know, I don't—I haven't looked at the details of the bill, but would this bill allow for that transition?

Dr. GOFF. I believe it allows for, you know, waivers for a certain period of time, as well, that, you know, someone—the Secretary could give waivers for material to come in during that period of transition.

Mr. PALLONE. OK, all right. Thank you so much.

I yield back, Mr. Chairman.

Mr. DUNCAN. The gentleman yields back. I will go to the gentleman from Virginia, the chair of Oversight and Investigations, Mr. Griffith, for 5 minutes.

Mr. GRIFFITH. Thank you very much, Mr. Chairman. I appreciate it.

Director Dorman, I have been working on so-called mandatory hearings and the Efficient Nuclear Licensing Hearings Act. Could you briefly talk about the current mandatory hearing process, what

steps normally take place in the license application before a mandatory hearing takes place?

Mr. DORMAN. Thank you, Congressman.

Briefly, when an application comes in, the NRC staff conducts a safety evaluation and an environmental impact statement. And in parallel with that, the Advisory Committee on Reactor Safeguards provides an independent review of the salient portions of that.

Once the staff has completed its work, it goes to the Commission, and there is a period of preparation for the hearing, and then the Commission conducts the hearing, and then the Commission issues its decision.

Mr. GRIFFITH. And in what cases is a mandatory hearing initiated, and what type of preparation is required other than what you just told us?

Mr. DORMAN. So the mandatory hearing in uncontested events for production utilization facilities, basically for nuclear power plants, as well as certain fuel facilities, and it is conducted in any uncontested proceeding. But it doesn't impact the ability of any interested party to request a hearing.

Mr. GRIFFITH. And that is what gets interesting. And who are the participants in that so-called mandatory hearing when it is uncontested?

Mr. DORMAN. So in the mandatory uncontested hearing, the participants are generally the Commission and the staff.

Mr. GRIFFITH. OK, the Commission and the staff.

So then let's get to the contested hearing, and the differences between a contested hearing, the mandatory hearing, and an adjudicatory hearing.

Mr. DORMAN. So you are going a little bit outside my expertise, because I am an engineer, not a lawyer. But I think, in the case of the contested hearing, it is an adjudicatory proceeding, and a person who is raising a concern with the application, in my understanding—and I am not a lawyer—they need to demonstrate that they have standing—in other words, they are impacted by the action—and that they have admissible contentions.

Mr. GRIFFITH. So here is my question. Do we—is it vital—and I understand you might have to do some hybrid work in there, but is it vital that you have, in an uncontested case, that mandatory hearing?

I understand if somebody has got a contest, if somebody brings forward an objection, if they have standing and they have got some concerns. I don't want to cut anybody off from being able to come forward. But do you have to go through a formal mandatory hearing process if it is uncontested?

I understand that lawfully you do. I am saying is it necessary for the safety of the operation of that licensee, or the person that has come before you?

Mr. DORMAN. I don't believe it is, sir.

Mr. GRIFFITH. All right. Finally, are you familiar with—let me check my time—are you familiar with the 2008 NRC proposal on the Atomic Energy Act transmitted to then-Speaker Nancy Pelosi? Yes or no.

And didn't the NRC propose eliminating the uncontested hearing at that time?

Mr. DORMAN. Yes and yes.

Mr. GRIFFITH. OK. So they did propose that. All right. I appreciate it greatly.

And I yield back.

Mr. DUNCAN. I thank the gentleman for yielding. That is what a chairman does sometimes. Good job.

I will now go to Mr. Veasey from Texas. Five minutes.

Mr. VEASEY. Thank you, Mr. Chairman.

As you all know, the United States has 93 operating commercial nuclear reactors at 55 power plants across 28 States, including 1 in Texas that we have down in Comanche Peak, accounting for about 20 percent of total annual U.S. electric generation, and about 46 percent of zero-carbon electricity. And maintaining and expanding this nuclear energy is going to be essential for us to have a cleaner and more sustainable energy future.

I look forward to working with my colleagues to make sure that we can ensure that licensing and regulation of new nuclear plant reactors continues to protect the public health and safety, while also meeting our growing energy demands. We know that we are going to have more and more objects and devices and cars and what have you plugging into the grid, and that we need good, reliable energy.

And so my question to Michael Goff is that we know that nuclear energy has long been one of the safest forms of energy globally, and that has been in large part to the NRC and the nuclear industry for continuing to innovate and meet new standards. And with new technology that is highly desired by our allies and possesses tremendous advantageous on safety and security, some stakeholders have echoed the sentiment that NRC must adjust for the current state of play.

And so one of the drafts today would amend the duties of the Advisory Committee on Reactor Safeguards in scheduling reviews, and impose term limits on members. And your experience, would the approach in this draft bill offer improvements to the current NRC process, or would it create additional layers of bureaucracy?

And how is the NRC considering the unique characteristics and safety features of innovative nuclear technologies, while maintaining this gold standard in safety evaluations and risk-informed regulatory processes?

Dr. GOFF. Well, I will speak to part. I don't want to necessarily speak to the NRC portion of this.

But yes, a number of the advanced reactor concepts that are being developed and deployed rely on additional passive safety features. So they do have some enhanced safety features over the already very safe operating fleet. So there are some potential advantages that could be taken advantage of in the licensing process for those reactors, because I do agree with you that, you know, we do need to make sure we can deploy these systems safely and efficiently.

I will defer to my NRC colleague on—

Mr. VEASEY. Please.

Mr. DORMAN. Thank you, Congressman.

On regarding the Advisory Committee on Reactor Safeguards, I think that the—this is an independent committee that the Commis-

sion hires external experts. I know the leadership of the committee today is working hard to be very focused on the innovative aspects and the safety-significant aspects of the questions that come before them. I think the ability of those experts to apply their expertise is a critical part of their contribution to the process. They have added value beyond the staff's review in some of our recent actions.

So I think they recognize the need to be very focused in their review, but I think they also need the leeway to follow their expertise.

Mr. VEASEY. Yes. Well, thank you very much.

And this will be a question that probably both of you will be able to weigh in on, if you feel comfortable doing it. As we continue to have these discussions around being able to deploy cleaner energy platforms in order to deal with a lot of the carbon goals that we are trying to meet and trying to clean up our air and trying to clean up our atmosphere, do you think that there needs to be more to inform the public on this particular, you know, endeavor that we are sort of all on in order to try to make the planet cleaner?

I mean, to me, there seems to be a huge sort of void there, and a lack of information that is out there as it pertains to this very difficult subject. When you are talking about trying to strengthen the grid, for instance, to make it more resilient, as more and more people, you know, do, you know, plug in cars or plug in phones, whatever it may happen to be, as we start moving more and more down that path, there does seem to be just a lot of confusion or a lot of uncertainty in the American public.

Do you think that there is a role for you all to play in that area?

Dr. GOFF. Yes, I think we definitely should be able to communicate better. We can always improve our communications in that area, and we should be continuing to work with stakeholders along those lines.

Mr. VEASEY. Yes.

Dr. GOFF. I am happy right now that we have much more support and continue with growing support for nuclear energy, but we still need to make sure we do continue to provide information, and help people do understand how these—you know, the nuclear technology does need to work together with the other energy technologies to deploy to give us the most reliable, resilient grid that we can.

So, yes, we should be continuing to try to improve our engagement to make sure people do fully understand that process.

Mr. VEASEY. Yes. Thank you very much.

Thank you, Mr. Chairman.

Mr. DUNCAN. The gentleman yields back. I now recognize the gentleman from Ohio, Mr. Johnson, for his 5 minutes of questioning.

Mr. JOHNSON. Well, thank you, Mr. Chairman, and thanks to all of our witnesses, both of you, for being here today. I have got a lot to cover, so I want to get right into it.

My legislation, one of the bills being considered today, the Strengthening American Nuclear Competitiveness Act, has a number of very important reforms, one of which is the extension of Price-Anderson Act liability protections that both industry and regulators have agreed has been in existence, and is today—and is es-

sential for the buildout of America's civilian nuclear industry ever since the 1950s.

Mr. Goff, first, can you explain to our subcommittee your thoughts on the importance of Price-Anderson protections for maintaining and expanding America's nuclear industry?

And can you explain why it would be important to extend these well into the future?

Dr. GOFF. Yes, I think it is very important to the nuclear industry to have that assurance as far as the coverage and indemnification for any—

Mr. JOHNSON. Why is it important?

Dr. GOFF. Well, I should add it is important for both industry and for the Department of Energy too. Our work is also covered under Price-Anderson as well, to make sure, again, that we have appropriate coverage if there is some unthinkable accident that occurs in the future. Luckily, we have never had to—had that, you know—

Mr. JOHNSON. Yes, just kind of in layman's terms, the original intent of Price-Anderson was because insurance companies didn't know how to set limits and liability on this stuff, right? And people were not—businesses, industry, they were not going to invest in nuclear programs without some assurance that they wouldn't just be wiped out in the unfortunate instance of an event, right?

Dr. GOFF. Yes, and I think that is still the case, is insurance companies don't necessarily know how to continue to handle that. I even know we have issues with countries necessarily—

Mr. JOHNSON. OK.

Dr. GOFF [continuing]. Knowing how to handle that as well, so—

Mr. JOHNSON. OK. Let me stay with you, Mr. Goff.

In our hearing last month with the Nuclear Regulatory Commissioners, we discussed the portion of my legislation having to do with, in my view, outdated bans on commercial nuclear investment coming from entities in allied, friendly countries. My bill would end that prohibition, which currently would hold—could hold back critical investments that could move the U.S. nuclear industry forward.

When I asked NRC Chairman Hanson about this last month, he said he thinks there is “a real opportunity” to perhaps make changes. Do you agree? What are your thoughts on this, from a DOE perspective?

Dr. GOFF. You are saying bans from our allied countries?

Mr. JOHNSON. Yes. Mine lifts that ban. So he said he agrees that there may be time for change. What do you think?

Dr. GOFF. For us to export to certain countries?

Mr. JOHNSON. No.

Dr. GOFF. Oh, OK.

Mr. JOHNSON. For investments—

Dr. GOFF. Yes, sir.

Mr. JOHNSON [continuing]. From allied—friendly allied countries in the United States.

Dr. GOFF. I think we—you know, we want to make sure we still have control of those assets in the United States and make sure

they have appropriate control, but I think there is some potential opportunity to open up how much investment you can have—

Mr. JOHNSON. OK.

Dr. GOFF [continuing]. In nuclear power plants.

Mr. JOHNSON. All right. Now, Mr. Dorman, let me go to you. In my legislation there are a couple of provisions where we are looking for the Nuclear Regulatory Commission to do a deep dive and report back to us here in Congress some of the unique licensing issues for some of the nuclear power applications of the future.

I am particularly interested not only in advanced techniques for speeding up the manufacturing of small modular reactors and microreactors, but also the innovative uses for these reactors in manufacturing perhaps one day being used to heat and power huge industrial facilities, data centers, and other energy-intensive industries. So Mr. Dorman, is NRC looking into these things now?

And how is the Commission preparing for the licensing process for new manufacturing techniques and nonelectric applications in the future?

Mr. DORMAN. Thank you, Congressman. We are looking at those issues.

As you know, the X-energy application that we expect in the next year is anticipated to provide process heat for a Dow facility.

We are also—the staff is looking at microreactors, and particularly the factory manufacture and transport of microreactors, and is developing a paper for the Commission on that subject. So we would be happy to also report to the committee.

Mr. JOHNSON. Great. Well, as one that is very interested in America reasserting its leadership role in commercial civilian nuclear energy both here and abroad—because we know it has geopolitical implications—I am glad to hear the answers from both of you today.

Mr. Chairman, I yield back.

Mr. DUNCAN. The gentleman yields back. I now go to Ms. Kuster for 5 minutes.

Ms. KUSTER. Chairman Duncan and Ranking Member DeGette, thank you so much for this hearing on nuclear energy.

Nuclear power is a key piece of our electric system in the United States. There are 54 nuclear power plants in the United States, including in New Hampshire. These power plants provide nearly 20 percent of the electricity generated in our country.

Preserving existing nuclear resources is an important part of meeting our carbon reduction goals. And as a recent MIT study found, if existing nuclear power plants were to close, we would see an increase in coal and natural gas production to make up for the lost power generation.

To help our existing nuclear fleet remain operational, Congress included the civilian nuclear credit program in the Bipartisan Infrastructure Law and a production tax credit for existing nuclear generators in the Inflation Reduction Act.

A question for Mr. Goff: Can you comment on how the program passed in the Bipartisan Infrastructure Law and the Inflation Reduction Act are helping the existing nuclear fleet?

Dr. GOFF. Well, first, we very much appreciate, you know, Congress moving forward on those actions. I think they are very crit-

ical to make sure that we stem closures of nuclear power plants. We have had a number of closures, and, basically, any closure we need to be able to replace.

So, yes, we had this Civil Nuclear Credit Program that moved forward first and has done their round of solicitations and was going forward potentially with one activity in that area.

On the production tax credit, that has not been implemented yet, but we are, you know, anticipating getting it implemented over the next year or so.

We should note we think that those are the very complementary programs. You know, we have looked at some on the civil nuclear credit. Will the production—would passage of the production tax credit eliminate the need for the civil nuclear credit? And the analysis that has been performed indicates that, no, there are still some plants that will have—you know, will still potentially need the civil nuclear credit in addition to, potentially, to the production tax credit. So we think those are very nice, complementary things, moving forward.

Ms. KUSTER. And I want to take a step back and ask you to think holistically. I know you had 30 years experience in the field, and a Ph.D. in nuclear engineering.

It is clear from the slate of 15 bills that are subject to the hearing today that Congress is very interested in identifying ways to ensure that the United States is a leader, particularly in advanced nuclear energy, moving forward. Advanced nuclear reactors are designed to be safer and have fewer environmental externalities than traditional light-water reactors.

If you were in Congress, Mr. Goff, what steps would you take to promote the United States' role as a leader in advanced nuclear energy, moving forward?

Dr. GOFF. Well, first, let me acknowledge what you are saying along that. I think we are the leaders in the innovation. We do have great companies and vendors that have developed the technology, the world-class technology. So I think we have the innovative technologies out there.

We need to now make sure that we can effectively deploy those technologies and be able to export them as well. I mean, some of the key things that we need to do as far as on deployment, say, domestically is we need to make sure that we are derisking those deployments. These are big, capital-intensive projects. We in general—the country as a whole—we haven't always delivered well on large construction projects. We have got to make sure that we do deliver on the deployment of these reactors and make sure that we have systems that can derisk those, especially those first-of-a-kind deployments.

That is why we are very appreciative of the funding from the Congress on the Advanced Reactor Demonstration Project and the Carbon Free Power Project. Us doing those public-private partnerships to derisk those initial deployments, I think, are very important so we can get additional reactors deployed.

So focusing, again, on things that we can do to derisk those initial deployments, I think, is very important. And that will also then lead to being able to do exports, because I think, again, this is very critical that we are exporting these technologies as well.

Ms. KUSTER. I am going to try to squeeze in one quick one for Mr. Dorman.

I share this enthusiasm for the advanced nuclear energy, but I am concerned about safety and derisking. Mr. Dorman, what resources does the NRC need to ensure advanced nuclear reactors are deployed safely?

Twenty seconds.

Mr. DORMAN. Thank you, Congresswoman.

I think we have included those resources in our budget requests, and we need to continue our hiring efforts to make sure that we are getting the critical skills that we need using the insights from our preapplication engagements with the developers.

Ms. KUSTER. And I think we need to be cautious about the deep cuts that have been proposed by our colleagues.

So thank you, and I yield back.

Mr. DUNCAN. The gentlelady yields back. I will now go to Michigan, Mr. Walberg, for 5 minutes.

Mr. WALBERG. Thank you, Mr. Chairman, and thank you, Mr. Goff and Mr. Dorman, for being here.

Nuclear energy provides the clean, reliable, affordable power this country needs. I know the importance of our nuclear sector firsthand, with nuclear plants on both Lake Michigan and Lake Erie shores in my district. But the current licensing and regulatory processes for new projects, upgrading current reactors, and maintaining and operating our existing fleet is just too onerous. We must update the Government's processes.

Mr. Dorman, my draft legislation, the Nuclear Advisory Committee Reform Act, aims to speed up the licensing processes through reforms to the Advisory Committee on Reactor Safeguards. What is the role, first, of the Advisory Committee on Reactor Safeguards?

And second, what kind of licensing actions do they participate in, and how often do they participate?

Mr. DORMAN. Congressman, the Advisory Committee on Reactor Safeguards is a group of independent experts hired by the Commission who report to the Commission, and they provide an independent review of the work that the staff does in its licensing. They generally participate in any new license, renewed license, and other significant licensing actions.

Mr. WALBERG. Significant work that they have to do, and needs to be done as well, but as efficiently as possible.

As I mentioned before, the nuclear community has suggested that the NRC implement a more efficient process for reviewing the power uprate license amendment applications consistent with NRC practice as recently as a decade ago.

Additionally, where nuclear operators are interested in pursuing multiple levels of uprate, the NRC should consider approaches to streamline the license amendment applications so that an operator can submit the necessary technical reviews once, instead of having to prepare redundant applications and costs.

So, Mr. Dorman, with over 2 gigawatts of new clean-energy capacity available from potential uprates, what is the NRC doing to reverse the trend of longer and more costly uprate reviews?

Mr. DORMAN. Congressman, we have not had uprate reviews for a number of years. And so we know that, from the incentives in the Inflation Reduction Act, that the industry is actively looking at power uprate applications that we are expecting, based on the feedback we are getting, in late 2025 into 2026. So we are looking at our uprate processes, and looking at how we can gain efficiencies in those reviews as the——

Mr. WALBERG. Ways to streamline and——

Mr. DORMAN. Yes, sir.

Mr. WALBERG. Dr. Goff, a recent study by the University of Michigan found that the premature closure of the Palisades Nuclear Power Plant just north of my district will have an adverse economic impact on the region of more than \$250 million annually. As I said before, it will also address the critical needs for baseload generation in our State.

Republicans and Democrats came together in Michigan to fund reopening of the plant. And now the decision lies with the DOE. Do you have any updates on those efforts?

This is a cone of silence in the room, as well, so be frank.

[Laughter.]

Dr. GOFF. Well, first, I commend those efforts. We want to keep plants up and operational, online. This would be the first time we would, you know, restart a license on that. But those—we commend the actions that have been taken by—in Michigan on trying to move forward on that, and we are still assessing, I guess, what can be done as far as the different options out there.

Mr. WALBERG. Well, assess well, assess efficiently, and don't waste any time.

Dr. GOFF. Yes.

Mr. WALBERG. Energy is needed. And right now I think there is a bipartisan support level that we haven't seen before on nuclear power for all sorts of reasons, including climate, environmental concerns, et cetera. So thank you. We will keep watch.

I yield back, Mr. Chairman.

Mr. DUNCAN. The gentleman yields back. I now go to Ms. Schrier for 5 minutes.

Ms. SCHRIER. Thank you, Mr. Chairman. Thank you, Ranking Member DeGette. And thank you, Dr. Goff and Mr. Dorman, for being here today.

Uranium, obviously, is a critical fuel source for the United States, with nuclear power providing nearly 20 percent of our electricity and half of our carbon-free power. We also must eliminate our reliance on Russia for nuclear fuel and prevent U.S. dollars from flowing into the hands of Russian interests.

This committee in May passed legislation to prohibit imports of uranium from the Russian Federation with safeguards to ensure that our nuclear fleet has access to the fuel that it needs to continue operating. This ban will provide the industry with certainty around need and demand, and the price-insensitive Russian uranium supply that in recent years has eroded U.S. capabilities.

Today we are considering the Nuclear Fuel Security Act of 2023, which is intended to expand our domestic capability to produce, convert, and enrich uranium, both for the existing fleet and for advanced nuclear reactors under development right now. I was won-

dering, Dr. Goff, how would this legislation, including an expanded strategic uranium reserve, work in tandem with uranium—with the Russian uranium import ban to restore domestic fuel cycle capabilities in the U.S. and give us national security?

Dr. GOFF. You know, we are very supportive of any activities, again, to be moving forward to incentivize being able to build out additional uranium enrichment and conversion-type activities in the United States.

That, with the—and the American assured fuel supply, as far as authorizing that, I think that is something that is potentially very good as well. That is a critical component of us being able to address shortfalls of uranium, enriched uranium. So the ability to be able to enlarge that, you know, fuel supply there provides us more of a buffer if there is some type of interruption in the future.

But again, you know, we very much support trying to see how we can work together to incentivize new capacity for enrichment in the United States to be able to work ourselves off—long-term, off the Russian supply of material.

Ms. SCHRIER. Thank you. And I appreciate your working with this committee, too, because we want to do whatever you need, within reason, to be able to hasten that. I anticipate you will face many barriers along the way, and we want to work with you because of this need to convert to nonemitting sources.

I was also wondering, because there were provisions in the bill that we passed, where else can we source uranium, say, from friendlier countries?

Dr. GOFF. Right now we do—you know, we use about 15 million SWU. The unit for enrichment is this separative work unit. The commercial fleet every year uses about 15 million of those things. In the United States right now we only have about 4.5 million SWUs. So we are buying right now a lot of our material already from Europe, primarily, that—there are, yes, various enrichment capacities in Europe.

And then, like I say, right now we have—around 24 percent of our material comes from Russia. So we are working with our allies and partners for that material.

Ms. SCHRIER. Where does Canada fit in that mix? My understanding is that we could significantly source from Canada.

Dr. GOFF. They do—they provide raw uranium material and conversion. They don't do enrichment. Their reactors don't require—in general, don't necessarily have to have a lot of enrichment. But they are a valuable partner for providing uranium and uranium conversion services that will feed into an enrichment process.

Ms. SCHRIER. Thank you for that clarification.

And I yield back.

Mr. DUNCAN. The gentlelady yields back. I now go to Kentucky, to Mr. Guthrie. Five minutes.

Mr. GUTHRIE. Thank you. Welcome to Kentucky, the great Commonwealth.

So the Commonwealth is a known energy-producing State, and we are trying to maintain our position as an energy-producing State. Our State and community leaders are looking at converting brownfield sites, and particularly where there were coal-fired plants that are no longer operating, into nuclear sites.

And so, Dr. Goff—a question for both of you, but start with Dr. Goff—are siting and licensing decisions faster at brownfield sites, and particularly when there is already some critical infrastructure in place?

And what is the Department of Energy doing to coordinate?

So is that—can it be quicker, and then what are you guys doing to coordinate that?

Dr. GOFF. It has the potential to be quicker, as Mr. Dorman mentioned earlier, that you—

Mr. GUTHRIE. I was in another hearing, I am sorry—

Dr. GOFF. No, no—

Mr. GUTHRIE [continuing]. I apologize.

Dr. GOFF. There is a lot of characterization already for those existing sites. So you could rely on those to help support, you know, the environmental reviews on that as well.

I mean, the Department is supportive of those type of activities. We did issue a report last year that really did a detailed look at trying to identify brownfield sites around the country, and look at, you know, what are—which ones are very potentially viable.

The other real benefit that they have, though, is also—is you have an educated workforce in the energy sector, as well, so you have a workforce that can transition from a coal-fired plant to a nuclear plant. It actually looked at, again, how many of those jobs can transition over, which is, again, a very large fraction. So, yes, there is a lot of opportunity in trying to do that.

And I will note one of our demonstrations that we are doing, the TerraPower demonstration in Wyoming, is going at a retiring coal-fired plant. So we will be learning a lot from that process and how much that can streamline the process.

Mr. GUTHRIE. Thank you.

And so then, Mr. Dorman, what is the NRC doing in that respect for guidance for those sites, particularly? Just kind of comment on that.

Mr. DORMAN. Yes, I agree with Dr. Goff that there are opportunities here. I think how recent and the data and methods are that characterize this site will impact how much benefit we get from streamlining the review in that regard.

There's also unique issues at a coal site potentially, that the coal ash contains naturally occurring radioactive material that has been concentrated that needs to be characterized and considered in planning for a nuclear facility there, and ultimately for the closure of that facility and the cleanup of it. So there may be unique issues there.

We have—you mentioned the TerraPower in Wyoming. We also have recently completed the staff safety evaluation for a demonstration reactor in Tennessee, which is on a former nuclear site, DOE. So again, we were able to take some of the insights there from the already-characterized site to help streamline our review.

Mr. GUTHRIE. OK, thank you. Well, that concludes my question for this panel, if anybody needs time.

Or Mr. Chair, if not, I will yield back.

Mr. DUNCAN. The gentleman yields back. I will now go to Florida to Ms. Castor, I believe, for 5 minutes.

Ms. CASTOR. Well, thank you, Chairman Duncan and Ranking Member DeGette, for organizing this important hearing on how we update our nuclear policies here in America. It is a good time to do that, because over the past couple of years Democrats and President Biden have made tremendous investments in the nuclear power industry. And it is critical for all of us to work together to build on that process.

The Bipartisan Infrastructure Law provided \$6 billion for the Civil Nuclear Credit Program, funds that will ensure our already existing fleet of nuclear reactors stays safe and competitive. We have 93 reactors at 55 plants. They provide 46 percent carbon—or they provide 20 percent of our electricity generation and 46 percent of our carbon-free power.

Then add on the Inflation Reduction Act, Democrats created a tax credit of up to 1.8 cents per kilowatt hour for zero-emission nuclear energy and provided DOE with 700 million to invest in increasing the availability of next-generation nuclear fuel for advanced reactors. So like I said, this is a very good time to do this.

Mr. Dorman, what is the oldest reactor in the U.S. that is operating currently?

Mr. DORMAN. I used to know that, but it closed. I think it is Dresden in Illinois—

Ms. CASTOR. So how old?

Mr. DORMAN [continuing]. At this point.

Ms. CASTOR [continuing]. As we extend the—we go through the safety review on extension of licenses, what is our oldest reactor? What do we need to be considering?

Mr. DORMAN. If I remember right, I think Dresden was licensed around the 1970 timeframe, so it would be 53 years-ish.

Ms. CASTOR. As we go through this process of trying to safely extend the life of nuclear power plants, I am concerned with extreme events right now. And there is one plant in Florida, Turkey Creek, where it was built right there between Biscayne Bay and the Everglades. They had extended the life of that plant a few years ago, and then did a safety review, and they rolled it back.

So I am curious, as we update our policies on review of the existing plants, do you have the authority to really look at the impacts of climate change, whether it is extreme heat or flash floods, hurricanes, you know—earthquakes are a different, or a little different. But I just—as we talk about streamlining and environmental reviews, I don't want us to lose sight of the increasingly unpredictable extreme events caused by climate change.

Mr. DORMAN. Yes. Thank you, Congresswoman.

Following the Fukushima accident, we did a complete review of flooding and seismic issues for all the operating plants in the United States, and we also established what we call a process for ongoing assessment of natural hazards information. So that is a process where the staff is constantly looking to USGS for seismic, looking to NOAA for weather information, looking to the Corps of Engineers for dam reliability issues that could impact nuclear power plants.

Where we have—where we would see any gap in the licensing basis of an existing plant based on new information, we have the

authority we need to engage that licensee and bring about change to address that, such a gap, if it were to occur.

Ms. CASTOR. Dr. Goff, do we need to—as we update policies, do we need to keep anything in mind in particular for extension of useful life, or the new sites for the small modular reactors when it comes to these—the shifting extreme events?

Dr. GOFF. Yes, we do need to take into account the climate and the river, the water usage.

And I will note a lot of these plants, though, some of the advanced ones, can actually do more dry cooling too. So they have less water needs, which could be very important going forward—

Ms. CASTOR. Because wasn't there recently an incident in France, where the water temperature to cool the reactor was at issue?

Dr. GOFF. You can at times downrate plants because of the—whatever their cooling water is. If it gets too high, they have to back off on the power level. That happens lots of times during the summer at a lot of different areas, and all is—

Ms. CASTOR. So do you need—do the agencies need additional authorities, or do you have the authorities that exist now to conduct all of the necessary reviews?

Dr. GOFF. I believe we have the authorities right now to do those necessary reviews to assess—

Ms. CASTOR. And would any of the legislation here counteract that, take authorities away that you need in this unpredictable world right now?

Dr. GOFF. Not that I am aware of, no.

Mr. DORMAN. Not that I am aware of.

Ms. CASTOR. All right. Thank you very much. And—

Mr. DUNCAN. The gentlelady yields back, and I will now go to Alabama.

Mr. Palmer, 5 minutes.

Mr. PALMER. Thank you, Mr. Chairman. I appreciate the witnesses being here. I want to get a little more specific about what we could do going forward in terms of utilizing nuclear technology for generating power, but before I do that I want to get back to this issue about fuel. And long term, if we transition to advanced reactors that can recycle spent fuel rods, that could virtually eliminate reliance on any foreign supply chain for enriched uranium.

Dr. Goff, I think you were talking about our reliance on Russia for uranium. We had the Director of the National Nuclear Laboratory in here from Idaho, and he made the point that if we went to the advanced reactors and started recycling the spent fuel rods, that we could operate our nuclear facilities for about 100 years. So I think that would address that issue—not totally, but it would address it in a very significant way.

Mr. Dorman, you served on nuclear submarines. And one of the things that interests me is the safety and the power generation capacity of a nuclear submarine. It is about 150 to 200 megawatts. Is that about right?

Mr. DORMAN. That sounds like the right ballpark. It has been about 30 years for me, but that sounds about right.

Mr. PALMER. Yes. But the thing that interests me most about this is that they are a standard design. They are modular. They can be assembled somewhere else and then be installed in a sub-

marine. I don't know that we have ever had to replace one. We may have, but they are designed such that they can fit pretty much any submarine that we operate.

And if we were to go to the small modular reactors, I think, by definition, they can—a small modular reactor can produce up to 300 megawatts of power. Is that your understanding?

Mr. DORMAN. That is the range we are looking at for most of the applications we are anticipating. Yes, sir.

Mr. PALMER. And one of the points I think that you raised was the problem with fitting things into the grid. It is a huge problem for renewables. That is one of the reasons why there is so much interest across the aisle for building out a new grid.

But with a small modular reactor, an SMR, you could fit that in pretty much anywhere. That is one of the advantages of a small—of an SMR, is that it can be located in places where a larger nuclear reactor or renewables could not to meet the power needs of different communities. Is that a fair statement?

Mr. DORMAN. Yes. So we are focused on the safety and less on the grid compatibility piece, except for the reliable power back to the plant. But it sounds reasonable.

Mr. PALMER. Well, that is—the safety factor is one of the real assets of the SMRs, is because they are standard design, they are modular, and you even have microreactors that the military is looking at using to power military bases but could also be used in—to meet power needs in emergency situations, whether it is post-disaster—is that a fair point as well?

Mr. DORMAN. Yes.

Mr. PALMER. Well, here is part of what I think we need to be thinking about, Mr. Chairman, is that we have this emerging technology. We have got some that have been approved by the NRC. I think there's projects different places around the country, one I know in Utah. And this might be the way to go, because these can be manufactured and assembled, delivered on site in locations where we can't get turbine farms, solar farms, can't get a large nuclear reactor. And the permitting on this ought to be a considerably shorter duration than any of these other facilities that we are talking about.

Mr. Goff, Mr. Dorman, either one of you, comment on that.

Mr. DORMAN. I think you hit a key principle there, Congressman, of standard design. You know, once we have gone through and approved a design, it should be very straightforward for us to do the safety review for that design in other locations. That has not been the experience in this country. We have 93 very different reactors, so the designs have evolved as it has come along.

So I think getting a very standard design would be very helpful to a streamlined process.

Mr. PALMER. I really appreciate the opportunity to raise these points. This is what France does with their nuclear reactors with standard design. I think it is a good direction for the United States.

I yield back.

Mr. DUNCAN. The gentleman yields back, and I will go to Maryland, Mr. Sarbanes.

Mr. SARBANES. Mr. Chairman, thanks very much, and thanks to you all.

Obviously, based on the hearing today and some of the bills that we have been speaking of, we know that while nuclear energy is already a very significant force in our domestic energy production portfolio, there's opportunities to work in a bipartisan way to try to bring its constant, reliable, and carbon-free power to even more Americans. So it is a very exciting topic, actually, in the broad context of all the challenges we are facing on the energy front.

So we know this will require licensing and deploying nuclear reactors, but another critical part of the domestic expansion of nuclear energy is going to be building and maintaining a robust Federal workforce—we have acknowledged that, I know others here have spoken to it—a workforce that we can count on every day to ensure safe and secure nuclear operations, as well as enable technological advancements.

This is very important to the broad public, too. If the full promise of this resource is going to be realized, we know, looking historically, that the public needs to have confidence. That derives not just from the technology, but it derives from the experts that are administering and managing the technology. So I want to learn a little bit more about the current workforce at the NRC and the Department of Energy's Office of Nuclear Energy.

Mr. Dorman, can you talk about the importance to the NRC of retaining current staff, people you have that are good and that we can rely on, while also obviously trying to recruit new staff both at early and midcareer levels? Because I imagine being able to pull people in who have got experience over years is an important part of the resource picture that you want to build.

And then give me the flip side. If we can't adequately staff the NRC, what are the consequences that you can foresee there?

Mr. DORMAN. Thank you, Congressman.

I think, as was touched on earlier in the conversation, we have—about a third of our workforce is currently eligible to retire. And so one of the blessings we have is that our workforce works well past their eligibility to retire, and that average number has actually been increasing in recent years. We have a very dedicated and committed workforce.

But they are not going to be there forever, and so we are working hard to replenish the staff. We hired over 200 people last year, and we are on track to hire probably 250 to 300 people this year, which means that about 15 to 20 percent of our workforce will be less than 2 years. So we are very focused on staff development, training, and qualification, getting those people up to speed in the work that we do so that they can continue to pick up that load.

You mentioned the distribution. We have, over the last 3 or 4 years, reinstituted our entry-level hiring program—we call it an apprenticeship network—to bring in people at the start of their career. But we are also very reliant on a significant portion of our external hiring being experienced people that we bring in with the knowledge and skills, and we just work with them on developing the regulatory tradecraft.

Mr. SARBANES. And Mr. Goff, could you talk about this in the context of the Department of Energy's Office of Nuclear Energy and the recruiting and retaining strategies you are using there?

Dr. GOFF. I think we have the similar challenges that were noted by the Nuclear Regulatory Commission. We have—a number of our staff could retire. In fact, over the last few years we have experienced a lot of attrition through the retirement.

As far as on the Federal staff, we are much smaller than the Nuclear Regulatory Commission, but we are responsible for the laboratories, which does a lot of our work. And we are seeing significant hiring increases in the laboratories, especially, I would say, at Idaho National Lab, the Office of Nuclear Energy's lab, we are, you know, seeing a 10 to 20 percent increase in hiring.

But you are getting a lot of turnover as well. There is a lot of competition with all these new vendors. So people are leaving, which—I support that, I want the vendors and all to be successful. But there is more turnover now within the industry—

Mr. SARBANES. Yes—

Dr. GOFF [continuing]. And more growth.

Mr. SARBANES. Let me follow on that in the time I have left. And I do just want to acknowledge, as I know has been done already, but Ranking Member DeGette has H.R. 4528, which is—would help significantly in terms of this recruitment and retention challenge.

But talk about the competition with the vendors, because everybody's efforts to recruit and retain is derivative of a broader ecosystem in which we are seeing shortages, and every player that is looking for these people is competing. So what does that look like?

Because it is sort of—every—you know, poaching, stealing, borrowing, whatever you want to call it, talk to that dynamic in 15 seconds, if you can.

Mr. DUNCAN. The gentleman yields back. I will now go to the—

Mr. SARBANES. OK.

Mr. DUNCAN [continuing]. Crossroads of America, Mr. Bucshon, for 5 minutes.

Mr. SARBANES. Zero—

Mr. BUCSHON. Thank you, Mr. Chairman. We have two hearings going at the same time, Health and this, so I apologize.

I want to thank the witnesses, of course, for joining us today.

America can and should be a leader in the advanced nuclear energy space. I was with Chairman Rodgers on the trip over to Europe, to Poland and Czech Republic, and we heard a lot about what they are doing over there, and we want to be leaders here.

It is a valuable component to an all-of-the-above energy strategy. It helps with the goal of lower emissions, and it contributes immensely to a diverse and secure energy mix in the United States. I am interested in boosting the development and deployment of advanced nuclear energy technologies here in the United States, and there are a number of hurdles that companies may face when seeking to license advanced nuclear reactor technologies.

Mr. Dorman, could you just—and I know you may have done some of this—could you just describe briefly the interactions a new application has with NRC, from preapplication meeting and planning to the acceptance review and through the actual licensing process? What are the steps?

Mr. DORMAN. Thank you, Congressman.

So the preapplication is an entirely voluntary process, but we strongly encourage it, particularly with new and innovative technologies, because it gives the opportunity for the staff to learn the technology and be better prepared for the application, and for the applicant to understand what the agency is going to be looking for in a complete application. So it is—it can take several years, depending on what point in the development of the design the applicant engages.

The license review, once the application comes in, will take about 60 days to look at the application against the regulatory requirements and determine that the application is complete. And then we will docket it for the staff's review and establish a schedule for that review based on the issues that arise in that licensing application.

Mr. BUCSHON. So do you know roughly how many hours of work would typically be charged?

Because I have—one of the pieces of legislation we are talking about is the Advanced Reactor Fee Reduction Act, trying to reduce the cost of this process. Do you know roughly how many hours of work would typically be charged in fees for the process?

Mr. DORMAN. It is going to vary, depending on the innovations and the complexities in the design—

Mr. BUCSHON. Right, yes.

Mr. DORMAN [continuing]. Fixed number, but generally, I would say, on the order of the 10 to tens of thousands of staff hours.

Mr. BUCSHON. Yes, so a very costly process.

Mr. DORMAN. Yes.

Mr. BUCSHON. Do you know roughly what portion of these initial fees are mission-direct costs and what portion are indirect or administrative costs?

Mr. DORMAN. Roughly, I would say half. There is one hourly rate that the current—

Mr. BUCSHON. Right.

Mr. DORMAN [continuing]. That we currently calculate, and I think it is in the ballpark of half.

Mr. BUCSHON. Yes, \$300 an hour, I think, final hour rate.

Mr. DORMAN. Right.

Mr. BUCSHON. Something along those lines.

Mr. DORMAN. Yes, sir.

Mr. BUCSHON. OK. In your opinion, would eliminating some of the costs for prelicensing activities encourage more applications and designs from smaller companies?

Do you think that is a rate-limiting step?

Mr. DORMAN. I think it could. That is kind of out of my wheelhouse.

Mr. BUCSHON. Yes.

Mr. DORMAN. I think the predominant cost for the applicant is the development of their design and the research that they need to do to provide the technical basis to support it. But I am sure that reducing the cost of our review would be—

Mr. BUCSHON. Yes.

Mr. DORMAN [continuing]. Appealing.

Mr. BUCSHON. So—and this is for either. I have some time left, so either one of you all. If there were three key things that we

could do that would make this process move along more quickly and keep America out front, what would it be, just broadly?

And that can be, you know, regulatory reform. I mean, just in your experience, what are the rate-limiting steps?

I mean, what is really holding us—

Mr. DORMAN. I think Dr. Goff touched on it earlier in the context of financing. You know, I think ultimately getting these products to market is a question of the financing.

I think regulatory reform is an area that we are focused on, and that is our area, and we welcome the committee's thoughts on that.

Mr. BUCSHON. Yes, I mean, the longer it takes, right, the more costly it is. So it is kind of a vicious cycle, right? If it takes longer to review, it becomes—continues to be more costly. And we are seeing that now, right, in Georgia and other places. You know, we have seen it in the past.

Also, I just want to make it clear we—the number-one focus is on safety, right, and doing this properly.

Dr. GOFF. Yes.

Mr. BUCSHON. Do you have a comment?

Dr. GOFF. Well, I will agree with that, yes, the number-one focus still is on safety. But yes, going back to your earlier question, I would agree, as well. I mean, one of the key issues is financing, you know, is—

Mr. BUCSHON. Yes, because we are going to have these small modular nuclear reactors probably in the next 5 to 10 years, maybe sooner.

And, you know, every time we deploy one of these things, you know, we basically roll it up in a truck and connect it. We can't have a multimulti-year-long—we have to figure that out, I think, right, that we can't take 10 years when we have a product that—everybody knows the product, it is just a matter of, OK, now we are deploying it to here and we are going to replace an old coal-fired power plant, literally just plug it in there. We can't take 10 years to do that, right? So we have got to figure that out.

I yield back.

Mr. DUNCAN. Good points. The gentleman yields back. I now go to California, Mr. Cárdenas. Five minutes.

Mr. CÁRDENAS. Thank you very much, Mr. Chairman. I appreciate the leadership putting this hearing together.

Over the last few months, this subcommittee has had the privilege of having the Nuclear Regulatory Commission testify before us multiple times. Throughout these conversations, the NRC—I have been vocal about my concerns relating to the life cycle of spent nuclear fuel. And during our last hearing with the Commission, Chairman Hanson identified that spent fuel storage and ultimate disposal remained key policy issues that we are still having to figure out how to contend with properly.

I continue to believe that addressing the legacy of toxic waste associated with nuclear energy should be at the forefront of our conversations. Our biggest priority should be to protect public health and safety. And as such, it is also our shared responsibility to ensure that current and future nuclear fleets are licensed and operated safely. Luckily, data has indicated that the production of nu-

clear power in the United States is safe, largely due to the current processes and regulations in place.

Of the 15 bills included in today's hearing, several reduce mandatory hearing and public notice requirements and change the environmental review process. Mr. Dorman, can you please explain what the current public notice and hearing processes look like?

Mr. DORMAN. Yes, sir. When a license application comes in and the staff has determined that it is complete and docketed it, the staff issues a notice in the Federal Register of an opportunity to comment and an opportunity for public hearing on that action.

In addition, on the environmental review, we go out into the community and conduct what we call a scoping meeting, where we get the community's insights on the scope of issues at play in the environmental report for the site, and then for—the draft environmental impact statement is noticed for comment. And then there is comment resolution in the staff reaching to a final environmental impact statement.

Mr. CÁRDENAS. OK. Can you please explain or discuss why the process was established the way it is, and the importance of this process?

Mr. DORMAN. Well, I think part of it is governed by the Procedures Act. So there are legal requirements that we need to meet, as well as under NEPA. But I think, in the context of the Commission's strategic goals of strategic—building stakeholder confidence in the work that we do, we are very much engaged in the communities that may be impacted by our licensing decisions and making sure that they have the opportunity to hear and understand what we are doing to ensure that they are safe.

Mr. CÁRDENAS. I think at the root of that, that you just described, the real purpose is because we live in the United States of America, where every human being who lives here has the right to know what is going on to the left of them, to the right of them, what is going on in their community, whether or not it is going to be safe or endanger them, et cetera.

I have been legislating for 27 years now, and I heard one of my colleagues give a ridiculous comment that in China, for example, they can build a dam darn near overnight. That is a silly comparison, because in China I don't think the people have the rights that we do in this country. And thank God we have the rights that we do in this country. And with that comes, unfortunately, processes that may cause complaint by those involved in the process.

But at the end of the day, as was mentioned by Dr. Goff and you, Mr. Dorman, you agreed with one of my colleagues that public safety—safety—is at the root of everything that we should be concerned with and involved with in every step and every action that we take when it comes to nuclear facilities. Isn't that correct?

Mr. DORMAN. Yes, sir. Safety is our focus.

Mr. CÁRDENAS. OK. Safety for people, right?

Mr. DORMAN. Yes.

Mr. CÁRDENAS. Thank you. Can you similarly expand on what the current environmental review process looks like, its history, and the importance of each aspect of the process?

Mr. DORMAN. Well, I briefly touched on the sequence of events—

Mr. CÁRDENAS. Yes.

Mr. DORMAN [continuing]. Of the scoping and drafting, but there is—it actually starts with the applicant doing site characterization, and characterizing the environment of the site that they plan to work on and what they propose to do at that site, and exploration of alternatives. It includes an assessment of severe accident management alternatives, ways that, if something adverse did happen, it could be mitigated.

So there is a very detailed process looking at the site, the potential impacts to the site, alternatives, and mitigations.

Mr. CÁRDENAS. And there are various levels of governments in the process, local governments, State governments, Federal Government, all these different processes.

Mr. DORMAN. Yes.

Mr. CÁRDENAS. Do you think there is a possibility that we could actually be more efficient by having more parallel tracks when and if—without compromising safety, without compromising informing the public—perhaps more parallel tracks?

Mr. DORMAN. Parallel tracks and, really, a thorough understanding of the stakeholder community so that we engage them very early in the process so that all the issues get raised early so that they can be addressed efficiently.

Mr. CÁRDENAS. Excellent. Thank you very much, Mr. Chairman. I apologize, my time expired. I yield back.

Mr. DUNCAN. The gentleman's time has expired. I will now go to the vice chair of the committee, Mr. Curtis, for 5 minutes.

Mr. CURTIS. Thank you, Mr. Chairman. I really appreciate this hearing. This has been very interesting. I think it should be very encouraging to the American people to hear the vast amount of bipartisan enthusiasm for this.

I think we have heard today about a world where we see hundreds of nuclear plants in—by the year 2050 and perhaps even beyond that. And yet I have watched the struggle to—in Utah we have a project by UAMPS, a—power cities. There is also one that you two have referred to as TerraPower. I prefer to refer to it as PacifiCorp, because that brings it back to Utah, even though the plant will actually go in Wyoming. But strong Utah ties there.

And in the case of PacifiCorp, I think you see incredibly strong resources coming together to take every advantage of moving forward with permitting in a pretty powerful way. Yet in the example of UAMPS, you have a number of cities, some of which are in the tens of thousands of residents, not hundreds of thousands, very limited resources. And I have watched from the beginning of their project seeming impossible to cross this hurdle. So in my few minutes today I would like to talk about that barrier and how we lower that barrier to get to the hundreds of plants that we foresee.

I have a bill. It is called the Advanced Nuclear Reactor Prize Act. It provides assistance to innovators that successfully license and deploy advanced reactors. Currently, first mover advanced reactors will have to expend significant financial resources. You both kind of called out finances as one of our most difficult barriers. My bill authorizes the Secretary of Energy to make targeted awards to cover regulatory costs to first technologies that are licensed and made operational in certain categories. The incentive of the award

will help first movers to submit quality applications that allow the public to benefit from safe, reliable nuclear technology.

Could you both briefly talk about this attempt to lower the barrier, if you see value in this?

And then I would like to kind of probe other opportunities as well.

Mr. Dorman, would you start first?

Mr. DORMAN. Yes, thank you, Congressman. The proposal that you mentioned, as I understand it, would provide the award after the completion of the regulatory review. And I think that that is important to us.

And you mentioned the quality applications. Quality applications are going to be critical to our being able to do efficient reviews. So I think having an incentive that supports that outcome is consistent with what we need to get our job done the best possible way.

Mr. CURTIS. Thank you.

Doctor?

Dr. GOFF. I agree strongly that, yes, helping to finance the licensing of those early movers is a very important incentive. We have already—we are doing that some already, like, say, through the UAMPS project. You know, we helped—you know, the—cost shared, the burden of doing the design certification for the U.S. was public-private partnership.

Similarly with the Pacificorp reactor, as we will say there, similarly with that we are cost sharing as they are going through the licensing process. So I think that cost sharing is important as far as moving forward.

I will even note that is what we did for the AP-1000 that was built in Georgia. That was a public-private partnership during the licensing process and the design certification. So I think having some public-private partnership to take care of some of that design certification cost is an important incentive.

Mr. CURTIS. You know, for reference, I was chair of UMPA, which is a sister agency to UAMPS, and so that is why I have watched them go through this process for a number of years. And I am amazed that they have been able to make it as far as they have. And I agree, without the help that is being provided, there is no way that they are able to plow through this.

I have also seen, in my current role—earlier we talked with another Representative about the brownfield sites and this Pacificorp project. And I can tell you firsthand, as somebody who has a county called Carbon County in their district, how much enthusiasm and excitement there would be for this and how many more goals we would actually accomplish in addition to clean, reliable power, helping these communities that have been so devastated by a lot of this transition. So thank you for those efforts, and thank you for all you are doing.

Maybe with 30 seconds left, let me just shout out you—the other thing that you mentioned was regulatory reform. Somehow, when the word “regulatory reform” is mentioned, all of us think of different things. I know some think of transmission, some are thinking of pipelines, right? And we don’t have time to explore that, but I would just like to put out there that that is a place where we do

need to come together as Congress and get broad consensus and move forward if we are going to lower this barrier.

Thank you, gentlemen, for your time, and I yield.

Mr. DUNCAN. It is now my pleasure to recognize, since I am an honorary Texan, the gentlelady from Texas, Mrs. Fletcher, 5 minutes.

Mrs. FLETCHER. Well, thank you so much, Mr. Chairman. I appreciate you holding this hearing today. And I really want to thank our witnesses too. This has been a really useful hearing, I think, for all of us. I appreciate your thoughts and insights. And as we are getting toward the end here, we have covered a lot of the topics that I had hoped to hear from you about, and I appreciate your insights and your answers.

As we have discussed throughout the day, nuclear energy plays just an essential role in generating reliable, carbon-free baseload power. That is certainly something that we see in Texas, where I have visited our South Texas nuclear power plant. But we also know—and our work on sort of the next generation of nuclear technologies—and that is really important in sort of our path forward.

So one of the things we have touched on a little bit today are the small modular nuclear reactors. And obviously, that offers a lot of potential advancements that are going to improve cost and efficiency and versatility for the grid, as well as addressing some of the concerns that people have raised over the years.

And we know, and we talked a little bit about, you know, the process at NRC to review these advanced nuclear reactors. And I know that along the Texas Gulf Coast there are some active partnerships trying to bring this technology to light, and so I wanted to ask you, Mr. Dorman, because you touched on it a little bit in your opening, the work that the NRC is doing to address the bipartisan NEMA requirements.

And I think that this is an area where I have heard a lot of concerns from folks that the draft rule that has been put together really just doesn't meet the requirements that Congress laid out, but also—and it is something we hear, unfortunately, a lot in this context—isn't workable. And so that is the big challenge, I think, in front of us.

And so can you talk just a little bit more with the time that I have about what the NRC is doing to try to ensure that the part 53 rule will meet the requirements of NEMA, and specifically the new licensing framework that—to be both risk-informed and performance-based?

I think that that is some of the tension. And if you could, just talk a little bit more about what you are doing.

And I know you anticipated movement on the rule quickly. I know you said you are ahead of schedule, but those seem to be the concerns. And so I want to know how you are seeing them play out now and how you are addressing them as we move toward a final rule.

Mr. DORMAN. Thank you, Congresswoman. So I will speak to what the staff has done, because the rule is currently with the Commission.

The staff had an extensive process over 2 years of iterative language development with significant stakeholder engagement. We

did have areas where we took stakeholder feedback. We have, as you know, a two-framework rule before the Commission. The second framework was developed by the staff in response to stakeholder inputs. But there are a number of areas that we had stakeholder inputs that was contrary to where the staff was coming out.

In presenting the rule to the Commission, the staff teed up four specific issues like that with what the basis for the staff's recommendation was, as well as other considerations that the Commission could evaluate. So that—the staff brought those issues to the Commission, and we are awaiting the Commission direction on that.

As you noted, we are 2 years ahead of the NEMA schedule on that, so we have some leeway to take that direction and whatever direction we get from the Commission and work it forward.

Mrs. FLETCHER. Well, thanks. I appreciate that, because I do think there's still some outstanding concerns, and that is what I am, you know, continuing to hear.

Mr. DORMAN. Yes.

Mrs. FLETCHER. And I think the other concern that I just want to touch on—I have a little over a minute left—and this is, again, something you mentioned in your opening, but can you talk a little about what the NRC is doing to ensure that the licensing frameworks make sense for all reactors and not just the traditional light-water reactors that are part of our existing fleet, but sort of all reactors going forward?

You have got about a minute for that.

Mr. DORMAN. Yes, thank you, Congresswoman.

So the part 53 would be what we are trying to do that would be technology inclusive. The existing rules in part 50 and 52 were designed for large, light-water reactors. We anticipate two applications for nonlight-water reactors in the next year under part 50 and 52. And so part of the preapplication engagement with those applicants is looking at those rules, applicability considerations of those rules, and any areas that are not applicable or may need exemptions from those requirements.

So we are working with those applicants to work through and get through a coherent licensing process and sound conclusions under the existing framework.

Mrs. FLETCHER. Great. Well, thank you so much, Mr. Dorman, and thanks to both of you for your time and testimony today.

With that, Mr. Chairman, I will yield back.

Mr. DUNCAN. The gentlelady yields back. I now go to the gentlelady that knows about the Palo Verde Nuclear Power Plant, Mrs. Lesko, for 5 minutes.

Mrs. LESKO. Thank you, Mr. Chairman. Thank you for being here to both of you.

Mr. Dorman, I was told, I don't know, probably about a year ago or so, that the NRC sends out additional inspectors to nuclear plants in addition to the on-site inspectors that are already at the plants. I was told that some of these additional inspectors sometimes do what they believe is outdated inspections, maybe duplicative inspections, and that the thought was that maybe the extra cost of this additional inspector doesn't always outweigh the benefits.

And so, because of those concerns, I have introduced this one bill to try to come up with ideas or a report from the NRC. And my bill requires the NRC to produce three reports for this committee detailing how to improve regulatory oversight: the report 1 would discuss lessons learned from technologies used during the COVID crisis to see if they can be applied on a permanent basis, because I was told there was some that worked well; our report 2 would access specific elements of oversight and inspections that can be modified using technology, improved planning, and continually updated risk-informed performance-based assessment; and report 3 would review office and facility space requirements.

Mr. Dorman, have you heard of any of the inspection concerns that I just talked about?

Mr. DORMAN. I think not in those terms. We have our resident inspectors, whose full-time duty station is at the nuclear power plant. And they are focused primarily on operations and maintenance issues and response to incidents that occur at the site.

The staff in our respective regional offices are deployed as part of our baseline inspection program to do more focused inspections in areas like engineering, security, and emergency preparedness. So they are specialists, and they are focused in different areas of our baseline inspection program than what the—is done day to day by the resident inspectors. So that is what I am hearing that you describe.

I think we are always open to improvements in our inspection program. The process that we have in place now was established a little over 20 years ago, and it establishes a baseline inspection program combined with objective performance indicators that are—that, combined, provide a minimum level of oversight to assure safety of the facility on an ongoing basis. And then there is a structured process if there's degradations in performance to—for escalation of additional inspection to ensure that causes are understood and fixed.

But I think, in terms of your proposals, we are happy to work with the committee on those report areas. There are technology enhancements that occurred during the pandemic to support our mission effectiveness during the pandemic, and I think there are ways that we can apply some of those.

We also have been working to put better tools in our inspectors' hands to make them more efficient in the field, in terms of technology. So I think there is definitely areas we can work with you on.

Mrs. LESKO. Good. I would appreciate it. Mr. Dorman, it is also my understanding that the NRC staff—maybe about—I don't know how recently, I think within the last year—originally recommended conducting that—inspections every 3 years, instead—wait, let me back up.

The Problem Identification and Resolution Program is part of the reactor oversight process, which follows up on how plants identify and resolve issues. As part of the overall efforts to enhance the reactor oversight process, this program was reviewed. One of the program's many inspection activities involves a large team inspection, which is conducted every 2 years.

Mr. Dorman, it is my understanding that the NRC staff originally recommended conducting that inspection every 3 years, instead of every 2 years, but that recommendation was withdrawn. Can you tell me more about this, and why the recommendation was withdrawn?

Mr. DORMAN. The recommendation that went to the Commission originally went with a view expressed in the paper that the leadership in our regional offices who implement the program hadn't had a chance to fully digest this recommendation and were not on board with the recommendation.

So the reason we withdrew the recommendation was to go back and further develop our—look at the whole problem identification resolution component, which consists of that 2-year inspection into the licensees program effectiveness as well as individual samples of discrete actions that the licensee identifies and resolves over the course of time.

And having done that review, the staff did not see a net benefit in the change in the—went back to the Commission and reported out that we did not intend to change that from 2 years.

Mrs. LESKO. Thank you.

And Mr. Chair, I may submit more questions because I have more questions with examples of—there is kind of an egregious example in 2017 how just changing two words of a corporate name was going to cost this nuclear plant—not the one that I am familiar with, but a nuclear plant, like, tons of money. And so I will submit it to you so you know what I am talking about.

Mr. DORMAN. OK, thank you.

Mrs. LESKO. Thank you very much.

Mr. DUNCAN. The gentlelady will submit questions, and her time is up. I now go to Ms. Matsui for 5 minutes.

Ms. MATSUI. Thank you very much, Mr. Chairman.

Nuclear energy has the potential to provide a reliable, carbon-free source of baseload energy. However, we cannot hold a hearing on the future of nuclear energy without addressing the 88,000-ton elephant in the room: nuclear waste. Before we build a new generation of reactors, we need to have a clear plan for how to dispose of spent fuel. The Rancho Seco Nuclear Power Plant in my district was shuttered over 30 years ago, and yet we are still dealing with the spent fuel.

I am pleased to see the Department of Energy take this problem seriously with a consent-based siting approach. I have led efforts to support annual funding for this program at DOE, and I also lead the Store Nuclear Fuel Act, which would authorize an interim storage program at DOE.

Dr. Goff, I was encouraged to see DOE's funding announcement in June to advance the conversation around consent-based siting for spent nuclear fuel. Dr. Goff, how will these 13 grants translate into the next stage of eventually siting a spent fuel storage facility?

Dr. GOFF. Thank you for the question, and thank you for the support in this activity. We are excited to be able to move forward on this consent-based siting for, potentially, a Federal interim storage facility. We are looking at this as being a three-phase process: this first phase that we are in right now with the consortium, the 13 different consortiums that were awarded, is really focused on plan-

ning and capacity building, you know, the next phase will be focused more on screening and assessments of siting; and then the final phase will be more toward negotiation and implementation.

But right now, these 13 teams will be helping us be able to, you know, have capacity building within the different communities and within the different stakeholders. So those entities that are spread out across the country will be able to interface with different communities and stakeholders that want to learn and understand more about potentially siting one of these facilities. So they will be able to make awards from those consortium to, again, help them understand and be able to know how they want to move forward into the next process, and help inform us, as well, on how we need to take this into the next stage, as well, within the Department.

Ms. MATSUI. OK. In DOE's April report on the consent-based siting process, you state that, while DOE is focused on consolidated interim storage facilities, you are also pursuing a comprehensive integrated strategy for spent nuclear fuel, and you expect the siting of interim storage could inform the siting of permanent disposal.

Dr. Goff, can you provide an update on where DOE is with developing a comprehensive strategy for siting long-term disposal of spent fuel?

Dr. GOFF. Yes, we do recognize that we need to go beyond interim storage, so we do need to have, again, kind of a three-phased approach. We need to have an integrated storage process, transportation process, and eventually geological disposal as well.

We have talked about what we are doing in the integrated storage. We are continuing to do, you know, research and development-type activities to help us be able to move forward on both the transportation and the geological disposal as well. That will support whatever type activity and whatever type repository you go into. So the work we are doing on geological repository, we are doing R&D to assess a number of different type of geologies. On transportation we are working and have worked toward licensing a railcar to be able to transport this fuel as it leaves retired sites—

Ms. MATSUI. Right.

Dr. GOFF [continuing]. And all, as well. So we are doing a lot of activities to make sure that we are ready to implement as—implement those next stages, as well—

Ms. MATSUI. Sure.

Dr. GOFF [continuing]. Process.

Ms. MATSUI. Now, there are several international examples of countries successfully navigating the consent-based siting process for long-term geologic storage. Finland now hosts the world's first permanent site for high-level nuclear waste, and France and Switzerland have also proposed sites for long-term storage.

How is DOE incorporating the lessons from other countries in how we approach long-term disposal?

Dr. GOFF. We are making sure that we are collaborating with all of those other countries, as well, either bilaterally—we are working with Finland and Canada, a number of different countries like that—to take their lessons learned—like I say, especially the Finns—on how they were able to site repository.

But we are also working through multilateral organizations like the Nuclear Energy Alliance, as well, to, again, look at what the lessons learned around the world are so we can take those and apply them to our system and hopefully, also, then be ones in the future to talk about our lessons learned and how other countries can apply them as well.

Ms. MATSUI. OK, thank you. I know all of us really believe that that aspect of nuclear waste is really critical to moving forward.

So thank you very much, and I yield back.

Mr. DUNCAN. The gentlelady yields back. I now go to Mr. Balderson for 5 minutes.

Mr. BALDERSON. Thank you, Mr. Chairman, and thank you both for being here today.

Mr. Dorman, in your testimony you note that the industry is looking at using brownfield—and we talked a little bit about that today—sites such as former coal plants to use existing infrastructure and workforce. Have you received applications for new nuclear plants at these types of sites?

Mr. DORMAN. We have not to date. We are anticipating one in the next year.

Mr. BALDERSON. Can you expand on how the NRC would leverage existing data about the sites to speed up any environmental reviews?

Mr. DORMAN. So the use of existing data is going to depend a little bit on the currency of the data and the methods used. But we would use any information that the licensee or the applicant provided from the historic characterization to gain efficiencies in our review.

Mr. BALDERSON. OK, thank you. That is what we like to hear.

In 2021—Mr. Dorman, again, I am sorry, sir—NRC ceased rule-making efforts related to commercial reprocessing, citing a lack of interest from the industry. However, since that decision there have been a number of private-sector entities that have emerged with plans to pursue commercial reprocessing at various scales. Some of these companies have received substantial funding from DOE programs for R&D.

Mr. Dorman, can you discuss what the NRC is doing to prepare for reviewing applications from such entities?

Mr. DORMAN. So, to my knowledge, we have one license plan for a company called Oklo to apply for a reprocessing facility. So we have begun what we call preapplication engagements with that licensee.

We also, going back 15 years, we had 3 letters of intent for reprocessing facilities that—the applications never materialized, but we did considerable work at that time to prepare for those. So we are refreshing on that as we get ready to potentially get another application for reprocessing.

Mr. BALDERSON. OK, thank you. Mr. Dorman, again—sorry, Dr. Goff—I would like to follow up on an issue that Chair Rodgers raised earlier during last month's hearing with the NRC Commissioners.

Commissioner Caputo noted the need for enhanced performance indicators so the Commission and the public can track the duration and status for licensing reviews. On a slightly separate note, Mr.

Dorman, I am curious how NRC measures staff performance today. And can you describe your performance indicators?

Mr. DORMAN. Yes, sir. I talked a little bit about it earlier. When the staff gets a license application in, when we have determined that it is appropriate for docketing, we look at the issues raised in the application, establish a review schedule and a level of staff effort associated with that review. And so we—I believe we communicate those to the applicant, and we track those internally to make sure we are meeting those.

So I think one of the concerns that Commissioner Caputo raised is that may not be broadly visible to the public. I think we report out on those macroscopically, a rollup of how we are meeting those, in some of our reports to Congress. So there are—I think part of the concern that I hear there is we could do better in public-facing indicators of performance in that regard.

Mr. BALDERSON. OK, thank you very much.

Mr. Chairman, I yield back.

Mr. DUNCAN. The gentleman yields back. I now go to Mr. Pfluger for 5 minutes.

Mr. PFLUGER. Thank you, Mr. Chairman, and I appreciate you holding this important hearing. Thank you to the witnesses for being here.

I am concerned just overall about where the administration is going when it comes to the production of electricity in this country and, you know, the different sources.

I think nuclear is exactly where we should be putting our resources, our innovation, and our time to enhance that. You know, recently leading a trip to South America, you see where the CCP and their influence is everywhere. It is in Africa. You know, I think my first question—I am just going to start with Mr. Dorman—how far behind are we when it comes to exporting our technology, getting nuclear technology to other countries? How far behind the CCP are we?

Mr. DORMAN. I am not sure I have a good measure for that. I think they clearly have an agenda to get into all parts of the world and have an influence.

We have recently had the agreements in Poland, and they are planning to build U.S. technology. I think the—we are seeing from our regulatory counterparts a high degree of interest in U.S. technology and support from the NRC to enable them to be ready to license those.

Mr. PFLUGER. One of the issues—we recently passed legislation about the NEPA process. Can you tell me how the NRC is going to implement—

Mr. DORMAN. So—

Mr. PFLUGER [continuing]. Those changes to reduce the timelines and to get to a realistic timeline for impact statements or analyses?

Mr. DORMAN. Yes, thank you, Congressman. So we are digesting that legislation, but we have a number of similar initiatives ongoing to reduce the magnitude of the documentation that we produce in our NEPA process to reduce our costs and time in producing the sound decisions consistent with NEPA.

There are a number of other areas that we are focused on. You know, I think that is probably—if we can get standard reactors, I

think that NEPA process is going to be the area that will be most important for gaining efficiencies. But in terms of your specific legislation, we are still analyzing that.

Mr. PFLUGER. I use the term "moving at the speed of relevancy," and we need the Nuclear Regulatory Commission to move at the speed of relevancy in order to not just get to an export—that was my first question—but also to domestically produce. And can either of you tell me how much, percentagewise, how much electricity is produced annually from nuclear power?

Mr. DORMAN. In the U.S. about 20 percent of the electricity is from nuclear.

Mr. PFLUGER. Wow, you guys are the first ones that have had a clue about electricity source generation.

And Dr. Goff, you mentioned something about a carbon-free electrical grid. I am interested to know what that looks like. I mean, what do you think the demand in U.S. electricity is going to be if the administration gets to just an EV mandate that they are pushing for by about 2032?

I mean, where are we going in the country, and how is nuclear going to play a role in that? What would that 20 percent have to look like in order to service the demand?

Dr. GOFF. I think that 20 percent will have to go up. But I think—well, we put out a report looking—the technology liftoff report, commercialization liftoff report, from the Department of Energy. In that we are projecting that we need on the order of 200 gigawatts of nuclear capacity between now and 2050, you know, where we have roughly 100 gigawatts, so roughly 3 times the build-out of what we have. And that is assuming what we have continues operating.

So it is a significant amount of new nuclear, but it is also a significant amount of renewables and, you know, fossil with sequestration. There is a lot of new capacity that needs to be out there as you go to that decarbonization, and nuclear has to play a major role in that.

Mr. PFLUGER. And it has to play a major role. And, as you guys know, renewables are not baseload providers. So when we are talking about baseload capacity—and thank you for doing the math on it—I would encourage you to please share this with Department of Energy, because they have not done the math. They have sat right here, and the Secretary of Energy does not know how much electricity the United States uses annually. That is shocking.

And so my last question: Dr. Goff, can we source all of the uranium and other materials from the United States of America? If we were to be able to permit appropriately, can we source what we need from this country?

Dr. GOFF. Right now we are not providing a lot of the uranium resources, the ore. We are not mining a lot. We do have resources in the country, but we also have resources in Canada and other trusted allies as well—Canada, Australia. So there is—we can trust—we can provide it from trusted allies. And we do have, like I say, reasonable reserves here, as well, so—

Mr. PFLUGER. Thank you. My time is expired. I yield back.

Mr. DUNCAN. The gentleman yields back. I will now go to Mr. Armstrong from North Dakota.

Mr. ARMSTRONG. Thank you, Mr. Chairman.

Mr. Dorman, the NRC has more than 50 years of experience in the licensing and regulatory space. Given the time, process, and subject matter expertise, it would normally be safe to assume that nuclear review time should shrink, and costs should decrease as agency efficiencies increase. But despite decades of working in this space, review cost and time have both increased. What actions is the NRC taking to increase efficiencies during the review process?

Mr. DORMAN. Thank you, Congressman. Several things I mentioned earlier, specifically on subsequent license renewal.

We recognize that the costs have gone up, and we are taking a look at how we can better use risk insights to focus our review. I think, in general, in our licensing reviews we are looking to apply risk insights at the outset of our process to make sure we are focused on the right things. And as I mentioned earlier, we are laying out the cost and time estimates at the outset of a review and holding ourselves accountable to those estimates as we go through reviews.

So we are trying to be more focused on the most significant issues and effectively—more effectively managing our processes.

Mr. ARMSTRONG. Under its current framework, is the NRC capable of managing new workload in the advanced reactor space?

Mr. DORMAN. Within the framework, we are capable of managing the workload we have in the next couple of years. I think if we get through several demonstrations and start to see that workload significantly increase, I think we will need to adjust our resources concomitantly.

I think, as I have mentioned earlier in this hearing, if we get standard designs where we truly are getting nth of a kind of the same thing that we have already reviewed, we should be able to get very substantial efficiencies in the process.

Mr. ARMSTRONG. So you said the NRC is streamlining the licensing review process, and that includes, like, preapplication interactions, enhancing communication with applicants and licensees, and early engagement with the NRC advisory committee. Does this include environmental reviews?

Mr. DORMAN. It does include the environmental reviews, yes.

Mr. ARMSTRONG. OK. And earlier in the hearing you mentioned that there is a substantial amount of information available to the public today that was not available in, say, like, the 1950s, particularly the public participation in contested hearings. Can you just further explain how the public engagement process works and why the public should have confidence in the existing structure without an additional Office of Public Participation?

Mr. DORMAN. So the—if I go back just 30 years, for the public to get information on what the NRC was doing, they had to get into a local library, navigate a microfiche system to find documents. Today those documents are all available on the internet. They have Google-type search engines to have ready access to all of our record activities.

In all of our licensing processes there are notice and comment. We go out into the community, engage. We engage through their State and local governments. So there are a number of ways that we very intentionally engage people in the process to make sure

that they are aware that an action has been proposed in their community, that they have the opportunity to hear from us of how we are going to make sure that it is done safely, and to ask us questions.

Mr. ARMSTRONG. And I don't mean to trivialize this in any way, because we have to have 100 percent on safety. It is nuclear, we all understand that, both for the danger, the—like, minor, minor chances, but extreme problems it raises, but also for public confidence in the energy source. But I make a joke with my staff quite a bit that we have way too many meetings that could have been an email, and I think an uncontested hearing is—kind of fits into that mold, particularly when you are talking about the advancements in how we communicate the information available.

So I appreciate your guys' attempts in trying to do this, and we have to figure out how to speed it up. We are coming to a crisis point on grid resiliency and reliability, and we need more molecules on the grid, not less. And nuclear is going to be a big part of that, moving forward. So I appreciate your time here today.

And with that, I yield back, Mr. Chairman.

Mr. DUNCAN. The gentleman yields back, and I will now go to Mr. Carter from Georgia.

Mr. CARTER. Thank you, Mr. Chairman. I appreciate you giving me an opportunity to waive on this. This is extremely important. As you know, we have two reactors that are under construction now and—well, one of them we thought was up but got delayed a little bit. But still, we are very committed to nuclear power in the State of Georgia, and very proud of that.

Today what we are doing is, of course, looking at bills that will support the U.S. nuclear industry. But it is important that we understand—and I am sure you would agree that we need to be looking at other nations, as well, and what they are doing, particularly our adversaries, Russia and China.

We understand that together they account for nearly 70 percent of the reactors that are either under construction or being planned right now. In fact, Russia, I think, has the most, with 19, and has a strong, very strong influence in global nuclear power. Russia is building plants in Turkey, Egypt, and I think they are discussing one in Hungary as well.

And then China, we know what they are doing. They are pursuing Pakistan, Argentina, and talks with Saudi Arabia and other countries as well. In fact, this is a big part of China's Belt and Road Initiative. And that, you know, that alone should be enough to get our attention, much less the fact that we need reliable baseload power here in America, and we all understand how important that is.

But that is why I have got a bill that I—if you can imagine that, that is why I am here—I have got a bill that I want to talk about. It is the Global Nuclear Energy Assessment and Cooperation Act. And what it does is to take a multipronged approach to promoting nuclear energy around the world.

First of all, it will prohibit us here in the United States from importing nuclear fuel assemblies from hostile foreign nations like Russia and China. That will encourage energy independence, and that is important as well.

Secondly, it will introduce a program, the International Nuclear Reactor Export and Innovation Branch at the NRC, that will focus our international nuclear efforts, including training and sharing our expertise with allies.

Dr. Goff, you just made a comment a few minutes ago about how we have got natural resources here and in Canada and our allies, and that is very important. We need to really foster those relationships and share with our allies and work together with them. That is extremely important.

I want to ask you—I will start with you, Mr. Goff—what are your concerns with Russia and Chinese dominance in the nuclear energy space globally?

Dr. GOFF. Well, like I say, Russia's invasion of Ukraine has demonstrated that they are not a reliable energy partner. So, you know, we can't rely on them for fuel, and I don't think other of our allies should be relying on them for new builds as well. We need to be looking at instead providing us—our allied resources there.

I would say similar things about China, as well, that we would rather have us or our allies doing those builds and all. So we do need to take this opportunity to focus on how can we replace those builds and how can we turn around more U.S. builds. You know, we have had some success now in Central Europe, and we need to, you know, continue our efforts to focus on how we can export U.S. technology—

Mr. CARTER. Right.

Dr. GOFF [continuing]. Because we want to make sure the U.S. is setting the standards for safety, security, and nonproliferation around the world. And the way we do that is to have the U.S. technology—

Mr. CARTER. And China is an open book. I mean, they have said through their Belt and Road Initiative what their intentions are. So they are just following through on their intentions. It is pretty obvious what they are doing.

Mr. Dorman, let me ask you, do you agree? Do you think it is important for the U.S. to be a leader in setting standards globally and sharing our best practices with our allies?

Mr. DORMAN. Yes, Congressman, and we have a longstanding role at the NRC working with other regulators to ensure they have the capacity to take on these responsibilities, particularly these countries that are looking to embark on nuclear power programs.

Mr. CARTER. Good. Well, I hope you will look at this bill, because it is a bipartisan bill. Scott Peters is the Democrat who—on this committee—who is the other cosponsor of it. But it is, I think, a good approach at how we should be looking at nuclear power and positioning ourselves in the United States along with our allies to make sure we are a leader in nuclear power.

Again, Mr. Chairman, I want to thank you for giving me the opportunity to waive on and to get a plug in for what I think is a very, very productive bill. And I will yield back.

Mr. DUNCAN. The gentleman yields back, and this concludes the question-and-answer portion of this panel. So I want to thank the witnesses for being here.

I thought it was excellent testimony and answers to the questions, a lot of information was provided. So thank you once again.

And we are going to go ahead and change over and seat the next panel in the essence of time, because votes are going to be called. We are going to try to get through at least the testimony beforehand.

But thank you, Dr. Goff and Mr. Dorman, very much.

[Pause.]

Mr. DUNCAN. All right. While you are being seated, I want to go ahead and thank you for being here today and taking time to testify before the subcommittee.

Each witness will have an opportunity to give an opening statement, followed by a round of questions from Members.

The second panel consists of Mr. Ted Nordhaus, founder and executive director of Breakthrough Institute; Ms. Maria Korsnick, president and CEO of Nuclear Energy Institute; Ms. Jackie Toth—did I pronounce that right, “Tath”? “Tath”? OK—deputy director of the Good Energy Collective; and the Honorable Jeffrey Merrifield, chairman of the Advanced Nuclear Working Group at the U.S. Nuclear Industry Council, former NRC Commissioner.

So we appreciate you being here. I will now recognize Mr. Nordhaus for 5 minutes to give an opening statement.

STATEMENTS OF TED NORDHAUS, FOUNDER AND EXECUTIVE DIRECTOR, THE BREAKTHROUGH INSTITUTE; MARIA KORSNICK, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NUCLEAR ENERGY INSTITUTE; JACKIE TOTH, DEPUTY DIRECTOR, GOOD ENERGY COLLECTIVE; AND JEFFREY S. MERRIFIELD, CHAIRMAN, ADVANCED NUCLEAR WORKING GROUP, U.S. NUCLEAR INDUSTRY COUNCIL

STATEMENT OF TED NORDHAUS

Mr. NORDHAUS. Thank you for inviting me to testify. My name is Ted Nordhaus. I am the founder and executive director of the Breakthrough Institute. We are an independent global research center based in Berkeley, California, that identifies and promotes technological solutions to environmental and human development challenges.

It is a particular honor to me to testify before this committee because my father, Bob Nordhaus, served as general counsel to the Commerce Committee in the early 1970s and played a major role in drafting much of the foundational Federal energy and environmental law enacted by this committee during that era, most notably, for purposes of this hearing, the Energy Reorganization Act of 1974, which created the Nuclear Regulatory Commission.

Today the United States faces far different environmental and energy security challenges from the ones that these laws were enacted to address in the early 1970s. In no area is that more clearly the case than America’s profoundly outdated approach to the regulation of nuclear energy.

Over the 70-year history of commercial operation, nuclear energy has proven to be a remarkably safe and reliable energy technology. Accidents are exceedingly rare, public exposure to radiation vanishingly small, and public health consequences nonexistent. Yet the NRC continues to regulate nuclear energy as if it represented an exceptional threat to America’s public health.

Moreover, despite a clear mandate from Congress, the NRC appears unprepared to efficiently license a new generation of small advanced reactors appropriate for reactor technologies that are typically smaller, simpler, and safer than today's extremely safe light-water reactors.

If there is one critical point that I hope that this committee will take away from my testimony today, it is that we are not going to develop an innovative, advanced nuclear sector capable of meeting our energy security and climate objectives if we don't fix the Nuclear Regulatory Commission.

There are other critical challenges that the sector faces, but the development of a rational and efficient framework for regulating advanced reactors grounded in up-to-date public health data and science is a precondition for solving any of those further challenges. Critically, I would urge this committee to consider the following steps.

First, clarify the mission of the NRC. In both the Atomic Energy Act and the Energy Reorganization Act of 1974, Congress clearly recognized the importance of nuclear energy to the Nation's general welfare and common defense and security. Nonetheless, the NRC has interpreted its mission far more narrowly, limiting its regulatory activities to consideration of potential negative public health impacts of using nuclear energy.

To assure that NRC is prepared to license and regulate advanced reactors consistent with the national interest, Congress should amend section 201 of the Energy Reorganization Act to make clear that the NRC's legal mandate is consistent with the overall objective of the Act, and amend that mandate to clearly include the goals of reducing the overall public health burden of the electrical system and its carbon intensity.

Second, ground NRC public health standards in epidemiologically observable metrics, and harmonize them with EPA air toxics standards. The NRC has long enforced radiological health standards that are so low as to be entirely theoretical and are far stricter than those enforced for pollutants associated with similar energy production and industrial activities by the Environmental Protection Agency. The failure to harmonize environmental health standards across highly substitutable energy sources has resulted in significant excess mortality and illness over recent decades.

Third, clarify congressional intent with regard to NEMA implementation. A bipartisan letter sent yesterday from over 60 members of the House and Senate, including a majority of this committee, makes it clear that the intent of Congress in NEMA was to establish an efficient, technologically inclusive, and risk-informed framework for licensing advanced reactors.

In my written testimony I suggest a number of other further steps that this committee might take. So hopefully, we can get into some of that in the conversation.

But thank you very much for considering my testimony today.

[The prepared statement of Mr. Nordhaus follows:]

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Written Testimony of

Ted Nordhaus

Founder and Executive Director, The Breakthrough Institute

To the U.S. House of Representatives

Committee on Energy and Commerce

Subcommittee on Energy, Climate, and Grid Security

Hearing Entitled:

American Nuclear Energy Expansion: Updating Policies for
Efficient, Predictable Licensing and Deployment

July 18, 2023

Thank you for inviting my testimony. My name is Ted Nordhaus, and I am the founder and executive director of the Breakthrough Institute. We are an independent global research center based in Berkeley, California that identifies and promotes technological solutions to environmental and human development challenges. We have, for over a decade, been strong advocates for nuclear energy as a critical environmental technology necessary to effectively address climate change and other environmental and public health challenges.

It is a particular honor for me to testify before this committee because my father, Robert R. Nordhaus, served as general counsel to the Commerce Committee in the early 1970's and played a significant role in drafting much of the foundational federal energy and environmental law enacted by this committee during that era, most notably for purposes of this hearing, the Energy Reorganization Act of 1974, which created the Nuclear Regulatory Commission.

Today, the United States faces far different environmental and energy security challenges from the ones that these laws were enacted to address in the early 1970s. In no area is that more clearly the case than America's profoundly outdated approach to the regulation of nuclear energy.

That regulatory framework was developed at a time when far less was known about the public health consequences of either low dose radiation or fossil fuel combustion. America led the world in nuclear energy technology and deployment. And almost no one had heard about the problem of climate change.

Today, our understanding of all of these subjects is quite different. Thanks to decades of nuclear medicine and long term epidemiological studies of subjects exposed to radiation at Hiroshima, Chernobyl, Three Mile Island, nuclear test sites, uranium mines, and nuclear power stations, radiological health is the most widely studied and well understood environmental health exposure in the field of public health. What we know today is that exposure to low doses of radiation is associated with far lower health and mortality consequences than was believed to be the case fifty years ago. So low, in fact, that in most cases, the health effects associated with exposure to low doses of radiation cannot be reliably observed in epidemiological studies.

We also know far more about the health toll associated with using fossil fuels, particularly for marginalized communities that bear a disproportionate share of the public health burden associated with fossil fuel combustion. Conventional air pollution results in 200,000¹ excess deaths annually in the United States. A substantial share of that air pollution emanates from the electricity sector due to our continuing dependence on fossil fuels to power the grid.

¹ Fabio Caiazzo et al., "Air Pollution and Early Deaths in the United States. Part I: Quantifying the Impact of Major Sectors in 2005," *Atmospheric Environment* 79 (November 1, 2013): 198–208, <https://doi.org/10.1016/j.atmosenv.2013.05.081>.

In contrast to the early 1970's, the United States has largely ceded its leadership in civilian nuclear energy technology. The two new plants beginning operation in Georgia this year were the first new reactors to begin construction in over 30 years and are the first new reactor designs ever licensed by the NRC in its almost 50 year history to commence commercial operation, a decade behind schedule and billions of dollars over budget. China, during this same period has commercialized multiple new reactor designs, including its first high-temperature gas reactor, and currently has more than 20 new reactors under construction.² With the world's largest new build nuclear program,³ China's nuclear reactor fleet is expected to surpass the United States' as the largest in the world. Russia, meanwhile, has become the world's largest exporter of nuclear energy technology and fuel.

Finally, we know that a warming climate is likely to bring significant human and economic costs to the United States in the coming decades. Limiting warming will require deep cuts in carbon emissions globally over the course of this century.

Taken together, these facts suggest that a major overhaul of US regulation of nuclear energy is long overdue, in order to protect public health, assure America's energy security and global leadership, and address climate change.

Over the 70 year history of commercial nuclear energy generation, accidents resulting in the release of significant amounts of radioactive material have been rare, public exposure to radiation from these events has been vanishingly small, and the public health consequences of these exposures have been non-existent. Yet the NRC continues to regulate commercial nuclear energy as if these events represented existential threats to America's public health. The agency continues to promulgate regulations and licensing determinations that prioritize elimination of infinitesimally low radiation exposure over the deployment and operation of nuclear power plants that have a documented record of both safe, clean operation and displacing the combustion of fossil fuels that emit air pollutants that are far more dangerous.

Despite a clear mandate from Congress, the NRC also appears unprepared to efficiently license a new generation of small, advanced reactors. Regulatory frameworks and practices at the commission are still based upon the large light water reactors (LWR) that constitute the entirety of the US commercial nuclear reactor fleet today. The commission has thus far failed to develop a workable framework for licensing advanced reactors - appropriate for reactor technologies that are typically much smaller than conventional reactors, have far less fissile material in their reactor cores, and utilize fuels and coolants that can accommodate much simpler designs and operate with an even higher margin for safety than today's extremely safe LWRs.

² IAEA, Power Reactor Information System, Under Construction worldwide as of June 2023, by country. <https://pris.iaea.org/pris/worldstatistics/underconstructionreactorsbycountry.aspx>

³ IEA, World Energy Outlook 2022, 2022, <https://www.iea.org/reports/world-energy-outlook-2022>

As an early proponent within the environmental community of the need to reconsider nuclear energy, it has been heartening to see strong bipartisan action in Congress to commercialize a new generation of advanced reactors in the United States for both domestic use and for export around the world. Congress has put real money on the table, authorized the demonstration of at least two advanced reactors this decade, and directed the NRC to develop a modernized licensing framework for advanced reactors. The Biden administration is now counting heavily on next-generation nuclear technology in order to achieve the commitments it has made in international climate negotiations over the last two years. And particularly in the wake of Russia's invasion of Ukraine last year, US allies around the world, most especially in Eastern Europe, are lining up to import new US nuclear technology to assure their energy security, if we can license and commercialize it.

But if there is one critical point that I hope that this committee will take away from my testimony today, it is that none of these initiatives can succeed if we don't fix the Nuclear Regulatory Commission.

There are other critical challenges that the US nuclear sector will need to address. These include the need to develop a domestic fuel source for advanced reactors, the need for a streamlined process for permitting and siting new reactors, and the need for the nuclear industry to reinvent itself as an innovative technology sector, able to compete in both domestic and global energy markets that are vastly different than those of the 1960s and 70s.

But the development of a rational and efficient framework for regulating advanced nuclear reactors - one that recognizes the benefits of nuclear energy to the public welfare, grounds regulatory standards in epidemiologically sound public health science, and can accommodate advanced reactor technologies that are fundamentally different from those that the agency is accustomed to regulating - is a precondition for solving any of those further challenges.

Developing an innovative next-generation nuclear sector to meet our domestic energy needs and for export to our allies around the world will require licensing not just a handful, but on the order of hundreds of new reactors (Table 1).⁴ Our modeling demonstrates that even at relatively high initial costs, the US power sector will see substantial growth in new nuclear generation if advanced reactors are available over the coming decades, as the power sector shifts from coal and gas generation to a grid that is predominantly powered by renewable sources and advanced reactors.

⁴ Stein, Adam et.al, "Advancing Nuclear Energy:Evaluating Deployment, Investment, and Impact in America's Clean Energy Future", Breakthrough Institute, 2022. <https://thebreakthrough.org/articles/advancing-nuclear-energy-report>

Table 1. Range of advanced nuclear reactors deployed by date across all scenarios.⁵

Year	Total Number of Advanced Reactors
2035	59-260
2040	152-939
2050	560-3,415

That, in turn, will require a paradigm shift in how the regulatory process works, not minor efficiency improvements that tiptoe around fixing problems that have been endemic to US nuclear licensing and regulation for a generation.

We are pleased to see continuing interest in both chambers of Congress to take further action to modernize nuclear licensing and regulation. The ADVANCE Act, which recently passed out of the Senate Environment and Public Works Committee, would take important steps to reduce licensing fees for advanced reactor developers, improve the NRC’s workforce recruitment and retention, extend the Price-Anderson Act, and incentivize development of advanced reactor designs. This committee has recently introduced a number of important proposals to take similar action on the House side.

There is an urgent need, however, for Congress to take further action to better align the NRC’s licensing and regulatory standards and practices with the nation’s environmental, energy security, geopolitical, and economic interests. Critically, we would urge this committee to consider the following steps to assure that the NRC is prepared to license a new generation of globally competitive and economically viable advanced reactors.

1. Clarify the NRC’s Mission

There is a long-standing myth that Congress created the NRC with the explicit intent that it regulate nuclear safety with no consideration of the benefits of nuclear energy. There is no statutory basis for this claim. The NRC’s licensing and regulatory authority derives from the Atomic Energy Act of 1954, which established the mission and legal mandate of the NRC’s predecessor, the Atomic Energy Commission.⁶ Specifically, the Act states the following⁷:

⁵ Stein, Adam et.al, “Advancing Nuclear Energy:Evaluating Deployment, Investment, and Impact in America’s Clean Energy Future”, Breakthrough Institute, 2022. <https://thebreakthrough.org/articles/advancing-nuclear-energy-report>

⁶ The Energy Reorganization Act of 1974 (P.L. 93–438) divided the powers of the AEC: the “licensing and related regulatory functions” were passed down to the NRC (Sec. 2(c)) and the other powers including promotion of nuclear power were given to a different agency which later became the Department of Energy.

⁷ Atomic Energy Act of 1954 (P.L. 83–703) (Sec. 1)

Atomic energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that—

- a. the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and*
- b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.*

The Energy Reorganization Act of 1974 divided the AEC's responsibilities, situating its "licensing and related regulatory functions" with the newly created NRC while delegating its oversight and operation of national laboratories, nuclear weapons manufacturing facilities, and other research and promotional activities to what would become the Department of Energy.

Nowhere in the Energy Reorganization Act of 1974, however, did Congress suggest that the NRC's sole responsibility was to regulate nuclear safety at the plant level. To the contrary, The Energy Reorganization Act of 1974 largely restates the broader mission and mandate defined in the earlier Atomic Energy Act, stating⁸:

The Congress hereby declares that the general welfare and the common defense and security require effective action to develop, and increase the efficiency and reliability of use of, all energy sources to meet the needs of present and future generations, to increase the productivity of the national economy and strengthen its position in regard to international trade, to make the Nation self-sufficient in energy, to advance the goals of restoring, protecting, and enhancing environmental quality, and to assure public health and safety.

Despite this broad mandate for the benefit of the nation, the NRC has interpreted its mission far more narrowly, focused entirely upon regulating "the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security and to protect the environment."⁹ As a result, the NRC limits its regulatory and licensing activities to consideration of potential negative public health impacts of using nuclear energy without any consideration of the consequences to public health and safety of not using nuclear energy.

⁸ Energy Reorganization Act of 1974 (P.L. 93-438) Sec. 2(a).

⁹ "About NRC." NRC Web. <https://www.nrc.gov/about-nrc.html>

In its safety goal policy,¹⁰ the NRC does recognize that nuclear energy risks should be considered relative to other energy sources. However, the NRC does not actually account for the comparative risks of alternative energy sources in any way in its actual decision-making and, to the contrary, consistently applies regulatory standards to commercial nuclear reactors that are significantly stricter and less risk tolerant than those applied to any other source of energy.

As a result, the NRC has for decades endeavored to regulate nuclear risk and uncertainty as close to zero as possible, with no consideration of the cost to nuclear developers and operators of doing so or the environmental, public health, energy security, or economic consequences of not building and operating nuclear energy plants. No other environmental, public health, or safety regulator in the United States takes a similar approach, for the simple reason that limiting the purview of regulators in this way predictably results in regulation that reduces rather than improves public health and safety.

To assure that the NRC is prepared to license and regulate advanced reactors consistent with the national interest, Congress should amend Section 202 of the Energy Reorganization Act of 1974 to make it explicitly clear that the NRC mandate is in line with the overall objective of the Act and should further amend that mandate to encompass reducing the overall public health burden and carbon intensity of the electricity system. Such an amendment would reaffirm the NRC's responsibility to consider a broader range of factors, including the costs and benefits of regulatory actions on society,^{11,12} and the consequences of impeding nuclear deployment. By aligning the NRC's mission with our national objectives, we can empower the agency to make informed decisions that broadly benefit public health, safety, and the environment.

2. Ground NRC Public Health Standards in Epidemiologically Observable Metrics and Harmonize Them With EPA Air Toxic Standards, as Congress Expected

The NRC, through its Quantitative Health Objectives (QHO),¹³ As Low As Reasonably Achievable (ALARA) approach, proposed Alternative Evaluation of Risk Insights (AERI),¹⁴ and other radiological dose limits, sets radiological health thresholds and standards for both normal

¹⁰ The NRC's top line Safety Goal is that, "Societal risks to life and health from nuclear power plant operation should be comparable to or less than the risks of generating electricity by viable competing technologies and should not be a significant addition to other societal risks" <https://www.nrc.gov/reading-rm/doc-collections/commission/policy/51fr30028.pdf>

¹¹ Additional examples of federal agency missions have been compiled here: https://thebreakthrough.imgix.net/Agency-Mission_Vision-Statements.pdf

¹² The Environmental Protection Agency (EPA) considers the broad impacts to society, economics relative to the regulation, and available technology, not just the cost to reduce the exposure.

¹³ Stein, Adam, "Quantitative Health Objectives in a Performance-Based Regulation", Breakthrough Institute, January 2022. <https://adamswbsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML22038A112>

¹⁴ Smith, Charlyne, Stein, Adam, Flaws with the Alternative Evaluation of Risk Insights (AERI), Breakthrough Institute, 2022. <https://thebreakthrough.imgix.net/AERI-whitepaper-2.pdf>

operations and rare design basis accidents. These standards are so low as to be entirely theoretical - meaning that health consequences associated with these exposures would not be statistically observable in a large exposed population,¹⁵ even over many decades - and are far stricter than those enforced for pollutants associated with similar energy production and industrial activities by the Environmental Protection Agency (EPA).

Since the 1970s for criteria air pollutants and the 1980s for air toxics, the EPA has enforced air pollution standards related to fossil fuel combustion. In a recently published working paper¹⁶ comparing the underlying latent cancer risk upon which these standards are based, we conclude that the EPA's air toxics regulations are significantly less stringent than those enforced by the NRC. In fact, the NRC applies more stringent standards for rare, worst-case accidents than does the EPA's for steady-state everyday operation of regulated facilities.

The result, insofar as NRC health standards have significantly constrained or increased the costs of licensing, building, and operating nuclear power plants, as much evidence suggests they have, has been to propagate, rather than reduce, the public health burden associated with the US energy system.

The enforcement of different standards for toxic air pollutants by EPA and NRC is clearly inconsistent with Congressional expectations. Congress included ionizing radiation as a regulated pollutant under Section 112 of the 1990 amendments to the Clean Air Act, explicitly endorsed the EPA's approach to defining "an ample margin of safety to protect public health," and explicitly established that the EPA standard would be the controlling authority for all sources of such radiation—including nuclear power plants—unless EPA could certify that NRC regulations regarding the release of ionizing radiation could comply with the EPA's "ample margin" standard.

Because NRC standards are so much lower than EPA standards, EPA has certified that NRC regulations comply with requirements stipulated in Section 112. But it is clear from the statute and legislative history that Congress intended EPA's Section 112 approach to be the yardstick for regulation of radiation from nuclear power plants—not that the NRC would impose standards far more restrictive.

The expectation from Congress that the EPA and NRC harmonize their approach to regulating toxic air pollutants was well considered. The failure to harmonize environmental health standards across energy sources that are highly substitutable has resulted in significant excess mortality and illness over recent decades, both due to the closure of existing nuclear plants and the failure to build new ones.

¹⁵ Stein, Adam, "Quantitative Health Objectives in a Performance-Based Regulation", Breakthrough Institute, January 2022. <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML22038A112>

¹⁶ Stein, A., et. al., "Comparing the NRC's Risk Regulatory Regime for Reactors with the EPA's Risk Regulatory Regime for Sources of Toxic Air Pollutants", Breakthrough Institute, July 2023. <https://thebreakthrough.org/articles/comparing-the-nrc-and-epa-risk-regulatory-regime>

Congress would be well advised to establish explicitly that the NRC should not establish or enforce health standards that deviate significantly from those that the EPA enforces for alternative sources of energy, consistent with Congressional intent in the 1990 amendments to the Clean Air Act under Section 112. Congress should also consider explicitly defining a threshold for radiological risks associated with licensing advanced nuclear reactors. This threshold should be based on observable negative health consequences within the population surrounding the facility. For example, such a threshold could be the following:

The threshold is defined as negative health consequences as a result of the operation of a nuclear power facility that would be epidemiologically observable in the population in the vicinity of the facility.

3. Clarify Congressional Expectations With Regard to Implementation of NEIMA

The Part 53 rulemaking is a crucial component of the Nuclear Energy Innovation and Modernization Act (NEIMA), which calls for the development of a modernized, risk-informed, and performance-based license framework for advanced nuclear reactors. At present, the Part 53 rulemaking, pursuant to Congressional direction in NEIMA to develop a modernized licensing framework for licensing of advanced nuclear reactors, has been conveyed to the Commission by the NRC staff.

Indications from public remarks by the Commissioners suggest that the Part 53 rulemaking is on track and on schedule. However, the NRC staff draft¹⁷ raises serious questions¹⁸ as to the ability of the NRC to meet the Congressional mandate under NEIMA to develop a modernized, risk-informed, and performance-based license framework for advanced nuclear reactors.

The proposed Part 53 draft includes the codification of risk standards such as QHOs, ALARA, and AERI that establish regulatory dose limits that provide no observable health benefit to the public.¹⁹ and, in the case of AERI, require assumptions regarding the frequency of design basis accidents and the demographics of exposed populations that are, at best, highly improbable.

Moreover, the proposed rules largely maintain the current prescriptive and deterministic licensing paradigm, limiting flexibility to use alternative analytical and regulatory tools appropriate to the wide range of new nuclear technologies seeking regulatory approval and hindering the path to

¹⁷ NRC. "SECY-23-0021: Proposed Rule: Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" ADAMS Accession number: ML21162A093 (hereinafter, the Proposed Part 53 Rule). accessed here: <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21162A093>

¹⁸ "Review of the Draft Proposed Part 53 Rule Language", Breakthrough Institute, 2022. <https://thebreakthrough.inigix.net/Whitepaper-Review-of-draft-Part-53-package-Dec-2022.pdf>

¹⁹ Letter from NEI/USNIC to NRC's Executive Director for Operations, Dan Dorman, re: "Comprehensive Industry Comments on the NRC's Rulemaking on, Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" November 21, 2021, (RIN-3150-AK31; NRC-2019-0062).

timely commercialization of advanced nuclear reactors. In fact, most advanced reactor developers have expressed their reluctance to utilize Part 53 as proposed for licensing their technology.

Congress can play a vital role in reinforcing the intent of NEIMA by making amendments to the legislation. For instance, NEIMA currently instructs the NRC to employ risk-informed and performance-based techniques "where appropriate." Congress should consider directing the NRC to use these methods "to the maximum extent possible."²⁰ This amendment would more clearly establish that the new framework for advanced reactors should differ from the prescriptive frameworks used for LWRs, ensuring flexibility and proper consideration of risks. Congress should also reinforce that previous and ongoing efforts by public stakeholders should be considered and incorporated into the final rule.

4. Enabling On-The-Go Innovation

Additionally, there is a pressing need to address the challenge of enabling rapid innovation in the nuclear industry. The current licensing process, particularly the Licensing Amendment Request (LAR) process under 10 CFR Parts 50/52, is ill-suited for the iterative innovation required for advanced reactors. If a licensee needs to make changes to their existing license, a LAR is required. It is the traditional route to regulatory approval of changes in plant design and/or operation.

Although the LAR process is well defined under Part 50, the regulatory framework is not technology-inclusive and was drafted with large LWRs in mind. By contrast, advanced reactors are expected to utilize a factory production model where several reactors are in process at a time and innovation can be applied as needs arise. Due to the nature and characteristics of these newer reactor designs, rapid innovation is necessary and anticipated. The lengthy and expensive nature of the LAR process is likely to deter developers from making non-safety-significant advancements, hindering the progress of advanced reactor technologies. A LAR does not appropriately provide a streamlined pathway for license amendments since it is not only expensive but can also take up to two years²¹ to gain approval from the NRC. As a result, the LAR process as written is not aligned with NEIMA and can disincentivize iterative innovation of non-safety-significant components in advanced reactors.

To overcome these challenges, Congress should direct the NRC to expect rapid innovation and develop a more streamlined amendment process that aligns with NEIMA. The NRC needs to

²⁰ For example, see NEIMA, Public Law 115-439, Sec. 3 (14): "The term 'technology-inclusive regulatory framework' means a regulatory framework developed using methods of evaluation that are flexible and practicable for application to a variety of reactor technologies, including, where appropriate, the use of risk-informed and performance-based techniques and other tools and methods." Emphasis added.

²¹ "Generic Milestone Schedules of Requested Activities of the Commission." NRC Web, <https://www.nrc.gov/about-nrc/generic-schedules.html>.

prepare for on-the-go innovation after a design is approved, especially for newer advanced reactors that are widely scalable due to their factory-built characteristics.

5. Modernization of Environmental Reviews

Successfully licensing, commercializing, and scaling up a new generation of advanced reactors will require significant improvements to the NRC's current processes for complying with requirements under the National Environmental Policy Act. Current NRC process for environmental hearings is an outlier among federal agencies. For major federal actions requiring an EIS, federal agencies typically conduct scoping, provide public notice and comment on the draft EIS, review and respond to comments, and then issue a final EIS. The NRC's process goes a step further by allowing trial-type hearings where third parties can challenge safety and NEPA issues before an Atomic Safety and Licensing Board. These hearings are often misused by intervenors to delay or derail new nuclear projects.

Using the current process, contentions may be raised after the final Environmental Impact Statement (EIS) is issued. Consequently, the issues raised and fully addressed during the public comment process for the draft EIS also may be (and often are) raised again during these proceedings. Substantial applicant and agency resources are required just to address the admissibility of those contentions. The entire process can take many months (sometimes years) to complete and unnecessarily complicates/extends the NEPA review process. Because these issues were already addressed during the earlier process, the additional time does not result in additional benefits. Notably, this is the process that recently resulted in the roll-back of subsequent license renewals for several existing plants.

The NRC also overutilizes Environmental Impact Statements (EIS) when less resource-intensive Environmental Assessments (EA) will often suffice. In addition to other changes to NEPA, the recently passed Fiscal Responsibility Act of 2023 has directed federal agencies to utilize Environmental Assessments (EAs) instead of the more resource-intensive Environmental Impact Statements (EISs) whenever possible.²² This recognizes the fact that, while EISs are essential for assessing significant environmental impacts, it is crucial to consider the appropriateness of conducting an EA as an initial step. Unless significant impacts from the project are strongly expected, NEPA reviews should start with an EA and move to an EIS only if a finding of medium impact or greater is determined.²³

²² Public Law No: 118-5, Sec. 321.

²³ Reducing the use of unnecessary EIS's saves both time and money for all parties. For example, NASA's Radioisotope Power Systems (RPS) Program specified that the NEPA process for its missions would start with an EA, when it previously automatically began with an EIS, and they implemented a programmatic NEPA approach. These two changes could result in "NEPA process costs of \$50K as opposed to \$2M." For more information see: Eppig, Bethany et al. "NASA's Approach to Nuclear National Environmental Policy Act Compliance." Nuclear and Emerging Technologies for Space Lightning Talks, 2021. <https://nets2021.ornl.gov/wp-content/uploads/2021/08/Lightning-Talks.pdf>

This practice is particularly problematic as the NRC prepares to license a new generation of advanced reactors that are much smaller and will often be manufactured entirely, or in significant part, offsite. Presently, the NRC considers the licensing of a new reactor to be a “major action” that requires a full EIS under 10 CFR § 51.20:

The following types of actions require an environmental impact statement or a supplement to an environmental impact statement ... Issuance or renewal of a full power or design capacity license to operate a nuclear power reactor, testing facility, or fuel reprocessing plant...

This decision was made with large LWRs in mind and will often not be the case for advanced reactors, which in many cases will be far smaller, and thus will have less impact on the environment.

To address these challenges, Congress should direct the NRC to modify its procedures to align with other agencies by allowing the existing notice and comment provisions for an EIS to simultaneously serve as an “informal” hearing under the Administrative Procedures Act. This approach, widely accepted and understood among other federal agencies, would fulfill any hearing requirement without providing an additional redundant opportunity to essentially “re-adjudicate” NEPA issues in front of an administrative judge.

Importantly, the informal process provides a more accessible pathway for the public to raise legitimate concerns, while limiting opportunities for unproductive interventions aimed at delaying and derailing projects. A limited scope rulemaking to revise 10 CFR Parts 2 and 51 would be appropriate to avoid undesired out-of-scope revisions.²⁴

Alternatively, the NRC could limit the hearing process rather than removing it altogether. This could involve reducing the time available for filing complaints or interventions and restricting participation to those who have already participated in the public comment process.

To address the overuse of environmental impact statements, Congress should instruct the NRC to remove the licensing of new reactors from the list of actions requiring an EIS. Instead, the level of environmental evaluation should be determined on a case-by-case basis, allowing for a more tailored approach that considers the specific characteristics of each reactor. Unless significant impacts from the project are strongly expected, NEPA reviews should start with an EA and move to an EIS only if a finding of medium impact or greater is determined. While recent amendments to NEPA are already in effect, without further direction from Congress to promptly implement

²⁴ For more information see: O'Neill, Martin J. (2021). Forging a clear path for advanced reactor licensing in the United States: Approaches to streamlining the NRC environmental review process. Nuclear Law Bulletin No. 105. Volume 2020/2 at p. 43-45. Accessible at: https://www.oecd-nea.org/upload/docs/application/pdf/2021-05/7534_nlb_105.pdf

these changes, the NRC may take years to start the rulemaking process to revise existing regulations and guidance.

6. Modernization of NRC's Fee Structure

We must also address the need for modernizing the Nuclear Regulatory Commission's (NRC) fee structure. Currently, licensees and applicants contribute approximately 90% of the NRC's budget through fees based in part on staff hours spent reviewing applications.²⁵ Licensees are unable to dispute the hourly rates or estimation of staff hours necessary to review an application, and there is no recourse if a review exceeds that estimate. Reviews can take upwards of 18,000 hours even for small reactors. Although nuclear reactors used to be built by established conglomerates that could afford those costs, many of today's developers of advanced reactors are start-ups that are less equipped to bear the extra expenses.

Congress should direct the NRC to adopt a fee structure that will better enable innovation and support a diverse range of reactor developers. The recently introduced ADVANCE Act²⁶ offers a promising starting point for reforming the NRC's fee structure, but further amendments may be necessary to address the challenges at hand. One recommendation is to reduce the percentage of fees the agency must recover from applicants, which would help reduce the burden on both applicants and staff, and balance this relationship. Another recommendation is to defer NRC fees until after an applicant has obtained a license and the ability to generate revenue from sales. In the meantime, the NRC could recover its real-time costs through a small rolling fund initially seeded by the government. This approach would ensure that license applications are not solely limited to large corporations or utilities, removing barriers to rapid deployment.

Moreover, we propose implementing a cost cap on the review of accepted applications, with costs exceeding the cap covered by Congressional appropriations. This cap would be determined based on recent NRC review schedules. This would incentivize the NRC to issue timely license decisions while maintaining sufficient flexibility to protect public safety. Several agencies already utilize a flat fee system for licensing or certification. Implementing these changes may necessitate an increase in the NRC's overall resources and staff capacity.

7. Modernizing the Role of the Advisory Committee on Reactor Safeguards

The Advisory Committee on Reactor Safeguards (ACRS) is an independent committee formed to review safety studies and facility license applications on a request basis from the Commission.²⁷

²⁵ For Fiscal Year 2023, the NRC's professional hourly rate is \$300 an hour, 88 FR 39120, 39122.

²⁶ "Capito, Carper, Whitehouse Introduce Bipartisan Nuclear Energy Bill, the Advance Act." U.S. Senate Committee on Environment and Public Works, April 3, 2023. <https://www.epw.senate.gov/public/index.cfm/2023/4/capito-carper-whitehouse-introduce-bipartisan-nuclear-energy-bill-the-advance-act>.

²⁷ See the ACRS Charter: <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML20337A117>

However, the ACRS's role is evolving into a committee that reviews all license applications in the queue. Even now, their review schedule is typically full despite having only one application in process at a time. With the expected influx of applications over the next few years, the ACRS could potentially impede the licensing process by becoming a bottleneck.

To address this issue, we recommend that Congress request a report from the Commission on the function of the ACRS. This report should evaluate the committee's potential limitations, opportunities for increased efficiency, and provide recommendations to rectify these limitations while improving licensing efficiency. Additionally, the Atomic Energy Act should be amended to remove the requirement for the ACRS to review all construction permit and operating license applications. Instead, the ACRS should focus on novel and safety-significant issues.

8. Extension of the Price-Anderson Act

Price-Anderson requires the industry to maintain substantial insurance to cover the costs of an accident with offsite consequences and provides a backstop where the government would provide coverage in excess of the insurance. Though a step in the right direction, the recently introduced ADVANCE Act only grants a 20-year extension, which is halfway through the reactor licensing period under the provisions of the Price-Anderson Act. A longer extension of the Price-Anderson Act would provide assurance to potential investors and developers that reauthorization will not be a future barrier to starting a new project.

To provide market certainty and encourage investments in new projects, we urge Congress to extend the Price-Anderson Act for 40 years, the typical reactor licensing period.

9. Fuel Availability, Spent Fuel Reprocessing, and/or Disposal

A. High Assay Low-Enriched Uranium

The availability and security of domestic high assay low-enriched uranium (HALEU) fuel is a critical concern due to reliance on foreign resources, particularly in light of the Russian invasion of Ukraine. Access to reliable domestic HALEU is essential for deploying new and advanced reactors in the United States, strengthening our national security.

Congress should support funding initiatives to secure domestic fuel availability separate from foreign sources. This would require rapid scaling up of production capabilities within the United States and, if feasible, in collaboration with our allies.

10. Improving Public Engagement

Some parties have suggested that the NRC should establish a new office in charge of community engagement to aid the agency in its public outreach, as has been proposed in the NRC Office of Public Engagement and Participation Act of 2022. We strongly support efforts to improve public engagement and participation in NRC proceedings. However we are not sure that a new office within the NRC is the right way to accomplish this objective.

Placing these responsibilities in a new office or division risks stovepiping them, rather than internalizing better and consistent public engagement practices in the NRC's present departments. The idea of establishing a dedicated office for these activities within the NRC is largely modeled on a similar office established by the Federal Energy Regulatory Commission (FERC) two years ago. However this office is new so it is difficult at this point to determine whether it has been successful, much less whether this approach, drawn from utility rate proceedings, is an appropriate model for assuring adequate public engagement in nuclear licensing, regulatory, or siting proceedings.

For these reasons, we believe that replicating the FERC model at the NRC is premature. In the meantime, there are far more straightforward steps that the NRC could take to improve public participation. Over the last several years, we believe that we have engaged NRC public proceedings more frequently than any other civil society based public interest organization. Based upon those experiences, we believe that resources intended to improve public participation at the NRC might be best spent at this time in a number of important ways. These include improving the NRC's ADAMS system, which is currently unnavigable for anyone not deeply familiar with its use. Public noticing practices are also highly inconsistent across departments and even individual licensing proceedings, as are instructions as to how to obtain access to public meetings, and the manner in which meetings are supported and can be accessed remotely.

To improve public participation, Congress should direct the NRC to revamp the ADAMS system in a manner that is straightforward and intuitive for the public to navigate and establish consistent public noticing and meeting practices across all of its departments and proceedings, and provide NRC with adequate budget resources to do so.

11. Conclusion

Leadership in new nuclear technologies has enormous potential for America's energy future. Advanced nuclear reactors offer a range of benefits, such as versatility, reliability, efficiency, and scalability, making significant contributions to energy reliability, public health, and climate mitigation goals. To fully realize these benefits and maintain our position in the international nuclear market, increased investment and policy support are essential.

Congress has taken important steps by passing the Nuclear Energy Innovation and Modernization Act (NEIMA) in 2019 to modernize regulations and support advanced reactor deployment. However, further action is needed to ensure proper implementation and alignment with NEIMA. The hesitance or resistance from the Nuclear Regulatory Commission (NRC) to adapt agency practices highlights the importance of additional policy support to facilitate NRC modernization.

As a prominent public interest organization in the nuclear regulatory field, the Breakthrough Institute has identified key regulatory challenges inhibiting progress in licensing and regulating advanced nuclear technologies.

It is crucial for the NRC to recognize its full mandate and consider factors beyond nuclear safety during the licensing process. Addressing issues related to risk tolerance, fee structures, the Advisory Committee on Reactor Safeguards (ACRS), staffing needs, market uncertainty, fuel supply, and spent fuel management are all critical for the successful deployment of advanced reactors.

The Nuclear Regulatory Commission plays a pivotal role in driving rapid decarbonization, enhancing energy infrastructure security, and supporting the growth of advanced nuclear technologies. By addressing the identified challenges and implementing necessary adjustments, the NRC can become a global model for effective and efficient regulation. Continued collaboration among Congress, regulatory agencies, the nuclear industry and civil society representatives is crucial to unlock the full potential of advanced nuclear technologies, leading us towards a cleaner and more secure energy future.

Mr. DUNCAN. Mr. Nordhaus, thank you so much.
I will now recognize Ms. Korsnick.

STATEMENT OF MARIA KORSNICK

Ms. KORSNICK. Well, thank you and good afternoon. I am president and CEO of the Nuclear Energy Institute, representing more than 340 organizations in an industry that directly employs nearly 100,000 people throughout the United States.

I really appreciate the opportunity to testify, and I thank Chairman Duncan, Ranking Member DeGette, and the subcommittee, as well as Chair Rodgers and Ranking Member Pallone, for continuing to recognize the critical need for nuclear energy for our Nation's energy security and decarbonization goals.

Congress has passed historic legislation that will preserve our existing nuclear generation and accelerate future deployment. I thank Congress for these important actions and urge you to protect the tax credits and other provisions that will enable continued U.S. leadership in nuclear technology. Federal support is a catalyst for action we are seeing in State capitals, private investment portfolios, and public utility partnerships in places with retired coal plants and new hydrogen facilities.

Demand for nuclear defines the current moment. Our member utilities expect to add enough new nuclear to double current output by the 2050s. And because nuclear is not only necessary for decarbonizing the electric sector but the entire economy, the Department of Energy predicts U.S. nuclear capacity has the potential to triple by 2050.

My written testimony outlines several policy proposals and will help us meet this demand, but I want to highlight three crucial points.

First, we must modernize the regulatory process. If we are serious about decarbonizing and meeting our climate and energy security goals, the NRC must get serious about modernizing its processes to be much faster without sacrificing safety. And let me be clear: Those two things can coexist. Without NRC modernization, regulatory inefficiency leads to excessive cost and lack of predictability, which will hinder deployment.

Our analysis of the NRC's own data demonstrates that, instead of the agency's reviews becoming faster and more efficient, they are taking longer and requiring more resources. For example, the staff resources applied to second license renewal review for plants that have safely operated for more than 5 decades—so you would assume it would be faster—are now 50 percent greater than the first license renewal.

DOE has projected that we will need to begin the ramp-up of advanced nuclear deployments in the next decade, which means the NRC will be asked to process a significant number of permit applications. So now is the time to take meaningful steps to ensure that the regulatory approvals do not slow progress.

Second, we need a competitive domestic nuclear fuel supply. Russia provides roughly half of the world's commercial enrichment capacity and is the only commercial supplier of the high-assay, low-enriched uranium needed by most advanced reactor designs. The U.S. commercial nuclear industry is committed to eliminating the

import of uranium and related conversion and enrichment services from Russia. However, Federal support is essential to establishing a secure supply in the U.S. so that we can move away from Russia fuel imports just as soon as possible. Accelerating investments aimed at competitive enrichment and conversion in the U.S. will support both near-term and long-term national security interests.

And finally, we need to deploy new technology at home now to support U.S. technology exports abroad. Governments around the world recognize that, by making nuclear the centerpiece of their energy systems, they can decarbonize their electric grid and strengthen their energy independence, because energy security is national security. Countries in Asia, South America, Central Europe, and Africa are committing to new nuclear, large and small. Although some countries have already made commitments to import U.S. technologies, it is a very competitive marketplace.

If we cannot be competitive in the global market, countries can turn to Russia and Chinese state-owned enterprises and they, not us, will build 100-year relationships throughout the globe. It is already happening today. And despite our superior technology, their nuclear programs are positioning themselves as very attractive options.

The U.S. must assign strategic value to nuclear energy exports, act to open markets to our industry, and back U.S. companies with the tools needed to compete.

The industry I represent looks forward to working with you to ensure our Nation can take full advantage of all that nuclear energy has to offer. Thank you.

[The prepared statement of Ms. Korsnick follows:]

Summary of Testimony

Nuclear Energy Institute

Maria Korsnick, President and Chief Executive Officer

Subcommittee on Energy, Climate, and Grid Security

House Committee on Energy and Commerce

July 18, 2023

Nuclear power is the largest, most reliable form of clean energy. Demand for nuclear energy in the U.S. and globally is projected to surge. Nuclear is poised to play a pivotal role in meeting U.S. energy security and carbon reduction goals via the long-term operation of our existing large light-water reactors and deployment of new, advanced plants.

China and Russia are aggressively broadening their geopolitical leverage with nuclear technology export sales. For U.S. companies to succeed abroad, international customers expect U.S. technologies to be deployed here at home. It is thus a national security imperative to accelerate domestic and international deployments of innovative U.S. technologies.

To achieve our energy security, national security, and decarbonization goals, NEI urges the following critical actions:

1. **Modernize the NRC regulatory process.** The NRC should update its mission to drive greater efficiency in its regulatory processes. Reducing review schedules, eliminating mandatory uncontested hearings, leveraging the National Environmental Policy Act innovations enacted in the Fiscal Responsibility Act, and other actions to improve efficiency will enhance—not detract from—safety by allowing the agency to focus on the most safety significant issues.
2. **Establish a secure, reliable, domestic fuel supply.** Having a strong domestic nuclear fuel cycle is a national security imperative. The U.S. commercial industry is committed to phasing out Russian fuel imports, but federal support is essential to the industry establishing a secure, competitive supply of conversion and enrichment in the U.S.
3. **Surmount financing obstacles facing domestic plant development.** Federal tax incentives are a game-changer for existing plants and new plant deployment. Additional federal support is necessary to meaningfully accelerate domestic deployments.
4. **Support U.S. competitiveness in global nuclear market.** The U.S. should assign strategic value to nuclear exports and streamline the cumbersome Part 810 process.
5. **Reauthorize the Price-Anderson Act.** Congress should maintain the Price-Anderson Act's well-established liability framework by acting on renewal in the near term. The Act has been successfully implemented for over six decades and preserving its indemnification authority is critical for the industry's continued growth.
6. **Establish an integrated approach to used fuel management.** Ongoing consolidated interim storage efforts and recycling research should be complemented by making progress on a disposal facility.

Testimony for the Record

Nuclear Energy Institute

Maria Korsnick, President and Chief Executive Officer

Subcommittee on Energy, Climate, and Grid Security

House Committee on Energy and Commerce

July 18, 2023

I am Maria Korsnick, President and Chief Executive Officer of the Nuclear Energy Institute (NEI).¹ I appreciate the opportunity to testify before the Subcommittee and would like to thank Chair Rodgers, Ranking Member Pallone, Subcommittee Chair Duncan, Subcommittee Ranking Member DeGette, and the rest of the Committee for inviting me to discuss the critical role of nuclear energy in the United States.

During my testimony, I will highlight the importance of nuclear energy to our energy security and carbon reduction goals, and discuss actions necessary to commercialize this clean and reliable technology in the near term and ensure U.S. global leadership in nuclear energy. These actions include increasing the efficiency of the Nuclear Regulatory Commission (NRC) regulatory processes, as would be advanced by several bills that have been or we expect to be introduced. My testimony will also stress the importance of developing and maintaining a strong domestic nuclear fuel cycle, overcoming domestic deployment financing challenges, supporting U.S. competitiveness in the global nuclear market, renewing the Price-Anderson Act, and implementing an integrated approach to managing used fuel.

This is a unique and opportune time to focus on nuclear energy. Demand for nuclear energy in the U.S. and globally is projected to surge, and the industry is poised to play a pivotal

¹ NEI's mission is to promote the use and growth of clean nuclear energy through efficient operations and effective policy. NEI has more than 300 members, including companies that own or operate nuclear power plants, reactor designers and advanced technology companies, architect and engineering firms, fuel suppliers and service companies, consulting services and manufacturing companies, companies involved in nuclear medicine and nuclear industrial applications, radionuclide and radiopharmaceutical companies, universities and research laboratories, labor unions, and international electric utilities.

role in meeting the nation's energy security and carbon reduction goals via the long-term operation of its existing fleet of large light-water reactors and deployment of new, advanced plants. We appreciate that Congress recognizes nuclear energy's importance. More than a dozen bills are under discussion that would support current and future nuclear plants by enhancing licensing efficiency, streamlining application review schedules, reducing regulatory costs, providing support for a domestic fuel supply, and bolstering export opportunities.

As the Department of Energy (DOE) recently reported,² advanced nuclear energy's value proposition lies in its generation of carbon-free electricity, ability to provide dispatchable power that complements other sources, low land-use requirements, and low transmission requirements relative to distributed sources. It also offers appreciable regional economic benefits, can aid in an equitable transition to a net-zero grid, and has a wide variety of applications that enable grid flexibility and decarbonization beyond the grid. By DOE's estimates, the U.S. could triple the amount of nuclear power utilized by 2050 and be the world leader in nuclear energy, supporting our national security goals and the energy security goals of countries around the world. U.S. nuclear leadership is more important today than ever as China and Russia are aggressively broadening and increasing their geopolitical leverage with nuclear technology export sales by their state-owned nuclear companies. Thus, accelerating the domestic deployments of innovative advanced nuclear technologies will not only pay dividends at home but also will bolster U.S. international competitiveness at this crucial junction.

² DOE, "Pathways to Commercial Liftoff: Advanced Nuclear" (Mar. 2023).

The Importance of Nuclear Energy to the United States

Nuclear power is the most reliable form of safe and clean electricity.³ The U.S. nuclear fleet is performing at unprecedented levels of safety and reliability.⁴ Currently, 92 commercial nuclear power reactors in 28 states supply nearly 20 percent of America's electricity. Nuclear is the largest source of carbon-free generation, providing nearly half of U.S. emissions-free electricity. In addition to its substantial clean energy benefits, nuclear generation is critical to grid reliability, annually providing nearly 800 billion megawatt-hours of 24/7 electricity. Nuclear plants are hardened facilities that are protected from physical and cyber threats, helping to ensure we have a resilient electricity system in the face of potential disruptions.

Nuclear power plants also are valuable contributors to the nation's economy, adding \$60 billion annually to the GDP. Nuclear power plants also serve as the economic backbone for communities in which they operate, producing more than \$12 billion annually in federal and state tax revenue. Tax revenue from plants often provides rural small towns with essential funding for schools, roads, emergency personnel, and other needs.

Nuclear power plants serve as engines for job creation. Construction of a new nuclear plant can provide thousands of well-paying jobs. For example, at its peak the Vogtle 3 and 4 project provided more than 9,000 construction jobs and is anticipated to provide more than 800 permanent jobs once the units begin operation. Today, the U.S. nuclear energy sector

³ DOE, "Nuclear Power Most Reliable Energy Source and It's Not Even Close" (Mar. 24, 2021), available at <https://www.energy.gov/ne/articles/nuclear-power-most-reliable-energy-source-and-its-not-even-close>; World Nuclear Association, "Safety of Nuclear Power Reactors" (Mar. 2022), available at <https://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/safety-of-nuclear-power-reactors.aspx#:~:text=The%20risk%20of%20accidents%20in,radioactive%20releases%20can%20be%20avoided;Our%20World%20In%20Data,What%20are%20the%20safest%20and%20cleanest%20sources%20of%20energy?>

⁴ NEI, "The Nexus Between Safety and Operational Performance in the U.S. Nuclear Industry," NEI 20-04, March 2020; NEI, "Nuclear by the Numbers" (Aug. 2020).

directly employs nearly 100,000 people in long-term jobs with salaries that are 50 percent higher on average than those created by other electricity generation sources. Maintenance work at existing plants accounts for 20 million union person-hours annually. Recruiting from universities, community colleges, the military and the trades, nuclear power plants provide high-quality jobs to the whole community. All told, these facilities are responsible for 475,000 direct and secondary jobs.

Federal and state programs and tax credits are playing a major role in saving jobs and communities, securing our grid, and sustaining clean energy progress by preventing unnecessary plant closures. New federal programs and tax credits for clean hydrogen production are also helping to ensure nuclear energy enables other sectors to reduce their carbon emissions.

Actions Necessary to Ensure U.S. Leadership in Nuclear Energy

To advance our civil nuclear technology and American competitiveness, NEI recommends actions to modernize NRC regulatory processes, establish a secure domestic fuel supply, overcome domestic deployment financing challenges, support U.S. nuclear exports, renew the Price-Anderson Act, and implement an integrated approach to managing used fuel. Many of these actions are outlined in our recent responses to requests from this Committee⁵ and the Senate Select Committee on Intelligence.⁶

1. Modernize NRC regulatory processes

Ensuring U.S. leadership in nuclear energy places the NRC in a central and decisive role. Despite the well understood technology of light water reactors used by the commercial nuclear industry during the last 50 years, NRC's processes have become more cumbersome, rather than

⁵ Letter from M. Korsnick, NEI, to Chair Rodgers, Chair Duncan, Ranking Member Pallone, and Ranking Member DeGette, House Energy and Commerce (May 4, 2023).

⁶ Letter from M. Korsnick, NEI, to Chair Warner, Senate Select Committee on Intelligence (June 2, 2023).

more efficient. And, too often, the agency diverts its focus to activities that have a negligible effect on safety.

With the pending expansion of nuclear in the U.S. and worldwide, it is critical that NRC's regulatory and licensing processes not only provide adequate protection of public health and safety, but also facilitate achievement of the policy goal announced in the Atomic Energy Act of 1954 that nuclear energy make the "maximum contribution to the general welfare."⁷ We believe the NRC can achieve both objectives. We encourage Congress to direct the Commission to update its mission statement to drive more timely and efficient licensing reviews of U.S. advanced nuclear technologies. Doing so would not detract from NRC's focus on safety. It is a false narrative to suggest that efficient regulation undermines safety as the two are not in tension. Rather, efficient NRC regulation can enhance safety by allowing the NRC to focus on the most safety significant issues.

Although the NRC has taken some positive steps to increase efficiency, additional actions are necessary because the NRC's persistent drive toward zero risk—rather than adequate protection of public health and safety—too often stands in the way of nuclear energy making the "maximum contribution to the general welfare." For example, NRC's reviews have become unnecessarily onerous, lengthy, and costly. Actions that previously have taken a reasonable amount of effort and time have doubled, tripled, and even quadrupled in cost and length,⁸ not decreased as one would expect. Indeed, the NRC's own data shows that the agency is applying

⁷ The Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 grant the NRC the authority to regulate civilian use of commercial nuclear power. The Act establishes "adequate protection" of public health and safety as the measure that underpins NRC's regulatory requirements. 42 U.S.C. § 2232(a). The Act also states that it is the policy of the United States that, "the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare." 42 U.S.C. § 2011(a).

⁸ NEI, "Recommendations for Enhancing the Safety Focus of New Reactor Regulatory Reviews" (April 2018).

50 percent more resources for subsequent license renewals than it applied to initial license renewals, despite the fact that the scope of subsequent license renewal is only a fraction of the initial license renewal review.⁹ And according to the NRC's generic review schedule,¹⁰ even the simplest licensing actions are given a review schedule of one to two years.

The NRC's extensive hearing process poses further risk of delays, insofar as it includes the opportunity for *both* a trial-type *contested* hearing on safety and environmental issues, and a mandatory *uncontested* hearing. Notably, the public can participate in the contested hearing. The mandatory uncontested hearing, which does not include public participation, was added as a requirement of the Atomic Energy Act in 1957 to address concerns over a lack of transparency in early licensing decisions. The mandatory hearing has outlived its useful purpose and adds 4-7 months¹¹ and millions of dollars to the licensing process.

The NRC's licensing process and the surrounding legal landscape have changed dramatically since the mandatory hearing requirement was enacted in 1957. Subsequent legislation such as the Freedom of Information Act of 1966, the Federal Advisory Committee Act of 1972, the Government in Sunshine Act of 1976, and the opportunities for public participation provided through the National Environmental Policy Act of 1969 (NEPA) address the concerns that prompted addition of the mandatory hearing requirement in the first instance. Today, the NRC's licensing process is transparent—with the public having ready access to both the information provided by the applicant, as well as the NRC staff's evaluation of that

⁹ NEI, "Examination of NRC Review Performance" (June 2023), available at <https://www.nei.org/resources/reports-briefs/examples-of-nrc-performance>.

¹⁰ NRC, "Generic Milestone Schedules of Requested Activities of the Commission" (Sept. 10, 2021), available at <https://www.nrc.gov/about-nrc/generic-schedules.html>.

¹¹ Idaho National Laboratory, Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process (Apr. 2023), available at https://inldigitalibrary.inl.gov/sites/sti/sti/Sort_65730.pdf (concluding that mandatory hearings conducted over the last 15 years have caused 4-7 months in delays).

information, and members of the public can request hearings on contested issues. Eliminating the requirement to hold mandatory uncontested hearings would not impact the public's ability to request contested hearings or otherwise alter the NRC's transparency obligations established by all these other federal statutes but would significantly increase the efficiency of the licensing process.

Additionally, the NRC's implementation of NEPA requirements can be considerably more streamlined, efficient, and better resourced. Although the NRC has made some progress in this area, further action is needed to achieve prompt change on the scale necessary to support new plant deployment. To this end, we support the discussion draft of the Modernize Nuclear Reactor Environmental Reviews Act, which requires the NRC to report on actions to implement the amendments to NEPA made by the Fiscal Responsibility Act of 2023 and other measures to streamline environmental reviews, including the expanded use of categorical exclusions, environmental assessments, and environmental impact statements prepared by other federal agencies. The discussion draft also would further environmental modernization efforts by directing the consideration of authorizing the use of an applicant's environmental report as the Commission's draft environmental impact statement, consistent with newly enacted section 107(f) of NEPA. Using an applicant's environmental report as the draft environmental impact statement could reduce NRC's NEPA review schedule by 6-12 months as it would accelerate the public's involvement in the process and eliminate the need for the NRC staff to re-write the detailed information already in the environmental report. The NRC would continue to be responsible for providing detailed guidance on the contents of environmental reports, considering public input, conducting its analysis of the proposed action, and producing the final

environmental impact statement. Thus, extensive NRC involvement in and ultimate responsibility for NEPA process would be ensured.

It is now time for the NRC to update its mission statement, management philosophy, and operations, and emphasize agency efficiency. Otherwise, we risk that NRC's processes will create roadblocks preventing newer, safe nuclear technologies from being deployed, impeding nuclear power from playing a key role in meeting our clean energy and energy security goals.

2. Establish a secure, reliable, domestic fuel supply

Russia dominates the global enrichment services market for low-enriched uranium, is the only supplier in the world for the high-assay low-enriched uranium required by most advanced reactor designs, and has a significant share of the uranium conversion market. Expanding domestic capabilities is critical to ensure the continued operation of U.S. existing reactors and the buildout of new reactors using innovative U.S. technology. Developing secure, reliable, competitive domestic nuclear fuel cycle capabilities is a national security imperative.

The U.S. commercial nuclear industry is committed to eliminating the import of uranium and related conversion and enrichment services from the Russian Federation. However, reestablishing the necessary infrastructure will require billions of dollars and at least five years to sufficiently fill the gap currently served by Russia given years of atrophy. As it is imperative to act quickly, we will continue to work with the U.S. government to reestablish a secure and diverse supply of conversion and enrichment services so the industry can phase out Russian imports.

3. Surmount financing obstacles facing domestic plant deployment

Commercializing the multiple innovative nuclear plant designs now in various stages of development will allow this country and our allies to take advantage of nuclear energy's non-

emitting electricity as well as its ability to be used for many additional applications. Federal tax incentives, including the technology neutral clean electricity production and investment tax credits, will play a game-changing role in preserving our existing nuclear fleet and deploying innovative nuclear technologies. These incentives are vital to our success and must be preserved.

In addition, to meet the growing demand for advanced technology, first-of-a-kind projects must overcome concerns regarding cost and estimated schedule accuracy. Additional government support would meaningfully accelerate domestic deployments by addressing the unique costs these projects face and offsetting risks that commonly come with new construction. Government cost-overflow support for the first commercial operation of multiple innovative advanced reactor designs would help make these plants cost competitive. That would provide certainty for project developers and investors, incentivizing purchase orders for these new technologies to speed deployments and help build supply chain capacity.

Time is of the essence, as the governments of Russia and China have already heavily invested in new deployment, challenging American leadership and potentially destabilizing international security. To compete with Russia and China, the U.S. will need to rapidly bring multiple reactor designs to the market. Providing a range of reactor designs and sizes will enable advanced U.S. nuclear technologies to match the markets in which they will be deployed, both in terms of the energy demand and the financial investment. Global demand for advanced nuclear technologies is rapidly building, with cumulative capital expenditures estimated to reach \$8.6 trillion for new nuclear.¹²

¹² UxC, “Global Nuclear Market Assessment Based on IPCC Global Warming of 1.5°C Report” (July 2020), available at <https://www.nei.org/resources/reports-briefs/uxc-global-nuclear-market-assessment-report>.

For U.S. technologies to be seen as viable commercial options abroad, international customers will expect multiple units of the designs to be deployed at home. American power companies are making plans to deploy this next generation of nuclear power to meet their energy and decarbonization goals by 2050. Although the long-term expectations for U.S. advanced reactor deployments could exceed 200 GWe by mid-century,¹³ without a government accelerant the timing of these deployments may not be soon enough for those countries urgently seeking to avoid reliance on Russia or China.

4. Support U.S. competitiveness in global nuclear market

Reactor exports allow the U.S. to form 100-year strategic relationships around the world that span the construction, operation and decommissioning of a plant. In the current global market, U.S. companies must compete against companies that have vast state-backed financial and political resources. Russia and China use nuclear exports as an instrument of foreign policy. The U.S. similarly should assign strategic value to nuclear energy exports and direct DOE and the State Department to streamline the cumbersome Part 810 authorization process for technologies of low proliferation risk.

5. Reauthorize the Price-Anderson Act

The dual purposes of the Price-Anderson Act are to protect the public by ensuring adequate funds are available to satisfy liability claims in the event of a nuclear incident, and encourage development of the commercial nuclear energy industry by providing limits on liability and a predictable, efficient system for claims management and administration of funds. Since its passage in 1957, the Act has met these two objectives and been successfully implemented with minimal costs to the federal government or the U.S. taxpayer. Congress

¹³ DOE, “Pathways to Commercial Liftoff: Advanced Nuclear” (Mar. 2023).

should maintain the Price-Anderson Act's well-established liability framework by acting on renewal in the near term.

Both NRC and DOE¹⁴ implement portions of the Act by requiring financial protection to ensure that funds are available to pay public liability claims flowing from a nuclear incident. Under the NRC's program, all commercial reactor licensees enter into indemnity agreements with the agency; the value of that indemnity (if any) and the amount of privately funded protection (*e.g.*, insurance) required of the licensee is determined by the reactor's rated capacity. The Act is therefore well-suited to accommodate reactors in a wide range of sizes, from a few megawatts to more than 1,000.

For large reactors (≥ 100 MWe), the Act's financial protection requirements are met through two layers of insurance.¹⁵ With respect to the first layer, licensees must maintain the maximum amount of financial protection available from private sources; reactor licensees meet this requirement with commercial insurance. The second layer is funded by mandatory industry contributions (from all covered reactor licensees through a retrospective premium plan). Currently, the combined total amount of coverage for large operating reactors is ~\$13.5 billion per incident. For smaller reactors (< 100 MWe), financial protection is provided through a combination of private sources and NRC indemnification, providing a total of more than a half a billion dollars in coverage consistent with the limited risk associated with smaller reactors.

¹⁴ Under its program, DOE uses its indemnification authority to provide \$13.7 billion in coverage for liability resulting from a nuclear incident or precautionary evacuation in the U.S. that arises from activity under a DOE contract. DOE's indemnification also provides \$500 million in coverage for nuclear incidents occurring outside of the U.S. that involve nuclear material owned and used by or under contract with the U.S. In its January 2023 report to Congress, DOE concluded that continuation of the Act is "in the best interests of DOE, its contractors, its subcontractors and suppliers, and the public." We agree with DOE's conclusions and support the Department's proposal to increase the amount of indemnification authorized to cover nuclear incidents occurring outside of the U.S. (increasing that amount to \$2 billion) and removing the condition that a nuclear incident arising from DOE contractual activity abroad must involve nuclear material owned by the U.S.

¹⁵ The value of NRC's indemnification agreements for large reactors falls to zero once a licensee is authorized to operate.

The NRC's authority to enter into indemnification agreements under the Price-Anderson Act will expire at the end of 2025. That authority is vital to advanced reactor licensing. A long-term extension (*i.e.*, 40-50 years) or permanent reauthorization would send a strong signal to investors and developers that the foundational liability provisions of the Act will remain intact. Because the Act's purposes are no less important today than they were in 1957, it is essential that Congress continue the established liability framework that has served the public and industry well for more than six decades.

6. Establish an integrated approach to used fuel management

To date, the safe management of used nuclear fuel at reactor sites has been an impressive but often untold success story. In 60 years of commercial nuclear electricity generation, there has never been a harmful radioactive release from used nuclear fuel. Significantly, the nation's entire used fuel inventory would fit inside a single big box store distribution warehouse and an individual's lifetime supply of nuclear energy would produce an amount of waste smaller than a soda can.

The nuclear industry continues to do its part to maintain public health and safety, but the federal government has a continuing statutory and contractual obligation to remove used nuclear fuel from the 76 commercial sites at which it is currently stored. Accordingly, we support DOE's recent effort to develop a consent-based process to site consolidated interim storage facilities. Because a permanent disposal repository is a necessary component of any credible used fuel management program, DOE's efforts to partner with communities on storage are more likely to succeed if they are part of a fully integrated used fuel management program that includes progress on a disposal facility (as well as continued research and support for recycling).

Around the globe, other nations are moving forward with integrated used nuclear fuel management programs. Finland is constructing a repository, France has a long and successful history of recycling used nuclear fuel and is developing a repository in partnership with community leaders, and Canada, Sweden, Switzerland, and the United Kingdom are in various stages of repository siting and development.

Much must be done to establish a program that will succeed in the U.S. NEI stands ready to work with the Congress and the public to develop durable solutions.

Conclusion

I want to thank the Committee for its continued support for nuclear energy and allowing me to testify on policies needed to establish an efficient, predictable licensing process and to advance new nuclear deployments. Enactment of supportive legislation is vitally important to achieving U.S. energy independence, ensuring national security, and meeting carbon reduction goals. The industry looks forward to working with the Committee on its legislative proposals.

Mr. DUNCAN. Thank you, Ms. Korsnick.
 Ms. Toth is recognized for 5 minutes.

STATEMENT OF JACKIE TOTH

Ms. TOTH. Chairman Duncan, Ranking Member DeGette, honorable members of the subcommittee. My name is Jackie Toth, deputy director of Good Energy Collective. Thank you for the opportunity to testify today on behalf of my organization, a progressive nuclear energy policy nonprofit that develops community-centered, social-science-informed policies to enable the adoption of advanced nuclear energy and promote equitable energy outcomes in a climate-constrained world.

As an energy journalist covering Capitol Hill from 2016 to 2020, I observed regular bipartisan collaboration on laws that have jump-started domestic nuclear energy innovation and reinvigorated U.S. global nuclear leadership.

I want to thank congressional Democrats, including ones on this subcommittee, for the key role you continue to play in supporting our Nation's largest source of carbon-free electricity.

Among these bipartisan statutes was the Nuclear Energy Innovation and Modernization Act, or NEMA, which the House passed under suspension of the rules in 2018 on an overwhelmingly favorable vote of 361 to 10. NEMA directed the U.S. Nuclear Regulatory Commission to develop the licensing frameworks and evaluation strategies to enable predictable, efficient, and timely approvals for the use of advanced reactors.

These regulatory activities reflect a dual imperative to provide communities with reliable, emission-free power, and the urgency to address climate change. It is in these contexts, the need to uplift communities and to meet the climate challenge, that Good Energy Collective is interested in ensuring that Congress build upon NEMA and equip the NRC with the necessary direction and resources to facilitate the successful adoption of advanced nuclear while preserving the public's ability to learn about and participate in the NRC's work.

Several bill texts before the subcommittee today advance that goal. H.R. 4530, the NRC Office of Public Engagement and Participation Act introduced by Representative Levin, would ensure that, as the NRC's workload grows, the agency can undertake more proactive and effective engagements with the public to share information about NRC activities and provide technical assistance.

Another of our independent energy regulators, the Federal Energy Regulatory Commission, established in 2021 its own Office of Public Participation, which is now stakeholders' one-stop shop for receiving support in navigating matters before FERC. Establishing a similar office at the NRC would not only streamline engagement opportunities and address public hesitations about the use of nuclear, but also support licensing efficiency by bringing communities into the siting and licensing process early on and supplementing industry's own engagement efforts. Developing these capacities aligns with reactor developers' growing recognition that to ensure the timely success of their projects they will need to increase early-stage public engagement.

We can build new energy infrastructure both quickly and justly. In fact, we must.

The NRC demonstrably struggles with employee satisfaction and retention. H.R. 4528, the Strengthening the NRC Workforce Act from Representative DeGette, would begin to address NRC staff hiring and attrition issues by ensuring the agency can attract and reward skilled employees.

Good Energy Collective further approves of policies supporting our international allies with nuclear energy and fuels, and with the development of strong safety regimes. H.R. 995, the Global Nuclear Energy Assessment and Cooperation Act from Representatives Carter and Peters, and the discussion draft of the Strengthening American Nuclear Competitiveness Act include useful measures to bolster U.S. climate leadership through nuclear energy exports.

I maintain reservations regarding some of the other draft legislation under discussion today. Any proposal to alter the mission of the NRC such as in the NRC Mission Alignment Act must be weighed against the risk of frightening the public that its trusted nuclear regulator is operating with a new purpose at the very moment that the Commission undertakes an historic scaling of certification reviews and licensing activities.

The cultural changes at the Commission that may be necessary to meet this moment and increase the timeliness and efficiency of its activities will depend more on the resonance and strength of Commission leadership and the availability of resources for staff than on a change in mission. Likewise, proposals before the subcommittee to reduce mandatory hearing requirements and public notice regardless of the novelty of reactor design or to streamline environmental reviews without providing additional resources for public engagement and outreach may weaken the NRC's responsiveness to the public that it serves, first and foremost.

Thank you. I look forward to your questions.

[The prepared statement of Ms. Toth follows:]

**TESTIMONY OF JACKIE TOTH
DEPUTY DIRECTOR
GOOD ENERGY COLLECTIVE
U.S. HOUSE ENERGY AND COMMERCE COMMITTEE
SUBCOMMITTEE ON ENERGY, CLIMATE, AND GRID SECURITY**

**“American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable
Licensing and Deployment”**

July 18, 2023

Chairman Duncan, Vice Chairman Curtis, Ranking Member DeGette, and Honorable Members of the Subcommittee. My name is Jackie Toth, Deputy Director of Good Energy Collective. Thank you for the opportunity to testify today on behalf of my organization, a progressive nuclear energy policy nonprofit that develops community-centered, social science-informed policies to enable the adoption of advanced nuclear energy and promote equitable energy outcomes in a climate-constrained world.

As an energy journalist covering Capitol Hill from 2016-2020, I observed regular bipartisan collaboration on laws that have jumpstarted domestic nuclear energy innovation and reinvigorated U.S. global nuclear leadership. I want to thank Congressional Democrats, including ones on this Subcommittee, for the key role you continue to play in supporting our nation’s largest source of carbon-free electricity.

Among these bipartisan statutes was the Nuclear Energy Innovation and Modernization Act, or NEIMA, which the House passed under suspension of the rules in 2018 on an overwhelmingly favorable vote of 361-10. NEIMA directed the U.S. Nuclear Regulatory Commission to develop the licensing frameworks and evaluation strategies to enable predictable, efficient, and timely approvals for the use of advanced reactors. These regulatory activities reflect the dual imperative to provide interested communities with reliable, emission-free power and the urgency to address

climate change. It is in these contexts — the need to uplift communities and to meet the climate challenge — that Good Energy Collective is interested in ensuring that Congress build upon NEIMA and equip the NRC with the necessary direction and resources to facilitate the successful adoption of new nuclear while preserving the public’s ability to learn about and participate in the NRC’s work.

Several bill texts before the Subcommittee today advance that goal. **H.R. 4530, the NRC Office of Public Engagement and Participation Act**, introduced by Rep. Levin, would ensure that as the NRC’s workload grows, the agency can undertake more effective and proactive engagements with the public to share information about NRC activities and provide technical assistance. Another of our independent energy regulators, the Federal Energy Regulatory Commission, established in 2021 its own Office of Public Participation, which is now stakeholders’ one-stop-shop for receiving support in navigating matters before FERC. Establishing a similar office at the NRC would not only streamline engagement opportunities and address public hesitations about the use of nuclear, but also support licensing efficiency by bringing communities into the siting and licensing process early on and supplementing industry’s own local engagement efforts. Developing these capacities aligns with reactor developers’ growing recognition that they will need to contribute more resources toward early-stage public engagement to ensure the timely success of their projects. We can build new energy infrastructure both quickly and justly. In fact, we must.

The NRC demonstrably struggles with employee satisfaction and retention. **H.R. 4528, the Strengthening the NRC Workforce Act** from Rep. DeGette, would begin to address NRC staff hiring and attrition issues by ensuring the agency can attract and reward skilled employees.

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I maintain reservations regarding some of the other draft legislation under discussion today. Any proposal to alter the mission of the NRC, such as in the **NRC Mission Alignment Act**, must be weighed against the risk of frightening the public that its trusted nuclear regulator is operating with a new purpose at the very moment that the Commission undertakes an historic scaling of certification reviews and licensing activities. The cultural changes at the Commission that may be necessary to meet this moment and increase the timeliness and efficiency of its activities will depend more on the resonance and strength of commission leadership and the availability of resources for staff than on a change in mission.

Likewise, proposals before the Subcommittee to reduce mandatory hearing requirements and public notice regardless of the novelty of reactor design (the **Efficient Nuclear Licensing Hearings Act**), or to streamline environmental reviews without providing additional resources for public engagement and outreach (the **Modernize Nuclear Reactor Environmental Reviews Act**, the **Nuclear Licensing Efficiency Act**) may weaken the NRC's responsiveness to the public that it serves first and foremost.

Thank you, and I look forward to your questions.

Mr. JOHNSON [presiding]. The gentlelady yields back.
The Chair now goes to Honorable Merrifield for your 5 minutes.

STATEMENT OF JEFFREY S. MERRIFIELD

Mr. MERRIFIELD. Chair, Ranking Member DeGette, and members of the subcommittee, it is an honor to testify before you today on the role that nuclear power can play in securing the clean, reliable, and resilient energy that we need to power our Nation's electric grid and decarbonize critical industrial capabilities.

I am here today in my role as the chairman of the Advanced Nuclear Working Group of the U.S. Nuclear Industry Council, although my full-time occupation is as a partner in the nuclear energy practice at Pillsbury Law Firm. I served as an NRC Commissioner from 1998 to 2000, and in the time I spent at the agency it remains one of the most satisfying periods of my career. To this day I embrace the motto of the agency, "Protecting people and the environment," a tagline I helped craft.

I believe the agency is staffed and led by talented, bright, well-meaning, and dedicated civil servants, and I firmly believe in the mission of the agency and the value of its independence. With that preface, I believe the agency has lost sight of its role. I fervently hope that the NRC can become a more efficient, effective, risk-informed, timely, and technically adept regulator.

Title 1, chapter 1, section 1 of the Atomic Energy Act of 1954 outlines the vision of Congress that it is the policy of the United States that atomic energy shall be deployed to "promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise." While those words were passed into law in 1954, they ring true and remain the law of the land.

In a time when global climate change is real and present—is a real and present threat to our common defense and security, and given that nuclear energy is the only major low-carbon, proven energy system that can reliably dispatch 24/7 energy, enabling nuclear energy safe usage is an obligation of the NRC under the Atomic Energy Act and the Energy Reorganization Act.

In my opinion, the NRC of 2023 fails to fully recognize the positive encouragement of nuclear energy that the Atomic Energy Act put into place that frames its licensing and oversight activities for the safe use of nuclear energy in our country. Instead, it is overly conservative and does not consistently apply commonsense principles in regulating the technologies it oversees. The current impasse on creating a new regulatory framework for advanced reactors under part 53 is the most recent example of this gap.

There are a variety of reasons that underline the behavior of the agency which are outlined in a speech I gave at the American Nuclear Society annual meeting on June 13 of this year, and I would ask these remarks be included in the record of this hearing.

I have heard from many licensees that the NRC staff states that it is limited in what it can say to applicants seeking clarification of agency rules and guidance, as the NRC cannot "promote" nuclear energy or act as a "consultant," due to its independent safety mission. I believe this is an incorrect reading of the agency's legal mission, and I believe the agency can and should do more to enable

the deployment of advanced nuclear technologies while maintaining its ability to independently assess the safety of the same.

There is absolutely nothing wrong with the agency providing clarifications and assistance to licensees who are attempting to understand and meet the complex, difficult, and sometimes inscrutable guidance and rules of the NRC. Responding to questions and engaging with licensed entities and the public with direct and fulsome responses is the responsibility of the agency, and the NRC should not hide behind its role as an independent safety regulator.

I believe Congress needs to address the ability of the NRC to have the resources to attract capable and experienced staff, and I believe the NRC needs to be provided flexibility such has been provided to agencies like the Securities and Exchange Commission and FDIC to pay above the standard Government pay structure.

Recently, Pillsbury partnered with the Nuclear Innovation Alliance to assess the current role of the Advisory Committee on Reactor Safeguards and issued a report with a series of recommendations to modernize the role of ACRS. I respectfully request that a copy of our report and recommendations also be included in the record of today's hearing.

In sum, I believe the Act should be updated to focus the role of ACRS on reviewing unique and difficult nuclear technologies, and we generally support the ACRS language included in the Nuclear Advisory Committee Reform Act.

U.S. NIC has reviewed the 15 bills that make up this legislative hearing. As a general matter, U.S. NIC is supportive of most of the legislation in its current form, and we have made comments about a handful of the bills in our written remarks. I am prepared to answer any questions you may have about my remarks, the bills under consideration, other matters associated with the NRC.

The advanced nuclear technologies that are under deployment are putting our country in a position to address its future energy demands while also allowing the U.S. to regain its leading position in nuclear exports. I am thankful for the hard work undertaken by the members and staff of this committee in support of this vital technology.

Thank you for allowing me to testify on behalf of the U.S. Nuclear Industry Council and its 80 members on this important subject.

[The prepared statement of Mr. Merrifield follows:]

**U.S. House of Representatives, Committee on Energy and Commerce,
Subcommittee on Energy and Power
“Legislative Hearing on Securing America’s Energy Future”**

**The Honorable Jeffrey S. Merrifield, Commissioner, U.S. Nuclear Regulatory Commission
(1998-2007)**

**Partner, Pillsbury Winthrop Shaw Pittman and
Chairman of the Advanced Nuclear Working Group of the U.S. Nuclear Industry Council**

July 18, 2023

Chair Duncan, Ranking Member DeGette and members of the Subcommittee, it is an honor to testify before you today on a topic of critical importance to the United States, the role that nuclear power can play in securing the clean, reliable and resilient energy that we need to power our nation’s electric grid and decarbonize critical industrial capabilities. I am appearing here today in my role as the Chairman of the Advanced Nuclear Working Group of the U.S. Nuclear Industry Council (USNIC), although my full-time occupation is as a Partner in the nuclear energy practice group of the Pillsbury Law Firm.

USNIC is the leading U.S. business advocate for the promotion of nuclear advancement and the American supply chain globally. USNIC represents over 80 companies engaged in nuclear innovation and supply chain development, including technology developers, manufacturers, construction engineers, key utility movers, and service providers.

I anticipate that my comments on behalf of USNIC represent the views of many of our members, but they may not necessarily reflect a unanimous view of our members.

I served as an NRC Commissioner from 1998-2007, and the time I spent at the Agency remains one of the most satisfying periods in my career. To this day, I embrace the motto of the Agency – “Protecting People and the Environment” – a tagline I helped craft. I believe the Agency is staffed and led by talented, bright, well-meaning, and dedicated civil servants, and I firmly believe in the mission of the Agency and the value of its independent role. While some of my remarks today shine a critical light on the Agency, I remain a big supporter of the NRC and its mission.

With that preface, I believe the Agency has lost sight of its role. I fervently hope the NRC can become a more efficient, effective, risk-informed, timely and technically adept regulator.

Title I, Chapter 1, Section 1 of the Atomic Energy Act of 1954 outlines the vision of Congress that it is the policy of the United States that Atomic Energy shall be deployed to “promote world peace, improve the general welfare, increase the standard of living and strengthen free competition in private enterprise.”

While those words were passed into law in 1954, almost 70 years later they ring true and remain the law of the land. In a time when global climate change is a real and present threat to our common defense and security and given that nuclear energy is the only major, low-carbon, proven energy

system that can reliably dispatch 24x7 energy, enabling nuclear energy's safe usage is an obligation of the NRC under the Atomic Energy Act and Energy Reorganization Act.

In my opinion, the NRC of 2023 fails to fully recognize the positive encouragement of nuclear energy that the Atomic Energy Act put into place that frames its licensing and oversight activities for the safe use of nuclear energy in our country. Instead, it is overly conservative and does not consistently apply common sense principles in regulating the technologies it oversees. The current impasse on creating a new regulatory framework for advanced reactors under Part 53 is the most recent example of this gap.

There are a variety of reasons that underlie the behavior of the Agency which are outlined in a speech I gave at the American Nuclear Society Annual Meeting on June 13, 2023, and I would ask that these remarks be included in the record of this hearing. I will summarize a few of my thoughts below.

First, I have heard from many licensees that the NRC staff states that it is limited in what it can say to applicants seeking clarification of Agency rules and guidance, as the NRC cannot "promote" nuclear energy or act as a "consultant" due to its independent safety mission. I believe this is an incorrect reading of the Agency's legal mission and I believe the Agency can and should do more to enable the deployment of advanced nuclear technologies while maintaining its ability to independently assess the safety of those proposed technologies.

There is absolutely nothing wrong with the Agency providing clarifications and assistance to licensees who are attempting to understand and meet the complex, difficult and sometimes inscrutable guidance and rules of the NRC. Responding to questions and engaging with licensed entities and the public with direct and fulsome responses is the responsibility of the Agency, and the NRC should not hide behind its role as an "independent" safety regulator.

A second area of concern is the technical prowess of the Agency, including a diversity of experience and background both within the Agency staff as well as the Commission. One challenge I believe Congress needs to consider is the ability of the NRC to have the resources to attract capable and experienced staff, and I believe the NRC needs to be provided flexibility, such as has been provided to agencies like the Securities and Exchange Commission, to pay above the standard government pay structure.

Likewise, I believe the Agency needs to consider a more technically diverse set of candidates for Senior Executive Service level positions, including those from the private sector, the military and other Federal Departments and Agencies. For example, as the current NRC General Counsel is retiring later this year, I think the Commission should be encouraged to consider outside candidates for that role.

Another area to be considered today is the role of the Advisory Committee on Reactor Safeguards (ACRS), an independent advisory board reporting to the Commissioners, whose roots date back to the early days of the Atomic Energy Commission. Recently, Pillsbury partnered with the Nuclear Innovation Alliance to assess the current role of the ACRS and issued a report with a series of recommendations to modernize the role of this Committee. I respectfully request that a copy of

our report and recommendations also be included in the record of today's hearing. In sum, we believe the Act should be updated to focus the role of ACRS in reviewing unique and difficult nuclear technologies, and we generally support the ACRS language included in the Nuclear Advisory Committee Reform Act.

USNIC has reviewed the fifteen bills that make up this legislative hearing. While USNIC is pleased to provide comments on all of them in the context of the hearing, for efficiency's sake, USNIC will not be commenting on all of them in detail in our opening comments today, but our testimony will discuss several of them at a high level. As a general matter, USNIC is supportive of most of the legislation in its current form, so these remarks will focus on areas where USNIC has our most meaningful comments and concerns.

Nuclear Advisory Committee Reform Act

USNIC is supportive of this proposed legislation. The language is generally consistent with similar proposals previously made by the Nuclear Innovation Alliance and Pillsbury regarding ACRS. Specifically, USNIC concurs with the limitation on terms for ACRS members and the ability to have the Commission direct the work of the Committee. USNIC is happy to work with the Committee on additional possible suggestions for improvement in the legislation.

Efficient Nuclear Licensing Hearings Act

USNIC is supportive of the proposed legislation and concurs in the effort to eliminate the mandatory uncontested hearing included in Section 2 of the bill. The original justification for a mandatory uncontested hearing was based on the failure of the Atomic Energy Commission to publicly engage on proposed reactor siting decisions during the early 1960s. Given the multiplicity of opportunities for public engagement that have been incorporated into the Agency's procedures by the National Environmental Policy Act and other NRC requirements, the justification for an uncontested mandatory hearing has been satisfied by a myriad of opportunities for the public to engage in the NRC licensing process and is no longer needed. We are pleased to work with the Committee on additional ways to improve the efficiency and predictability of the NRC licensing process.

H.R. 4528, Strengthening the NRC Workforce Act of 2023

As discussed earlier, while USNIC is supportive of the intent to enhance the ability of the US NRC to recruit and retain the qualified workforce needed to staff the Agency going forward as it prepares for a bow-wave of advanced reactor applications, however, USNIC is concerned that some elements of the bill may not achieve the desired result. As a former Commissioner, I would urge that the decision to use the authority in the legislation is a policy issue that should be determined by the Commission as a whole and not merely directed toward the Chair. Additionally, the definitions and timing of the authority may not have the intended results. USNIC would be happy to work with the Committee on alternatives that would achieve the intended desire to enhance the ability of the Agency to attract a qualified and diverse workforce.

H.R. 4530, NRC Office of Public Engagement and Participation Act of 2023

USNIC appreciates and shares the concern that the NRC can do a better job of engaging in two-way communication with the public as well as its licensees. As I discussed previously, the current culture of the Agency, which utilizes an overly broad view of what constitutes “promotion” has unnecessarily limited the way in which it engages with the public, including the type and breadth of information it provides to members of the public. I am supportive of making changes that would improve this situation. With that said, I am concerned that the legislation as drafted could have unintended consequences and could degrade the ability of the Agency to meet its mission. Increasing opportunities for effective public engagement are important and USNIC is pleased to work with the Committee to identify methods to enhance this important area of concern.

In sum, since I first worked as a Senate staffer over thirty-five years ago, the need and support for nuclear energy, particularly advanced nuclear, has dramatically changed, and with the support shown by this Committee and your counterparts in the Senate, there is an overwhelming sense of support behind enabling the deployment of these technologies. Advanced nuclear and the dozens of innovative companies that are developing and deploying the next generation of clean and cost-effective nuclear technologies are putting our country in a position to address the future increased energy demand in our country while also allowing the U.S. to regain its leading position in nuclear exports. I am thankful for the hard work undertaken by the members and staff of this Committee in support of this vital technology.

Thank you for allowing me to testify on behalf of the U.S. Nuclear Industry Council on this important subject. I look forward to the dialogue with the Committee about the proposed legislation.

Mr. DUNCAN [presiding]. I ask unanimous consent to allow the documents Mr. Merrifield referenced be entered into the record.

Without objection, so ordered.

[The information appears at the conclusion of the hearing.]

Mr. DUNCAN. So now we are going to get the question-and-answer, and we will try to get through at least a few here. Let me raise the same question I raised on the first panel. I recognize myself for 5 minutes.

As many of us have made clear, a goal of our nuclear policy work is to align and restore agency alignment with the policy goals of the Atomic Energy Act. These policies helped the United States for several decades lead the world in nuclear technology to spread peaceful benefits of nuclear.

So to the panel, beginning with Mr. Nordhaus, would you each speak briefly to the value of making sure NRC's mission is more in line with the mission goals of the Atomic Energy Act?

Mr. Nordhaus.

Mr. NORDHAUS. I am happy to. I think both the Atomic Energy Act and the goals of the Energy Reorganization Act of 1974, which created the NRC, actually very clearly establish that the NRC has a responsibility to account for the benefits that nuclear energy brings, as well as assure public safety from radiological exposure.

And as I kind of make fairly clear in our—in my written testimony, the focus on limiting the NRC's public safety focus purely to operations at the plant level actually is propagating public health risk, it is not reducing it. And that is because we don't consistently regulate these risks across different exposures.

So EPA's regulations for similar facilities that combust fossil fuels are an order of magnitude less strict than the NRC's, and that results in actually increased public health risk. It results in increased mortality associated with the operations of the electrical system.

So for that reason we would argue that, you know, not only do we need to get back to the original goals but that we actually need to add—further, that the NRC needs to consider the overall consequences in terms of public health and also in terms of carbon intensity of the electrical grid when it is making licensing and regulatory determinations.

Mr. DUNCAN. That is good. Ms. Korsnick?

Ms. KORSNICK. Yes, thank you. Yes, I would just maybe state directly what it does say in the Atomic Energy Act of 1954, which states not only does the NRC—or “should this industry be guided and provided adequate protection from public health and safety, but also to achieve the policy goal of making sure that nuclear energy make the maximum contribution to the general welfare.” And so we believe that in the actual reading of the current Act, the NRC needs to embrace that mission.

Mr. DUNCAN. Thank you.

Ms. Toth.

Ms. TOTH. Thank you, Chairman. Yes, I want to be clear I don't dispute that the Atomic Energy Act or the Energy Reorganization Act of 1974 don't leave room for the consideration of the public welfare as part of the NRC's activities. But you know, ultimately, the agency mission is as much about optics as it is about setting direc-

tion. And setting direction is something that agency leadership can do just as easily.

I would caution the committee that, you know, any effort to alter the mission be weighed against the potential of increasing or welcoming litigation risk by the public. For example, if consideration of the general welfare is added to the mission, one could foresee public concerns and litigation over whether or not they think the Commission had met that benchmark, whatever that benchmark may be.

And likewise, we heard from the Executive Director Dorman on the previous panel that the NRC is currently performing important functions in supporting our international partners in other countries and standing up strong safety regimes for their own regulatory infrastructure, and certainly would not want to raise any concerns among our international allies that the gold standard of U.S. nuclear regulatory—regulation and safety was being changed in any way at this important juncture.

Mr. DUNCAN. Thank you, Ms. Toth.

Mr. Merrifield.

Mr. MERRIFIELD. Yes, the foundation of the Atomic Energy Act remains the same as it was in 1954. It is a determination that we want nuclear power to be deployed in the United States for beneficial purposes.

The agency, the NRC, is to evaluate those technologies. As long as they can determine that they are safe, they have to license them. That is the—that is built into the legislation. And so the NRC utilizes its authority to determine if reasonable assurance of adequate protection has been demonstrated by the applicant. And if so, it has to license it. That hasn't changed. That was the way it was when I was a Commissioner back in 1999. It is not different today.

I just think the agency needs to be reminded of that to a greater degree, because I think some of the impediments it has put into place, including what I think is an inappropriate framework under part 53, go against that.

Mr. DUNCAN. Thank you all for that. I have some additional questions I will submit for the record.

I now recognize the ranking member, Ms. DeGette, for 5 minutes.

Ms. DEGETTE. Thank you, Mr. Chairman.

So as all of you know, I have got one of the bills in this hearing today about workforce. And I talked to our Government witnesses about the workforce issues. They are not just limited to the safety concerns but also to the NRC's ability to process applications. So I am curious to know what our panelists think about this.

I will start with you, Ms. Toth. In your view, how will the NRC's workforce challenges impact the industry?

Ms. TOTH. Sure. Thank you for the question. Absolutely.

As we heard from the previous panel, there is 100 percent a shortage of—right now of nuclear engineers across all of the different hiring functions for these roles, from the development community, our national labs, the Energy Department, and the NRC. So certainly, the Strengthening the NRC Workforce Act could go a really long way toward ensuring that the NRC has the capacity to

hire top talent, which it is certainly going to need as part of its workforce continues to retire and as competition from other nuclear sectors continues to grow.

Ms. DEGETTE. Thank you. I guess I would like to ask the rest of the panel too.

Outside of the regulatory workforce, what steps do you think we need to do to bolster the nuclear workforce that will help us meet anticipated growth in nuclear and ensure the highest levels of safety?

Mr. Nordhaus, do you have any thoughts on that?

Mr. NORDHAUS. I think that the—you know, I think there is clearly—we are seeing these problems across the economy, and not just nuclear, from sort of qualified STEM talent to, you know, electricians who can sort of build the infrastructure, install the infrastructure that we are talking about, particularly in this sort of post-IRA with significant incentives to sort of scale up these technologies. And I think nuclear is sort of, basically—

Ms. DEGETTE. So do you think significant incentives is an answer?

Mr. NORDHAUS. Yes, correct.

Ms. DEGETTE. Ms. Korsnick?

Ms. KORSNICK. Yes, thank you.

Well, for one, I think we can redeploy some of the talent that we have on the fossil fuel side of the house. We did an analysis—or an analysis was done on using workforce that are currently at coal plants, and it demonstrated that 75 percent of the folks that work in coal facilities could work at nuclear facilities. And so I think there is a wonderful, synergistic effect as we are closing down some of the fossil fuel plants to redeploy that talent and save a lot of towns that depend on that talent.

Also, we can create partnerships with unions. We have a wonderful relationship with the unions who have fantastic apprenticeship programs. So we don't just need nuclear engineers, we need workers across the board, and I think partnering with the unions is a great opportunity for us as well.

And it is not just 4-year degrees. You know, we need 2-year degrees. We can take people right out of high school. So I just want people to appreciate the breadth of attention that we can be using for the whole energy sector.

Ms. DEGETTE. That is exactly right.

Chairman Merrifield?

Mr. MERRIFIELD. Yes, I think the point of your legislation, to provide tools to the NRC, is one that we appreciate and agree with the general intent.

As I mentioned in my testimony, I actually think perhaps having it focused more along the lines of the Securities and Exchange Commission rather than the FERC legislation would be—would probably be my recommendation.

A couple other things in the legislation. It vests the authority solely in the Chairman of the NRC to make those determinations, and as a former Commissioner I would say policy decisions of that size and scope really need to be decisions of the Commission as a whole. So that would be an area we would certainly want to talk to the committee about.

Ms. DEGETTE. Great.

Mr. MERRIFIELD. There is a duration of time on which the authority applies. Given the nature of the competition that the NRC faces today for workforce, I think addressing this in a longer term than perhaps 5 year—the 5-year limitation included in the draft bill would be appropriate.

Ms. DEGETTE. Great.

Mr. MERRIFIELD. But we certainly—

Ms. DEGETTE. If you don't mind, I have one more question for Ms. Toth.

Mr. MERRIFIELD. Absolutely.

Ms. DEGETTE. And I have 40 seconds. I wanted to ask you, Ms. Toth, if you could elaborate on the concerns you mentioned with respect to the Efficient Nuclear Licensing Hearings Act, and in particular whether you think these hearings are a critical tool for ensuring public health and safety.

Ms. TOTH. Certainly. Thank you, Ranking Member. I think it is super important that, as we move forward here with the licensing of new reactor designs, we continue to maintain that level of Commission oversight and the mandatory hearings.

Ms. DEGETTE. Thank you.

Thank you very much, Mr. Chairman. I yield back.

Mr. DUNCAN. The gentlelady yields back. I will now go to Dr. Burgess for 5 minutes.

Mr. BURGESS. I thank the Chair.

Ms. KORSNICK, I really liked your answer to Representative DeGette's question about helping people who are in the—in a 2-year or 4-year degree, and even providing a paid internship perhaps to someone in high school. We really do need to move away from a system where kids amass so much student debt that they are never able to pay it off, and yet at the same time you need workforce. And if there were a way to incorporate a learn-on-the-job trajectory, it just seems like that could be so powerful.

And right now, again, there is no one who comes in here and talks to us in any committee that doesn't identify workforce as a central thesis that they are having to deal with consistently. But if there were a way to make it easier for the workers of tomorrow to begin to integrate into the program—and, again, even during the high school years, I don't think that is too early—and to be able to offset the cost of their higher education with loans and grants from industry itself, not from the government. We do enough. But really, it is on you all to be able to bring that next wave of the workforce into being.

Ms. KORSNICK. Yes, I would just agree with you, and to say that, you know, the industry is eager. And I can just speak from my past, as a chief nuclear officer and as a site vice president, we created partnerships with local community colleges and, you know, worked on students. Again, maybe they just wanted a 2-year degree, and then they could work as chemistry technicians or other technicians in the plant.

Sure, we will take people with full college degrees. They can also be put to work. But we—as we look ahead, there is a wide spectrum. You know, you need electricians and plumbers and pipefitters. And again, I am just going to give a plug to our union craft.

You know, they have a wonderful apprenticeship program, and we are also working with them to figure out how best to lay the groundwork for what we hope to be a very thriving industry over the next 10 to 20 years.

Mr. BURGESS. Well, I think that is wonderful. You don't always need a Federal program to provide for workforce when it can be developed internally.

Let me just ask you a question about, in the NRC, the operating plant budget that is derived by fees. It is up a significant amount, 64 percent since fiscal year 2018. There does seem to be a growing disparity between fee-for-service collections and overhead.

The most recent NRC fee rule indicates that operating plants will each be required to pay approximately \$5.5 million in annual fees, which is a 22 percent increase since fiscal year 2017. But there are less operating plants. Do we need to be concerned about this trend?

Ms. KORSNICK. Yes, right? So I think, across the board, we are looking for a level of efficiency for the regulator. You have heard it from several different ways. The example I gave in my opening remarks was about subsequent license renewal and how it is taking even longer in the subsequent license renewal, even though they have done it more and they should be getting more efficient in the same way that—what you are suggesting, we have now fewer plants, plants have shut down, and yet the cost burden is increasing.

And in addition, they carry over from fiscal year to fiscal year. And even with that carryover, still the burden on the operating plants is increasing. And so I do think that we need to take a hard look at that, and just provide pressure for an internal drive for efficiency. There is no sense in hiring more people to an agency that is already operating inefficiently. You will just create more people working inefficiently. So the drive needs to be to get efficient.

Mr. MERRIFIELD. Congressman, I completely agree with Maria. When I was a Commissioner, we really had a focus on effectiveness, efficiency, and alignment with the staff to achieve that goal. I think Congress needs to hold the Commission's feet to the fire to get there.

Mr. BURGESS. Yes, it does seem like the operating reactors are the cash source for the NRC, when they should be licensing new projects to continue building, rather than just bleeding what is already available.

Thank you, Mr. Chairman. I will yield back. I know there are votes on.

Mr. DUNCAN. The gentleman yields back. I am going to try one more. I will go to Bill Johnson for 5 minutes.

Mr. JOHNSON. Well, thank you, Mr. Chairman. I want to continue—and thanks to our second panel for being with us this afternoon—I want to build off my questioning that I began in the first panel.

My legislation, the Strengthening American Nuclear Competitiveness Act, directs the NRC to submit a report on licensing requirements for nonelectric applications and advanced manufacturing. Mr. Merrifield, can you please explain why preparing for li-

censing of advanced nuclear for nonelectric applications is a good use of the agency's time?

Mr. MERRIFIELD. There is going to be a significant wave of non-utilities who are going to seek advanced reactor technologies to decarbonize difficult-to-deal issues such as steelmaking, aluminum, chemical manufacturing. We have seen this with announcements with companies like Nucor and Dow seeking to evaluate advanced reactor technologies. So this is an area I think the agency is going to have to spend some time. I think it can do it effectively, and I think that these types of technologies can be appropriately deployed in support of those efforts.

I would want to make one note about your bill, section 3—I am sorry, section 4, regarding removing some of the prohibitions on the Atomic Energy Act regarding foreign ownership. I testified in front of this committee as a Commissioner back in the 2000s in support of that type of change, and certainly would want to reinforce that in what you are trying to do.

Mr. JOHNSON. OK. Well, thank you. And next, my legislation seeks to strengthen U.S. global competitiveness by reviewing our current export capabilities, improving export processes, and encouraging coordination with our allies to increase deployment of new commercial nuclear energy technologies.

So again, Mr. Merrifield and Ms. Korsnick, I would like to hear from both of you on this. Ms. Korsnick, I would let you go first.

How important is it to the global nuclear market that the United States works with its allies?

And also, with countries like China and Russia rushing to deploy civilian nuclear around the globe, giving them a centurylong foothold in a given area, why is it important for the U.S. to be able to export its own civilian commercial nuclear technology abroad?

Ms. Korsnick, you go first.

Ms. KORSNICK. Well, it is critical to our national security, I would argue, that we absolutely want to be supporting countries around the globe and helping and support them with their energy supply.

I think we have all watched Russia cut off gas to Europe and watched how they manage when they are in control of your energy supply. And I think we should take strong note of that. And it wouldn't be any different if they had built a nuclear plant in some of these countries—

Mr. JOHNSON. Right.

Ms. KORSNICK [continuing]. And they would be also able to turn that off. And so I think doing business with the United States, with our allies, is precious. And I think it is very important that we take that leadership role.

I would point out that a Russian reactor just started up in Egypt. I believe one just started up in Pakistan. So when we say that there is this potential, it is not a potential, it is happening.

Mr. JOHNSON. Yes, it—

Ms. KORSNICK. And that is why we need the United States to really be very relevant and support our allies.

Mr. JOHNSON. I agree. And I think most people don't understand that when a country like Russia or China gets their foot in the door in another country providing nuclear capability, they are in there

for upwards of 100 years. I mean, they got to build a plant, they got to operate it, they got to maintain it, they got to update it, and they are there to stay.

Mr. Merrifield, do you want to comment——

Mr. MERRIFIELD. Yes, Congressman, you put your finger on it. These are 100-year relationships——

Mr. JOHNSON. Yes.

Mr. MERRIFIELD [continuing]. Build, and so it is vital that we be there and have an alternative.

I think the advanced reactor technologies that we are talking about today provide us an opportunity to retake that lead. We have some game-changing technologies that we are going to be deploying, and those are going to really allow us to take that flag abroad.

Mr. JOHNSON. OK.

Mr. MERRIFIELD. Having said that, I think we also need to talk about our Canadian and UK friends who can be collaborative. This is an international arena. None of the plants that we build today can be built with entirely U.S. parts. But I think we need to be focused on our allies and working to try to win more market share.

Mr. JOHNSON. And let me move quickly. I have got one more question. I want to address my legislation's extension of Price-Anderson out to 2065.

Again, Ms. Korsnick, I will start with you. Can you explain why Price-Anderson has been important to America's nuclear industry and why it would be important to extend it 40 more years, especially with advanced reactors and small modular reactors on the way?

Ms. KORSNICK. Absolutely. It is very critical. I would just say, in straightforward terms, it provides a framework within the—insurance companies can work to allow us to appropriately insure.

The second place is it then requires the rest of the nuclear energy industry to contribute. So it creates an indemnification framework that allows us to manage risk. And without one, you wouldn't have the industry that you have today. And we just need to continue this framework—you mentioned—for a length of time. I would love a lifetime extension. So yes, it is just—it is absolutely critical.

Mr. JOHNSON. It is going to be almost as hard as getting insurance on an electric vehicle, Mr. Chairman.

Mr. DUNCAN. Yes, I am seeing that.

Mr. JOHNSON. Chairman——

Mr. DUNCAN. The gentleman's time is expired, and we are going to have to go vote. So we are going to stand in recess, pending the call of the Chair. I ask witnesses just to hang out, use the restroom, whatever you need to do, and we will be back as soon as we can.

[Recess.]

Mr. DUNCAN. I am going to call the meeting back to order.

There is a lot of hearings going on today, there is a lot of work going on, so we are back in order, and I will now recognize—as she gets her computer going—Mrs. Lesko for 5 minutes.

We will start the clock when you are ready.

Mrs. LESKO. Almost there.

Mr. DUNCAN. OK, the gentlelady from Arizona is recognized for 5 minutes.

Mrs. LESKO. Thank you very much, Mr. Chairman, and thank you for being here all these hours and testifying. I appreciate it.

Ms. KORSNICK, can you explain the use of on-site inspectors versus inspectors that come from off-site to nuclear plants?

And do you believe the benefit from these extra inspectors is worth it?

Ms. KORSNICK. Absolutely. So the on-site inspectors are called resident inspectors, and these are inspectors that are always at the plant, 7/24, if you will, whenever they want to be there or not be there. They have full access to the plant.

And then the extra inspectors that you talk about, there are certain inspections that they will plan and schedule, and they will bring other resources to the plant to conduct those. PI&R inspection, problem identification and resolution, is an example of one where you know it is going to be a pretty extensive amount of time, and they will send extra people to your plant.

So I do think that there is value, because they have additional background and additional expertise. I think that is helpful.

But I would like to add—perhaps where you are going with this question—is that during COVID they were also able to conduct a lot of these inspections with a lot fewer inspectors on site. So they used technology. They used other ways to get the information without having to send a bunch of inspectors to the site.

And so what we would like is some of the improvements and some of the synergies that they were able to put in place when they were under more restrictive conditions. They still conducted their inspections very effectively, and I think that can be leveraged.

Mrs. LESKO. And so then, do you think that my piece of legislation that is being considered or will be voted on soon out of this committee would be beneficial?

Because part of my legislation basically asks the NRC to look at what they did during COVID and see if some of those practices that were more efficient could be used permanently.

Ms. KORSNICK. Absolutely. Spot on.

Mrs. LESKO. Thank you. Ms. Korsnick, I would appreciate your perspectives on other areas we should focus on to improve the effectiveness of NRC's oversight of the operating reactor fleet.

Ms. KORSNICK. Thank you. Yes, I do think there's opportunities for improved oversight, and I know we sent in a letter with some of our suggestions, and I would be happy to work with you to provide some additional examples for improving oversight of the regulator.

But at the heart of it, it goes to, in general, just how can we be more efficient with the oversight of the fleet. And one of the things that we are very passionate about is what we call risk informing.

In other words, whatever it is that you are working on, understand what the ultimate risk to safety is. And if there is very, very low risk, then spend less time on it, and so that it helps you decide where to put your time, energy, and effort. And we think that there's improvements that could be made there on things of very low safety consequence and significance.

Mrs. LESKO. I am going to another committee hearing upstairs, Oversight Subcommittee, but it is dealing with energy infrastructure and cybersecurity and physical threats.

But one of the things that has come up is, actually, EMPs, electromagnetic pulses. And do the nuclear plants ever talk about that risk, and if they are prepared, protected against any EMP attacks?

Ms. KORSNICK. Yes. And actually, we worked with EPRI, the Electric Power Research Institute, to do testing on EMPs and what parts would be impacted by that, like large transformers, for example. So I do know that quite a bit of work was done relative to EMP to better understand the risk of it.

Mrs. LESKO. And do you think that there is any way for the plants to protect themselves against EMPs, or is it just, like, everything just shut down?

Ms. KORSNICK. No, there are—yes, there are some things, some hardware modifications that can be put in place to make some of the equipment that you are counting on to be more resilient in case of an EMP threat.

Mrs. LESKO. All right. And are the plants doing those things currently?

Ms. KORSNICK. Yes. I don't know the complete status of the whole industry. It comes a little bit more from the transmission and distribution side in terms of the grid being resilient, if you will. I think the plants were evaluated to be relatively resilient, but the grid, I believe, was the weak point. And I know that they have looked at specific modifications that could be done to protect the grid. I don't know the status in terms of how far along they are, though.

Mrs. LESKO. Thank you, and I yield back.

Mr. LATTI [presiding]. The gentlelady's time has expired and yields back. The Chair now recognizes the gentleman from New York for 5 minutes.

Mr. TONKO. Thank you, Mr. Chair.

In the past, the Environment Subcommittee has done great bipartisan work to support remediation and redevelopment of our Nation's brownfields. EPA's brownfields program has been tremendously successful in reducing pollution, creating jobs, and getting vacant properties back on local governments' tax rolls. So I was very interested to see the Nuclear for Brownfields Site Preparation Act.

Former coal plants and other brownfield sites often have great characteristics that can be assets in their redevelopment. They may be near existing transmission infrastructure, have access to water and rail infrastructure, and have preexisting security infrastructure. So the notion of reusing these sites for advanced nuclear or other clean energy projects could provide a great opportunity for local communities to bring back high-quality jobs to their given region.

So Ms. Toth, how can new nuclear projects create jobs and support economic revitalization in former energy communities?

Ms. TOTH. Thank you, Congressman, for the question, and we are very supportive of the Nuclear for Brownfield Site Preparation Act.

Good Energy Collective takes a particular interest in ensuring that we advance enabling policies so that nuclear energy can support communities facing the retirements of their coal generators in the next, you know, 10 years as part of a just energy transition.

Like you mentioned, there are a lot of opportunities to reuse existing infrastructure on site transmission, road and rail access, water, the heat sink. But more importantly, and what Good Energy Collective has started to analyze, are what are the community-level benefits of these transitions? And there are many to be able to support these communities with good-paying jobs that they are losing when these coal plants close, with the tax revenues for the local community.

So we see this legislation up on the docket today as important and enabling policy on the regulatory side when Congress last year passed the Vision for the Future Act, enabling DOE to support technical assistance for R&D for coal—the revitalization of coal plant infrastructure with nuclear energy.

Mr. TONKO. Thank you.

And Ms. Korsnick, what are your thoughts? What are the opportunities to reuse these former power plant sites for new nuclear projects?

Ms. KORSNICK. I think there is a wonderful opportunity. A study was done about the plants that—coal plant workers, and how they could be transitioned to work at a nuclear plant, and I think the study suggested that 75 percent of the jobs at coal plants could be repurposed to nuclear plants. Personally, I think it is probably even larger than that, but that just gives you an early idea of just how much synergy there is.

You know, from being a site vice president and running a previous nuclear plant, I would tell you that we would bring the coal plant and fossil fuel folks down to work our refueling outages. There is a natural synergy. We might boil water differently in nuclear, but after that you need mechanics, and electricians, and I&C techs, and, you know, the same skill set that you are working and using at that coal facility. So I am incredibly optimistic of the synergy.

And I think it is beautiful, as she mentioned, you know, some of these plants—or the towns are going to be devastated by the closing of a fossil fuel plant, and there is no need for it. We can absolutely repurpose all of those jobs and keep that community alive and thriving.

Mr. TONKO. Thank you. I am supportive of trying to redevelop formerly used fossil fuel sites for productive, cleaner uses, and that seems to be the intent of this draft.

Mr. Chair, I would like to raise an issue that I hope the committee staff can further investigate before this proposal moves to a markup. The draft uses the CERCLA definition of brownfield site, which explicitly excludes numerous types of facilities, including facilities that had permits under RCRA, the Clean Water Act, and the Safe Drinking Water Act. So I am worried that many former coal plants may not meet this definition of a brownfield site, and the Commission may not include them in their evaluation.

CERCLA included these statutory exclusions for good reason, so that polluters could not gain access to limited brownfield funds in

order to carry out remediation otherwise required by their permits. That is still a good reason to maintain the exclusion within the EPA Brownfields Program. I am not sure if it should be the litmus test for a brownfield site under this proposal, so I hope the majority and minority staffs can receive technical assistance from the Commission and EPA to ensure that this language does not accidentally exclude some of the intended beneficiaries by taking too narrow of a definition of brownfield site.

And with that I thank you, Mr. Chair, and yield back.

Mr. DUNCAN [presiding]. The gentleman yields back. I now go to Mr. Latta from Ohio for 5 minutes.

Mr. LATTA. Well, thank you, Mr. Chairman, and thank you for—our witnesses for appearing today. We appreciate your knowledge, and we also appreciate your feedback on the legislation before us today.

Commissioner Merrifield, many new reactor technologies require access to HALEU to fuel their operations. Russia's invasion of the Ukraine has made the only commercial source of that fuel inaccessible and has also negatively impacted the LEU market, which is used to fuel our existing fleet.

My bill, the Nuclear Fuel Security Act, aims to reduce our reliance on Russia. And as we heard in the previous testimony of our first panel today, about 24 percent coming from Russia and 2 of the—Kazakhstan and Uzbekistan, adding up to all over 50 percent, then, that is not good. So we need to increase the United States' global leadership.

Could you expand on the current state of our nuclear fuel security?

Mr. MERRIFIELD. Yes. We, obviously, have significant dependence on the import of Russian material that makes up at least 20, if not more, percent of the fuel used in the U.S. We do not currently have the capability to produce high-assay, low-enriched uranium, which we are working toward. DOE has a series of programs—there was an announcement yesterday—with Centrus and TerraPower that they are engaging on a program to do some of that.

So I think Congress and the legislation you have are working to try to improve this, both in the supply of uranium, in the supply of low-enriched uranium, and ultimately in the supply of HALEU. So I think these efforts in your legislation are beneficial, and I think U.S. NIC is supportive of them.

One thing in your legislation I would also want to point out, which I think is positive, you do establish in the—it would establish in the U.S. Treasury a revolving loan fund for the revenues received by the Secretary from the sale and transfer of feed material. We think that is a very logical step, and one that certainly we would support.

Mr. LATTA. You know, what role can NRC play in quickly establishing a robust domestic nuclear fuel supply chain?

Mr. MERRIFIELD. The NRC does need to take a look at the methods it uses to review and approve new fuel facilities, and I think that is an area that could get some additional attention.

There will be a series of centrifuge facilities that will need to be built in order to make up for the loss of fuel capabilities from out-

side of the United States. That is an area I think additional attention by Congress would be very beneficial.

One thing I would also note, I think we need to think about this not just in terms of the United States. We also do need to be thinking about Canada. As mentioned earlier in the hearing, Canada is a critically important source of uranium, but there is no enrichment capability in Canada at all, despite the fact that they will be deploying low-enriched uranium reactors by GE Hitachi. The Ontario power generation is committed to doing that, and there are a series of other advanced reactors that would use highly-enriched—or high-assay, low-enriched uranium in their production.

So I think there is a great utility in having enhanced U.S.-Canadian cooperation in this area.

Mr. LATTA. Thank you.

Ms. Korsnick, just this week we heard the announcement that the company TerraPower would be entering into a memorandum of understanding with Centrus Energy Corporation, which operates a HALEU enrichment facility in Piketon, Ohio. This is a sign that private capital is already—is ready to invest in our—in the domestic nuclear industry, and DOE needs to step up its support and quickly implement programs to establish—established in the Energy Act of 2020.

How important is it for the industry to have DOE fully implement the HALEU availability program?

Ms. KORSNICK. Yes, we think it is critical for the DOE to engage on the high-assay LEU program, and that is because the market is not yet established, right? These are advanced reactors that are going to be built, but there is not an established supply right now of the high-assay LEU, and that is where it is very important that our Government, through the Department of Energy, help get that sort of moving and going. And significant investment—they did recently put out a request for proposal that was mentioned earlier today.

Just a point of note, as the industry reviewed that, we were very dissatisfied with the request for proposal, and put comments to that effect, which I appreciate the DOE is looking at now.

Mr. LATTA. Well, Mr. Chairman, my time is about to expire, and I appreciate the testimony from our witnesses today because we want to make sure that we are leading in the world and we have everything we have to have, especially from the uranium and the enriched uranium in this country.

So with that, Mr. Chairman, I yield back the balance of my time.

Mr. DUNCAN. The gentleman yields back. I will now go to Washington for Ms. Schrier for 5 minutes.

Ms. SCHRIER. Thank you, Mr. Chairman. Thank you, Ranking Member DeGette, and thank you to our witnesses today.

My understanding is that, for every gigawatt of nuclear capacity constructed, some 200,000 job years of employment are created. And as we increase the mix of nuclear energy in the U.S. energy grid, many more very skilled workers will be needed to construct and operate and maintain and also guard these facilities.

We heard from my colleagues and witnesses in the earlier panel about the workforce shortages and our Federal Government, and what we must do to meet—to manage the workforce to meet the

need for nuclear power in the coming decades. But ensuring that we develop and support workers within the private sector is also important, not just the public sector.

In fact, in Washington State we have a long history of nuclear power with hundreds of companies participating. Terrapower is actually one of them. But universities with Ph.D.s, we have PNNL, which is a powerhouse of research in this area.

I was just a few minutes ago so heartened by your comments, Ms. Korsnick, about how the coal industry jobs can translate so well into nuclear industry jobs, because that is one of the things that we have really worried about, is that we don't want to be pie in the sky about making sure that everybody can transition to a clean energy job. And so what you said meant a lot, I think, to all of us. And I think that facts should weigh heavily in decisions about where to site nuclear power plants so that we can have those same people doing the work.

I wanted to direct this question, really, to the entire panel, just for your thoughts. And it is about workforce. I would like to start with you, Ms. Korsnick, because you touched on the significance of nuclear power and job creation. Can you just expand on ways you have seen the private sector thoughtfully approach workforce development, where partnerships have been made, what lessons we can learn on the Government side, and how we should prepare the next generation of leaders and thinkers in the nuclear industry?

Ms. KORSNICK. Sure, I am happy to begin, and my colleagues, obviously, can jump in and add.

I think a recent DOE report came out as they looked ahead at potentially having 3 times the amount of nuclear power by 2050, and they estimated that we would need 375,000 additional workers. So just to give a sort of a volume, it is very significant.

But these aren't all nuclear engineers, right? These are—they run the whole gamut. Some of them are engineers, mechanical, electrical, et cetera. But they are also, you know, plumbers and pipefitters and electricians and I&C techs. And they are also, you know, folks that maybe have just a 2-year degree, a chemistry technician, for example. There are some people right out of high school.

And so I think what we need to really look at from a workforce perspective is literally K through 12, you know, and on. Like, don't just start at secondary education, you know, start from the very beginning. I know we have teamed several years ago—I want to give credit to the American Nuclear Society, where they have built in programs about nuclear energy into K through 12 programs, because I think it starts that young that you get people sort of interested and engaged. And my hat is off to American Nuclear Society. They worked with the Department of Energy to get this established, and they are continuing to grow it.

When I was a site vice president back in the earlier age, maybe 2008, 2010 timeframe, there was the conversation around a nuclear renaissance. And what it caused the industry to do is partner with community colleges and partner with others to begin to get that supply chain of people, if you will, ready. And so I think that is really what needs to happen again today.

If there is this clear signal that we are absolutely focused on making nuclear thrive, then, if you will, a machine begins within

the industry itself that says we want to invest in these people, we want a team with people that have fossil fuel workers and encourage them to come over to nuclear. We want a team with universities. We want a team with high schools to have a natural pipeline. We work very well with the unions. They have fantastic apprenticeship programs. We are all in.

Mr. MERRIFIELD. Yes, I would like to reinforce that comment, and I chair an organization called E4 Carolinas, which is a North and South Carolina energy association—plumbers, electricians, pipefitters, welders.

We identified a long time ago having nuclear-grade welders is going to be critically important. That is an area we are already challenged in the existing nuclear industry, let alone having the workforce available for these advanced reactors going forward.

We talked a lot about the issue of the bow wave of retirement at the NRC. It is the same in the nuclear industry, and particularly with the trades. So, you know, I think colleges and universities will respond to having the engineers that we need, but it is really the trades that are going to need more help, both from unions and otherwise.

Ms. SCHRIER. Thank you. I appreciate those comments, particularly touching on apprenticeship programs.

I yield back.

Mr. DUNCAN. The gentlelady yields back. Thanks for mentioning the Carolinas and what we are doing.

I will now go to Kentucky and recognize Mr. Guthrie.

Mr. GUTHRIE. Thank you. Welcome to Kentucky again. Thank you. And I am sorry I missed some of the discussion. We have three subcommittee hearings going on today, so we are all kind of bouncing around. And I really wanted to be part of this discussion, but I was chairing one, so I couldn't be. So I will say that and get right to my point.

You know, Kentucky has been an energy-producing State. We are very famous for good Kentucky coal. And what we have seen is some of our coal plants, obviously, go out of existence and move forward. So, you know, my big concern and one of the things I would like to see and we are going to work on is turning these brownfield sites, the old coal plants, into nuclear sites. We are trying to continue our leadership, and our local—State and local leaders.

So I guess my question—and I know I used to work in transportation stuff when I was in previous committees, and building in a right-of-way is a lot simpler when you have already done a lot of the work beforehand than just building a greenfield site. I know there's differences between—it is not just completely 100—you are not just adding an extra lane. There are some differences between nuclear and other power generation, but there are a lot of similarities.

And so my question to each of you, if you kind of address them—we will just start left and go right—what are your views about the potential use of brownfield sites?

And then, can we use these sites to help expedite? Do you think it would make it quicker using a site that already existed for energy producing to make it quicker?

Mr. Nordhaus, if you will, start and—

Mr. NORDHAUS. Yes, I mean, there—obviously, I think we have—a number of conversations we have had already here, it is clear that there is huge potential there. I think that we will need to expedite and do any of that quickly. I think we are going to kind of need to take a hard look at a set of the existing rules and regulations associated with exclusion zones, emergency planning, a variety of other issues. I think the Commission has already stumbled a bit on that issue and sort of trying to reset those rules already.

And, you know, obviously, when you are talking about a very different kind of advanced nuclear plant, often smaller that you are talking to sort of dropping into an existing coal site that is smaller than the historic, large, you know, 10-mile exclusion zones we have had around large light-water plants, there is going to be a need to make pretty significant changes in the regulatory frameworks. Those changes are appropriate, given the differences in the technology, but that is just one example of the sort of kind of change that is going to have to happen. It is going to have to happen quickly in terms of modernizing regulation.

I think, you know, I see kind of a pretty broad bipartisan desire to kind of turn these sites into sites for nuclear generation. But that literally can't happen without pretty significant changes in how the NRC approaches a set of these questions around regulating sites.

Mr. GUTHRIE. All right, thank you.

Ms. Korsnick?

Ms. KORSNICK. I think it is a wonderful idea, and I think we should challenge the regulator to make it happen efficiently. These are a fantastic way to keep that workforce employed. Many towns are built, literally, around a fossil fuel plant. There is no reason for that town to go out of business just because that coal plant needs to transition to another source of energy. And nuclear is a wonderful opportunity.

I mentioned in answer to a previous question a study was done. We could use 75 percent of the workforce. I challenge it. I think it can be even more of a percentage of the workforce. I have worked at nuclear plants before. We brought coal folks down to help us with our refueling outages. We work hand in glove. It is a match made in heaven.

Mr. GUTHRIE. Thank you.

Ms. Toth?

Ms. TOTH. Yes, thank you, Congressman.

So Good Energy Collective, you know, we have looked, we have started to look at quantifying some of the community-level benefits through our report, "Opportunities for Coal Closure Communities through Nuclear Energy," and, you know, this year we will be conducting some on-the-ground engagements with prospective host communities facing coal plant retirements over, you know, what are your questions about nuclear? Maybe you have worked on some of the plants before to help with refueling outages.

But we anticipate that, you know, communities that are familiar with hosting large energy infrastructure like a coal facility may be among the most interested in hosting new nuclear, and we should be facilitating that as part of a just energy transition.

Mr. GUTHRIE. Thank you.

And Mr. Merrifield?

Mr. MERRIFIELD. Yes, I think coal facilities, for all the reasons mentioned, make excellent sites for nuclear power plants. Much of the infrastructure can be reused.

I would say the same for other fossil plants that are retiring—combined cycle gas units, for example—or other brownfield communities. I think Congressman Tonko made some good points about the expansion there.

One thing I would say, you know, the NRC right now requires there to be an analysis of a need for power in the environmental impact statement process. That seems to be pretty redundant, if you are talking about repowering a coal plant.

In addition, this requirement is really typically covered by State public utility commissions in terms of the need for power, or has been evaluated by the applicant itself.

So I think the NRC's—I know in the context of the modernization of Nuclear Reactor Environmental Reviews Act, one of the areas of strengthening, I would—I believe, would be to drop the requirement for the NRC to do a need for power. It is one of the largest pieces of their review. Frankly, I think it is completely unnecessary.

Mr. GUTHRIE. Thanks, I appreciate that.

And my time has expired, so I will yield back.

Mr. DUNCAN. The gentleman's time has expired. I now go to Mr. Veasey from Texas for 5 minutes.

Mr. VEASEY. Mr. Chairman, thank you very much. And it is great that during this hearing that we are considering, in conjunction with—just how important good jobs are as it relates to some of the improvements that the NRC's licensing of nuclear technologies are.

I know that, combined with targeted funding, that we can truly make nuclear energy a component of our cleaner energy plans. And so I am just—great that we are here talking about this, because I really do think that we need to get this out more in front of the public.

One of the things that I am really—I think is a really great project that is going on right now in Texas as it relates to nuclear technologies—and I have mentioned it before in a previous committee hearing—is that Abilene Christian University is experimenting with a nuclear energy experimental testing lab in conjunction with University of Texas and Texas A&M to experiment using molten salts rather than water as a coolant for nuclear reactors. And potential new additions of safe, reliable, affordable, and cleaner nuclear power like those at Abilene Christian, I think, are going to be very essential to the U.S. energy security and deployment of new advanced nuclear reactor technology that is going to be crucial for our ability to compete with China and Russia in the global nuclear industry.

For new nuclear technology to get to these goals, these reactors will need to be licensed quickly by the NRC at scale, and be eligible for targeted Federal funding. That is clearly in our national interest. And on the latter point, I was pleased to hear that the CHIP Act established a new program for new university research reac-

tors, and last year's NDAA provided important access to fuel service for such new reactors.

Commissioner Merrifield, I know that you are helping at Abilene Christian and that you are advising them on its research reactor project. Can you please describe how important it is that we ensure a steady funding stream to eligible new research reactor projects in the same way we have supported existing research reactors?

Mr. MERRIFIELD. Yes, thank you very much, Congressman, for that question.

And the Abilene Christian University program, with its partner, Natura, is an important one, and one that I think is very exciting. It is going to allow the development and deployment of a molten salt reactor for university research purposes. It will be the first new research reactor to be built in the United States for several decades.

And I think, if you go back to the early days of the Atomic Energy Act, research reactors were really the leading technique used by the Eisenhower Administration in its Atoms for Peace program. So I think having a new, U.S.-based, designed research reactor could be a potential item that could be exported to countries that are seeking to get into the nuclear energy programs. So I think it is very exciting there.

The CHIPS Act, the recent legislation, was very helpful in that regard. The NDAA, there is still some appropriations language out there that says, you know, the appropriators don't want to build new research reactors. I think this is something there needs to be further dialogue. It is important for us to have a new generation of these reactors, to have a new generation of individuals who can be trained on them, and certainly appreciate your support and that of other Members of Congress to enable that activity.

Mr. VEASEY. Yes. No, thank you very much, and work with me a little bit on this question. It is more of a—getting your opinion on something, but do you think that there is actually some benefit for people to be able to go to someplace like west Texas and see so much traditional fossil fuel energy being produced, then also see the country's leader when it comes to cleaner technologies like wind and solar, and then see this nuclear project, and kind of see it all come together in one space? How important is that for the public?

Mr. MERRIFIELD. I think it is important for a couple of different reasons.

Number one, we do not have a university-based molten salt reactor in the United States. So it would be a leader in that regard and would draw people from all over the world to look at it. It is a consortium made up of four universities, three of which are in Texas, one of which is in Georgia. So it is a very collaborative, interactive program.

The other thing I think is important—and I can't talk in detail—but as a law firm we have talked with a number of folks in Texas and in west Texas who are really looking at trying to decarbonize various parts of the upstream part of oil production through the use of microreactors and other advanced reactor technologies. So this is really an area Texas could take a lead, and we certainly think that Abilene and Natura could be part of that.

Mr. VEASEY. Yes, thank you very much. I appreciate that.

I yield back.

Mr. DUNCAN. The gentleman yields back. We should talk about U-233 sometime.

I now go to the chairwoman of the full committee, Mrs. Rodgers, for 5 minutes.

Mrs. RODGERS. Thank you, Mr. Chairman.

On the first panel I raised concerns about the NRC's handling of its part 53 regulatory development—so this is for the advanced nuclear reactors, some exciting technology in Washington State, too—as outlined in the letter Members of Congress just sent to the Commission. And I believe all of you do not think that the current proposal is workable. I also believe many of you expressed this repeatedly to NRC staff.

So to Ms. Korsnick, Mr. Merrifield, Mr. Nordhaus, my first question is, How do you instill within NRC a results-oriented culture, a culture that measures its work, shows progress, works to adhere to the laws that Congress has passed?

And I am going to start with Ms. Korsnick.

Ms. KORSNICK. Thank you very much. Thanks for the question.

It has to start with leadership, honestly. If you want the organization to change, it has to be important to leadership. They have to talk about it.

And, you know, we have had previous working relationships with the NRC that have been very helpful, and have solved problems, and we have worked through things. Part 53 was not that experience. It has been one of the most frustrating interactions, I think, between the industry and the regulator that I have been associated with, and I have 35 years with this industry.

And again, to change that, I think it has to come from leadership. It is not about holding meetings, it is about listening to the feedback. They held a lot of meetings. They didn't listen.

Mrs. RODGERS. OK, thank you.

Mr. MERRIFIELD. I concur with Maria. As a former Commissioner, I have to say this has been very disappointing to see how this has all panned out. I sat in a lot of those meetings, and I will tell you there wasn't a whole lot of—there was listening, but there wasn't engagement. And I think some of it was a bit of a kabuki dance, frankly.

I think the—what they have come up with in terms of part 53 is not useful. I don't think it will be used. And frankly, they could do a whole lot better. The agency has been around for 50 years. They have got a lot of knowledge. They ought to be able to put together an efficient and streamlined licensing process for advanced reactors. And what we got is completely opposite of that.

Ultimately, when I was a Commissioner we got held accountable by Congress. Former Senator Pete Domenici called us to the carpet. We had a similar situation that happened with the earlier iteration of part 52, the 2-step licensing process, and the Commission at that—1-step licensing process. And the Commission at that point went back to the staff and told them to start from scratch.

This piece in part 53 isn't workable, it is not going to be helpful, and it certainly is not what Congress intended by passing the law.

Mrs. RODGERS. Thank you.

Mr. Nordhaus?

Mr. NORDHAUS. I will just agree with both of the prior comments. You know, just—there is—I don't think that this happens without greater leadership both from Congress and from the Commission itself.

And until, you know—and as I mentioned in my opening comments, you know, it was very heartening to see 60 Members of Congress, bipartisan, saying, you know, to the Commission that this part 53 rule, we need to go back to the drawing board, it needs substantial changes, and being pretty explicit about a set of the major problems that need to be addressed before that rule moves forward.

I think that the Commission and the Commissioners need to sort of take up that challenge and send that message very clearly to the staff, that they need to go back to the drawing board. They need to go back and look at, you know—as our organization, which was, I think, certainly on the sort of NGO, nongovernmental, side, attended more of these meetings, submitted more extensive public comment than sort of almost anyone else participating, very little of it was actually kind of taken up. And I think that was generally the stakeholder experience.

So I think until Congress, you know, makes it very clear that we need a substantially modernized and different framework for licensing advanced reactors, and then I think we need to expect that the Commissioners kind of follow through on that——

Mrs. RODGERS. Thank you.

Mr. NORDHAUS [continuing]. And demand that of the staff.

Mrs. RODGERS. Great, OK, thank you.

And to that point, Mr. Merrifield, you mentioned that there were lots of meetings. I wanted to ask, do you think the NRC licensing staff, in interactions with applicants, should not act as a consultant on agency rules and guidance, as they have been telling applicants I——

Mr. MERRIFIELD. I think what the agency staff can do is engage. They can have workshops where they actually engage in back-and-forth conversation to try to drive better understanding of where the licensees are coming from and where the agency positions are. Many of the meetings were not much more than listening sessions, where the utilities and other advanced reactor developers would explain their concerns, which were met with, "Thank you very much, we will consider it."

At the end of the day—Dan Dorman was here earlier. Dan Dorman and his senior team are perfectly satisfied with the package they delivered to the Commission on part 53. That is troubling to me. Despite all of the concerns that have been raised by Congress and by folks on this side of the table, they have no—they believe that they are completely in the right.

I think that there is—and I put this into my—the speech I gave at ANS earlier this year—I think there is some fundamental issues at the agency. One of them is technical depth. I am a little concerned whether they have the technical capability to come back with a better product.

Mrs. RODGERS. Thank you. It is very helpful for you all to be here and to tell us, from your perspective, what is going on. We are going to work on this with bipartisan support. Thank you.

Mr. DUNCAN. The gentlelady yields back. I now go to Mr. Cárdenas for 5 minutes.

Mr. CÁRDENAS. Thank you very much, Mr. Chairman and Ranking Member. I appreciate this opportunity for—to have this hearing, and thank you to the witnesses for giving us your perspectives and expertise.

While the NRC considers public opinion in their nuclear regulatory decisions, proceedings are often inaccessible and difficult to understand. Creating better, more accessible opportunities for public participation are necessary out of respect for potentially impacted communities, to rebuild trust with the public, and because it will lead to better outcomes down the line. That is why I am pleased to see Congressman Levin's bill, H.R. 4530, which would establish the Office of Public Engagement and Participation within NRC included in today's hearing.

Ms. Toth, is that how you say your name? "Toeth," OK, thank you. Can you discuss how an Office of Public Engagement and Participation at the Nuclear Regulatory Commission would help communities better navigate proceedings before the Commission?

Ms. TOTH. Certainly. Thank you, Congressman.

As the ranking member of the full committee, Representative Pallone, mentioned on the previous panel, from 2021 to '22, the NRC undertook a systematic assessment of how it addresses environmental justice across all of its programs and activities. And that review process revealed a lot of learnings about how the Commission can be doing better that extend beyond just how it implements environmental justice practices across the agency.

The staff made many recommendations to the Commission that are still sitting with the Commission for action. One of these, referencing the NRC's existing 1995 EJ strategy, flagged that the NRC has a goal to inspire stakeholder confidence through more comprehensive public outreach, engaging more transparently, providing information up front. And certainly, the staff had identified that, currently, NRC stakeholder outreach is very infrequent and often only ever takes place when there is already a pending activity within the community.

Also that in its engagements with Tribal and EJ communities, but also writ large, the NRC—it is often incumbent on an individual project manager to take the initiative to conduct effective local engagement and outreach. And there is a lot of variability among the project management of how they, you know, undertake that work.

So we see OPEP as potentially playing an important function not only in externally making itself accessible to the public and answering questions but also internally, potentially being able to train project managers in effective strategies for public engagement.

Mr. CÁRDENAS. So an office of public engagement, do you think it potentially could help both project sponsors and potentially impacted communities, as well?

Ms. TOTH. Yes, absolutely. As I mentioned in my opening remarks, the OPEP would establish more capabilities to enable the public to engage with the regulator, which is an important democratizing function of any Federal agency.

But critically, having that office in place, the OPEP would also be able to engage with some of the developers, as well, or with communities where there is conversation around potentially hosting new nuclear infrastructure, and bringing those communities into the process early on to answer a lot of questions that they might have, bring them into the process. Because as we know, a lot of times, even with environmental reviews under NEPA, some of the delays that are experienced are because of issues or concerns that the public has that aren't unearthed until much later in the infrastructure siting process. So OPEP could start to detangle that concern to the benefit of industry.

Mr. CÁRDENAS. I am the kind of average American before I got elected. Now I am just kind of messed up. I have been doing this for 27 years. I am in the inside looking out.

But before I got elected I had never gone to a community meeting when it came to the environmental issues impacting my community, the Northeast Valley, where I was born and raised. But when I got elected, it was brought to my attention that we had more dump sites and more particulate matter issues emanating out of our community that were actually coming from all over LA County, the largest populated county in the country.

And it wasn't until I became an elected official that I realized that somebody needed to do something to actually listen to the people who are affected by these things, not just look at it from the vantage point of somebody investing \$1 million, \$100 million, \$1 billion into a facility. It is about balance, about making sure that we listen to all sides.

And so with that, can you talk about how the NRC Office of Public Engagement and Participation Act would build on the NRC's environmental justice review team's recommendations?

Ms. TOTH. Yes, certainly, Congressman.

You know, with the systematic assessment of EJ that the Commission has identified, they held a lot of both public and private community meetings to understand how the public felt about the NRC's engagements, certainly found things like improvements in translation services, providing longer notice ahead of public meetings, the kinds of learnings that an Office of Public Participation could learn and convey to NRC Commission staff to implement—to improve that—those functions.

Mr. CÁRDENAS. Thank you very much.

My time having expired, I yield back. Thank you very much, Mr.——

Mr. DUNCAN. The gentleman yields back. I now go to Mr. Walberg from Michigan. Five minutes.

Mr. WALBERG. Thank you, Mr. Chairman, and thank you to our second panel. It has been a long wait for you.

Mr. Merrifield, it is good to see you again since COP 27.

Mr. MERRIFIELD. Thank you very much.

Mr. WALBERG. It is about as warm here as it was back then.

Mr. MERRIFIELD. Indeed.

Mr. WALBERG. Yes. I spoke to the first panel about my draft legislation, the Nuclear Advisory Committee Reform Act. Could you talk to us about why the reforms laid out in this legislation are needed?

And along with that, would these changes actually produce better outcomes because the Advisory Committee on Reactor Safeguards will be focused on new and novel projects?

Mr. MERRIFIELD. Yes, thank you very much for that question. And this is an issue I have been thinking about since the late 1990s, when I was a Commissioner.

I interacted with the ACRS, and I engaged with them and used their work product in helping to make determinations as Commissioner. I engaged—and I had it read into the record—with the Nuclear Innovation Alliance in a study of ACRS. We interviewed over 40 individuals, most of them former NRC Commissioners, senior staff, ACRS members, and others, and came up with a series of recommendations not to get rid of ACRS, not to take away from the work it does on behalf of the Commission and the public, but to really target them to the most important things that they needed to be doing in order to enable the Commissioners to make sound decisions about the technologies that we are moving forward with, and to do so in a manner that was going to be efficient and effective.

And the recommendations that you have included in your legislation are consistent with what that attempted to achieve. We certainly—you know, I certainly support the work that you are doing there. We would certainly be committed to working with the committee to see if there are some additional improvements to your legislation we could make.

But at the end of the day, I think the Commission needs to be granted the authority, which it currently doesn't have under the Atomic Energy Act, to have some flexibility about how it deploys the ACRS to really look at the most technically difficult issues and free up some time for them to focus on that, and remove the current requirement that they have to review, in some cases, relatively mundane licensing areas that don't—where they don't, frankly, add value.

Mr. WALBERG. Good tools used by the right body ultimately help make the project work, doesn't it? Or we hope that is the case.

In addition to making sure that the NRC's regulatory requirements are appropriate, the right staff must be in place to do the work. There are some proposals to improve the NRC's ability to hire the right people, including one bill today, the Strengthening the NRC Workforce Act of 2023. However, I am concerned that we need a fix that provides certainty to companies that they would be working with a competent regulator in the long term.

And so, Mr. Merrifield, your testimony discusses this legislation as well as the need for the NRC to have qualified staff and leadership. Can you expand on that?

And then, secondarily, how can the NRC incorporate some of the best practices of private industry to attract the right staff?

Mr. MERRIFIELD. The NRC—thank you—the NRC is challenged right now. They have a retiring workforce. Frankly, as I mentioned, I think they have lost some of their technical capabilities as a re-

sult of that. And so having greater tools to make sure that they have got the right workforce makes sense.

I have looked at the Securities and Exchange Commission, FDIC, and others. There are other financial institutions which have been given greater flexibility to hire their workforce not simply at the entry level, but all the way up through senior management, to make sure that there is an appropriate workforce that is encouraged and employed. I think it is very important that they have diversity in that group, not just simply—I think they ought to be considering people who do have industry experience, who do have experience in other departments and agencies, because that was the kind of diversity we had when I was a Commissioner, and I think, frankly, the NRC needs more of it.

I do have a few concerns. I agree with the intent of the Strengthening the NRC Workforce Act. I am a little concerned about the authority is vested solely in the Chairman. I think those decisions should be with the Commission as a whole.

The limitations on the timing of that authority is somewhat limited. There may be reasons of which I am not aware. Maybe budgetary. I think those authorities should be given to the NRC for a longer period of time.

And I think, certainly, it would probably be worth considering having the Government Accountability Office and perhaps OMB engaged in dialogue about other tools that might be useful to enhance the ability of the agency to have what they need to attract a talented and capable workforce.

Mr. WALBERG. OK. Thank you.

My time is expired. I yield back.

Mr. DUNCAN. The gentleman yields back. I now go to Mr. Palmer for 5 minutes.

Mr. PALMER. Thank you, Mr. Chairman.

In the previous panel we had a discussion about the fact that the U.S. needs to decouple from China and Russia and other foreign sources for nuclear fuel. And one of the things that I have really been pushing is the conversion to advanced nuclear, but specifically following the model utilized by France with their standard design, but more specifically the model of what we would use with our nuclear fleet, our submarines and aircraft carriers.

And Mr. Merrifield, I just—I want to ask you, what is your—what are your thoughts about the ability to—for the NRC to expeditiously permit small modular nuclear reactors?

Mr. MERRIFIELD. I have a couple of different views. The first one is, as we discussed, I don't think the part 53 process that you are coming up with is going to be helpful and useful. Having said that, I think there is an identification that the existing 2-step process in part 50 and the 1-step process that can be used under part 52 can be used to deploy these reactor designs.

What I think is going to be important going forward is having a framework that the agency can deploy in which, after they have reviewed the first version of that design—whether it is TerraPower, X-energy, Terrestrial, Oklo, or others—that the—that what is required to deploy the next version of that same design should really be only focused on site-specific factors, and make it as speedy as possible.

Mr. PALMER. But isn't that one of the advantages of the small modular reactors, is that because they can be constructed outside fabricated parts, that site location—it is much easier to locate one of these than it is the traditional nuclear reactor?

Plus, they will fit into the grid where you have got all kind of grid issues with renewables and with the traditional nuclear. Isn't that—

Mr. MERRIFIELD. That is completely the case. I used to be—I used to work in the construction industry. We sold combined cycle gas units. Once you have got that design down, a nuclear reactor design down and licensed, it should be a very similar process.

In the 2000s we put in about 1,000 gigawatts of gas, either combined cycle, simple cycle, or other combustion units. The goal ought to be able to get to a point where we can deploy nuclear reactors, advanced nuclear reactors, in a similar, efficient way.

Mr. PALMER. You also use a lot less land space than you do with the renewables and the—and what we normally have with traditional nuclear.

And the other thing I want to point out is—because I keep hearing concerns about the use of nuclear with the—these are almost exactly the same. They have a little more generating capacity than a reactor on an aircraft carrier or a nuclear submarine, but the U.S. Navy has got 6,200 reactor years—that is over a 50-year period—with no accidents. This should be what, I think, the public should be pushing us toward. No emissions. These are modular units that are fabricated and located on a site connecting with the grid. It seems to me, in terms of eliminating emissions or reducing emissions, this is the best course to follow.

And the last thing is being able to recycle what we have always considered spent fuel rods, because my understanding is—again, going back somewhat to the French design, but what we could design with these—we could recover about 96 percent of the recoverable material from spent fuel rods. And that would decouple us to a certain extent from foreign supply.

Mr. MERRIFIELD. Yes. To your point, Congressman, we regularly park two aircraft carriers in San Diego, each of which contains two nuclear reactors. The public lives immediately in proximity to those reactors, and nobody thinks anything about it because of their safety. And that is the goal that, in my view, we can have for advanced nuclear technologies.

On your second point, advanced reactors do bring with them the promise of reutilizing what is considered now a waste, used nuclear fuel, and making it into a resource. And there are, from my count, probably at least four or five different companies out there today evaluating the potential of reutilizing that fuel, and I think that is a very exciting thing going forward.

Mr. PALMER. Mr. Chairman, I really appreciate the opportunity to have hearings like this. I think it is extremely helpful. And hopefully, if the public is paying attention to this, they got to—they should get a sense that we have a good idea of where we need to go.

With that, I yield back.

Mr. DUNCAN. The gentleman yields back. And now Mr. Balderson of Ohio is recognized for 5 minutes.

Mr. BALDERSON. Thank you, Mr. Chairman, and thank you all for being here today.

Mr. Merrifield, before I get to my questions, would you like to respond to some of the earlier comments regarding public participation?

Mary Martin from the committee just came back and asked me, "Mr. Merrifield, would you like to make some points?" Would you like to have any response to that, or—

Mr. MERRIFIELD. Yes, I just—I am firmly—a firm believer that the NRC can do—can and should do—a better job of engaging with the public in two-way communication and should also be leaning forward to provide information to communities that may host nuclear facilities. I fully agree with that, fully agree that more resources should be added there, fully agree that the agency staff should be more engaging with members of the public, should be providing them information about what is going on. All of that I am fully in agreement with.

I do have concerns about the creation of a new office in equal standing to the Office of Nuclear Reactor Regulation but with a mandate that will assist in submitting contentions and hearing requests which are ultimately a challenge to the NRC staff licensing process. Challenges could—would then be funded by taxpayer dollars, such that the NRC staff could essentially use taxpayer dollars to come up with new and creative ways to legally challenge its own licensing decisions, potentially delaying those decisions in the process.

So I agree that the agency needs to be—do more on engagement. I think that element of the agency funding a contentious process is not one I would support.

Mr. BALDERSON. Thank you. I will follow up with some of my other questions.

As you know, the nuclear industry requires a predictable licensing process in order to secure financial support from investors to commercialize their technologies. Regulatory predictability allows financiers to estimate timelines and cost accurately. Draft bills such as the Nuclear Licensing Efficiency Act seek to address this. Mr. Merrifield, what are your thoughts on the approach taken by these bills?

Mr. MERRIFIELD. As a general matter, I think many of the bills that are before this committee today are beneficial. I think I would include within that the Nuclear Licensing Efficiency Act. The U.S. NIC is supportive of the expedited review timelines contained in the legislation, and we would certainly be pleased to continue to work with the committee to enhance the legislation.

Mr. BALDERSON. What else can be done to strengthen these bills to support more of these new technologies?

Mr. MERRIFIELD. I am sorry, Congressman.

Mr. BALDERSON. I am sorry. What else can be done to strengthen these bills to support the commercialization of the new technologies?

Mr. MERRIFIELD. I think, well, frankly, one of the areas that was talked about earlier today was the process that is used to—the fee-based process used to apply to these reactor designs. And I do think that whole process was driven by the Omnibus Budget and

Reconciliation Act, which created the NRC as a fee-based agency. The current fleet of reactors did not have to go through that process. They had to pay a fee for licensing, but it was relatively modest in comparison.

I think there ought to be put into place some guidelines that would perhaps have a cost share requirement for advanced reactor developers—you know, 80 percent of the regulatory costs paid for by the Federal Government, 20 percent by the licensee, ability to perhaps waive fee requirements until after the reactors are built. I think there is a variety of things that could happen there that would be helpful.

I think also the agency should be held—you know, once it has accepted the application for review, it should be held to the timeline and perhaps be held to the amount of hours that it would spend on reviewing that application. And if it went beyond that time or beyond those hours, those would be borne by the Federal Fisc, rather than imposing those on an advanced reactor developer.

Mr. BALDERSON. OK. I would also like your thoughts, Ms. Korsnick and Mr. Nordhaus, on this particular subject. Would you like to add anything to that? What else can be done to strengthen the bills to support the commercialization of some of these technologies?

Ms. KORSNICK. Yes, I—earlier I think there was some conversation around maybe additional metrics that could be put in place, and I think that would allow for some of the transparency for how long is it taking to review some of this information, et cetera, so that you could see a pattern of improvement as they do more of these reviews, instead of a pattern of additional resources and more time, for example.

So I think some interesting metrics that would have to be reported back to Congress would be interesting.

Mr. BALDERSON. OK. Mr. Nordhaus, sir.

Mr. NORDHAUS. I would agree. I think that, you know, I will just sort of connect this a little bit to some of the discussion around staffing and workforce issues—

Mr. BALDERSON. OK.

Mr. NORDHAUS [continuing]. Which is I think there is reasonable concern that, if you don't have an accountable, streamlined, performance-based licensing process and you add additional staff, that you don't actually get additional efficiencies. So I think that the staffing and workforce issues at the NRC need to be much more explicitly tied to expectations of expeditious review, and—

Mr. BALDERSON. Thank you very much, Mr. Chairman. I yield back.

Mr. DUNCAN. The gentleman yields back. Now Mr. Pfluger is recognized for 5 minutes.

Mr. PFLUGER. Thank you, Mr. Chairman, and I thank the witnesses for being here.

You know, one of the things that we keep talking about in this committee is just the speed of relevancy, doing things in the regulatory process that allow us to compete. And, you know, nobody knows bureaucratic red tape better than this panel of witnesses. We appreciate you helping us push back on that.

And I also appreciate my colleague from Texas bringing up Abilene Christian and the work that they are doing. This is the kind of innovation that we, as the government, we set the conditions and then get out of the way. And let's let either private industry or these partnerships or universities do what they do best.

Ms. KORSNICK. One thing that you brought up—and I appreciate it—is a need for a—not an interim storage but a permanent repository. And so I couldn't agree more. And we actually have been pushing back fervently in Andrews, Texas, against an interim storage facility that—you know, we have got Yucca Mountain. It is the law of the land. And how do we, in your opinion, get to that permanent facility there, and what needs to be done either by the NRC or by Congress in order to get to that point?

Ms. KORSNICK. Well, thank you, and thanks for the question.

You know, I guess I would just step back for a minute and just recognize that the industry and ratepayers have done their part in establishing a fund to establish a long-term repository or a durable fuel solution. There is over \$40 billion in that fund today. And it is really—the Government needs to get to yes on this. We need a long-term geologic repository. Whether or not we reprocess, whether or not we have, you know, interim storage, all of those can be pieces and parts. But at the end of the day, you are going to have to have a long-term repository, regardless.

You know, we can look around the world and say, well, let's see, Finland is doing it, Sweden is doing it, Switzerland is doing it, France is doing something, Canada is making some progress, so is the UK. I have a high level of confidence in the United States of America that we can figure this out. It is not a technical challenge.

We just need to move forward with it and, at the end of the day, act as we should and come up with a long-term repository. Because then things like interim storage, they make sense. They make sense because people understand there is a long-term answer, and people have a view of being interim. OK, I know I am interim because there is something long term. It is much harder to convince somebody they are interim when there is nothing else around.

Mr. PFLUGER. What a great point.

And I would like to thank the chairman for his leadership on this particular subject, which is helping get us—get the Government to yes. And there are many of us who are pushing for that. So thank you for your testimony there.

Mr. Nordhaus, I enjoyed your commentary on the modernization of our environmental review, NEPA process, and how we can get to—have the speed of relevancy. And maybe can you spend a couple of minutes expanding on other areas outside of the EA, the EIS, the analysis and impact statement, about how we can actually compete and innovate and build and get to where we need to. Because I am worried about competing with China right now and other countries, that we are not doing things at the speed of relevancy.

Mr. MERRIFIELD. Was that—

Mr. PFLUGER. Sorry, I am looking at you, Mr. Merrifield, but I mean Mr. Nordhaus.

Mr. MERRIFIELD. OK.

Mr. PFLUGER. Very confusing when you—Mr. Merrifield is looking at me going, "Is that for me?"

[Laughter.]

Mr. NORDHAUS. I was a little—could you briefly restate the question?

Mr. PFLUGER. Yes, just looking at environmental impact statements and analyses, the recent legislation that we passed to modernize those, to shorten them, to bring them into the speed of relevancy, can you just comment and summarize—

Mr. NORDHAUS. Yes—

Mr. PFLUGER [continuing]. What needs to be done, either outside of that or in addition to that?

Mr. NORDHAUS. Well, you know, again, I think, you know, in your role providing oversight and accountability over the NRC, I mean, I think it needs to be clear that the NRC needs to move sort of quickly to comply with the new requirements in the Fiscal Responsibility Act.

I think that the NRC could also sort of remove new reactors as an automatic sort of trigger for EIS, for an EIS project. Our view is that it should be sort of based on whether there is significant impact associated. You know, a small, factory-manufactured reactor shouldn't necessarily automatically have to kind of comply with an EIS in the way that we have historically required large reactors to do so.

So those are two things that I think would sort of make a big difference.

Mr. PFLUGER. Mr. Chairman, may I have 30 seconds for my snafu?

So what is the threat if we don't comply with the Fiscal Responsibility Act, if we don't actually implement what the reforms to NEPA have stated for us? What is the real threat to the country?

Mr. NORDHAUS. I just think we are likely to sort of end up what we have sort of had to date, which is just a lot more sort of automatic sort of deferral to an EIS process when it is not necessarily needed. So—

Mr. PFLUGER. So thank you very much.

Mr. Chairman, I yield back.

VOICE. Mr. Chairman, can I just—

Mr. DUNCAN. The gentleman yields back, and I now go to Mr. Carter for 5 minutes.

Mr. CARTER. Thank you, Mr. Chairman, and thank you all for being here. I know it has been a long day for you, but we appreciate it because this is extremely important.

You know, according to the Department of Energy Strategy to Restore American Nuclear Energy Leadership—and that is a mouthful—but according to this group, the U.S. is missing out on a nuclear reactor market that is valued between 500 and 750 billion dollars a year—over the next 10 years, I should say. I mean, economically, just economically speaking—and never mind that we are talking about baseload, reliable, clean energy—just from an economic perspective, we ought to be pursuing this.

Not only that, but looking at it from a worldview, and looking at it from our allies, from our adversaries—and I know this is preaching to the choir here, I know you all know this, but it is important that I repeat this because we know that China is providing over 80 percent of the financing for its nuclear power plants, and we

know why they are doing it. We know that they are, in some places, even 85 percent. I mean, that is practically giving it away. But what you have to take along with that, as we all know, is something that I think a lot of these countries, particularly these developing countries, are going to find out is very difficult.

But we have had some successes here in America too. In fact, Romania canceled its plans to work on a—work with China on a nuclear plant and instead is working with a U.S. group. That is good news.

Also, Westinghouse building in Poland and the Czech Republic, and excluded Russia and Chinese from bidding on these. So we have got the ability, we have got the knowledge, we have got everything we need, we just need to utilize it and we need to take it.

I want to ask you this question. I will start with you, Ms. Korsnick. Did I get it right? OK.

Let me ask you: With China and Russia rapidly expanding their nuclear reach around the globe, have we already ceded that opportunity to our adversaries?

Ms. KORSNICK. Well, thanks for the question. I think we should be incredibly proud of the innovation that we do here in the United States. And our innovation pipeline is chockablock full, ready to come out with several different designs.

So, no, I don't think we have ceded our leadership. I think China and Russia—and Russia, specifically, with their bad behavior in Ukraine—I think have given a lot of people an opportunity to stand up and take notice. We have watched them cut off the gas supply to Europe, and so they wouldn't do anything different if you—if they owned all the nuclear plants. They would shut them down, too, right?

Mr. CARTER. Absolutely.

Ms. KORSNICK. So it matters who you do business with. It matters who you want to form a 100-year relationship with.

Mr. CARTER. And it matters that we should be pursuing that.

Ms. KORSNICK. Absolutely. It should be a strategic imperative of this country—

Mr. CARTER. Absolutely, thank you.

Ms. KORSNICK [continuing]. To absolutely want to make sure that this happens.

Mr. CARTER. Mr. Merrifield, do you want to comment on that?

Mr. MERRIFIELD. Yes, I want to give kudos. I think the Ex-Im Bank has been working hard to partner with Westinghouse and others to allow those to be deployed. I concur with Maria. We have got the technologies. We have the ability to get out there and win those markets.

I would say the Development Finance Corporation has been given tools to do more, including having some authorities in equity participation. I think that needs to be encouraged. I think DFC has got to do more in that area.

I would also say it is appalling, as the largest contributor to the World Bank, the United States nonetheless is burdened with the fact, as are others, that a small number of antinuclear countries, including Germany, Austria, and Ireland, are keeping us from allowing to tap into World Bank funding to enable these technologies

to deploy to countries in Africa and elsewhere. That is appalling to me, and I think the United States Government—

Mr. CARTER. That is a great point. I had the opportunity to visit Europe with the Conservative Climate Caucus, and I will tell you that they have allowed—particularly in Germany, they have allowed their policies to get ahead of their innovation, and closing all their nuclear plants, relying on wind and solar, and now they are having to go back to fire—to coal power. And that is just inexcusable.

Now, granted, some of it was due to what happened in Ukraine and Russia, but still, it was shortsighted on their part.

Nevertheless, we understand our natural allies, that we can have some success with them. What about the developing countries? What can we do to better position ourselves with those countries?

Mr. MERRIFIELD. We engage a lot as a law firm with countries in Africa and in Asia that are developing.

Mr. CARTER. But they are just looking for the cheapest thing.

Mr. MERRIFIELD. They—

Mr. CARTER. They just want energy, period.

Mr. MERRIFIELD. I will tell you, they—and when it comes to nuclear, given their choices, they know what the situation is with China. They know what the situation is with Russia. They would prefer to have U.S. technologies. We, as a government, need to find the tools to help them achieve that choice.

Mr. CARTER. Great. Thank you. Thank you all again.

And I yield back.

Mr. DUNCAN. I thank the gentleman, his time has expired. I will go to—now to Mr. Allen for 5 minutes.

Mr. ALLEN. Thank you, Chair Duncan. This is an important hearing.

Our energy demand is continuing to grow across the world. We saw that play out last winter, and particularly in Germany, where they, unfortunately, had a lot of folks that, you know, didn't have heat, and a lot of lives were lost.

I want to thank you all for being here today and talking about this process. Advancing nuclear energy legislation in our country is critical, in my mind, not only for energy security, but national security. And we should continue to dominate this market.

You know, we talked, I think, a lot about China today and what they are doing. In my district Plant Vogtle, home to units 3 and 4, will be the first two nuclear power plants built to come online in the United States in over three decades. Unit 3 is projected to be in service at the end of this month, and unit 4 is projected to be in service the first of the year. You know, this is—and I have been through this with Southern Company, and it has been a tremendous accomplishment. Lots of things, there were lots of headwinds, regulatory changes and things like that, which they experienced on 1 and 2.

But, you know, they persevered, and the accomplishment also highlights the importance of investing in critical infrastructure to enable the next generation of nuclear technologies. What I was told is, you know, these are the new Westinghouse units. There was a learning curve. But guess what? We have the people now that know how to build these things.

And so what I would like to get to here today is to find out how do we go—I know there is the new module reactors and things like that, but it is going to be a while for those to—you know, because once you get these things built, it costs very little to operate them. And it is still less than a penny a kilowatt hour. But as we look forward, you know, what can we do?

And I know that, you know, it is part of the administration. And, of course, you know, Congress has its role in this. But as Congressman Carter mentioned, it gets to the point where you can't afford to build these things. I mean, it is just too much risk. And even on units 3 and 4, the government had to back those bonds and—which changed a lot of how it was constructed.

But I am proud to work on a version of the Nuclear Licensing Efficiency Act.

And I would say—I would ask this question to Mr. Nordhaus and Mr. Merrifield and Ms. Korsnick. Could you share your thoughts on this and the—and, you know, what do we need to do to, one—I mean, you see countries like France developing these technologies. What have we got to do here in our Nation to understand nuclear and use it to our benefit?

Mr. MERRIFIELD. I think Congress has taken a number of steps over the last several years to incentivize the deployment of advanced nuclear, whether it is through changes such as envisioned in this legislation to improve the licensing process, or certain funding.

To deploy those internationally, I think the AP-1000 is a good example. Lessons have been learned. We have got potential markets in Poland, Ukraine, Czech Republic, and others in Eastern Europe, and I think having the Government tools used by Ex-Im Bank, Development Finance Corporation, and others could be very helpful in getting those designs deployed.

Similarly, GE, TerraPower, other—X-energy, other designs which are out there certainly could use those same tools as well.

Ms. KORSNICK. I guess I would add quickly that we need to build it here first. And I really commend the work that has happened at Plant Vogtle, and I commend the fact that the companies, you know, stuck to it even when times got tough. I know that was hard, but we should be very proud of that advanced technology that is now going to be in operation here in the United States.

And in that same way, we have to build the SMRs and build the microreactors, because if you are going to build it in Romania and Poland and Ghana and all these other places, you know what? They want to see it here first. They want to see that you built it. They want to know that you did it well. They want to know that your regulator approved it.

And so, you know, I look at this and say, oh, my gosh, we just have to move quickly—not only quickly to help ourselves, we need to move quickly so we can demonstrate to our allies that we can build it in their place too.

Mr. ALLEN. OK. I am out of time. But, sir, would you like—Mr. Nordhaus, would you like to comment?

Mr. NORDHAUS. I will just say that the advantage of the smaller reactors is that I think there is more likelihood that we can do it with project finance without these huge sort of government back-

stops. And it doesn't sort of require the same kind of huge, you know, 60-year, \$20 billion—

Mr. ALLEN. Right.

Mr. NORDHAUS [continuing]. Bet on future electricity production that a big plant like the Vogtle plant costs.

So hopefully, we start to see some AP-300s and some NuScale reactors, and some TerraPower reactors, and some smaller reactors, where we can sort of start to scale and get some of that learning without necessarily needing to make the same kind of one-off sort of bet the farm on a gigawatt scale reactor.

Mr. ALLEN. OK, Mr. Chairman, I apologize, I am over my time.

Mr. DUNCAN. That is OK.

Mr. ALLEN. But I yield back.

Mr. DUNCAN. You were at the end, and we needed to hear the answer.

I want to thank all of our witnesses for being here today. You all have been great. Both panels, really.

Members have additional written questions for you, I am sure. I do, as well. And I will remind Members they have 10 business days to submit additional questions for the record. I ask the witnesses do their best to submit responses within 10 business days upon receipt of the questions.

I ask unanimous consent to insert in the record documents included on the staff hearing document list, other documents that were provided today.

Without objection, that will be the order.

[The information appears at the conclusion of the hearing.]

Mr. DUNCAN. And without objection, the subcommittee will be adjourned.

[Whereupon, at 3:15 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

**U.S. House Committee on Energy and Commerce
Subcommittee on Energy, Climate, and Grid Security
"American Nuclear Energy Expansion: Updating Policies for Efficient,
Predictable Licensing and Deployment"
[July 18, 2023]**

1. Letter to U.S. Nuclear Regulatory Commission Chairman Christopher T. Hanson from Members of the U.S. Congress, July 14, 2023, submitted by the Majority.
2. Letter to Speaker Nancy Pelosi from Nuclear Regulatory Commission Commissioner Dale E. Klein, June 9, 2008, submitted by the Majority.
3. A report from the Nuclear Innovation Alliance entitled "Improving the Effectiveness and Efficiency of the Advisory Committee on Reactor Safeguards" March 2023, submitted by the Majority.
4. Remarks of Jeffrey S. Merrifield to the American Nuclear Society Annual Meeting, June 13, 2023, submitted by the Majority.
5. American Nuclear Society response to House Committee on Energy and Commerce nuclear RFI request, May 5, 2023, submitted by the Majority.
6. The Breakthrough Institute response to House Committee on Energy and Commerce nuclear RFI request, May 5, 2023, submitted by the Majority.
7. Clean Air Task Force response to House Committee on Energy and Commerce nuclear RFI request, May 5, 2023, submitted by the Majority.
8. ClearPath response to House Committee on Energy and Commerce nuclear RFI request, May 5, 2023, submitted by the Majority.
9. Idaho National Laboratory response to House Committee on Energy and Commerce nuclear RFI request, April 26, 2023, submitted by the Majority.
10. Idaho National Laboratory report entitled "Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process" April 2023, submitted by the Majority.¹
11. Nuclear Energy Institute response to House Committee on Energy and Commerce nuclear RFI request, May 4, 2023, submitted by the Majority.
12. Nuclear Innovation Alliance response to House Committee on Energy and Commerce nuclear RFI request, May 5, 2023, submitted by the Majority.
13. Letter to Chair Rodgers, Ranking Member Pallone, Chairman Duncan, and Ranking Member DeGette from Nuclear Innovation Alliance, July 17, 2023, submitted by the Majority.

14. Third Way response to House Committee on Energy and Commerce nuclear RFI request, May 8, 2023, submitted by the Majority.
15. United States Nuclear Industry Council response to House Committee on Energy and Commerce nuclear RFI request, May 4, 2023, submitted by the Majority.
16. Letter to Chair Rodgers, Ranking Member Pallone, Chairman Duncan, and Ranking Member DeGette from the Uranium Producers of America, July 18, 2023, submitted by Rep. Latta.

¹ The Idaho National Laboratory report has been retained in committee files and is included in the Documents for the Record at <https://docs.house.gov/meetings/IF/IF03/20230718/116255/HHRG-118-IF03-20230718-SD028.pdf>.

Congress of the United States
Washington, DC 20510

July 14, 2023

The Honorable Christopher T. Hanson
Chairman
US Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Dear Chairman Hanson,

We write to urge you to carefully review and modify, as necessary, the proposed rule titled “Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors” to enable the successful use of the rule for licensing of advanced nuclear reactors.

In 2018, Congress passed the Nuclear Energy Innovation and Modernization Act (NEIMA) with broad bipartisan support.¹ This law reformed the Nuclear Regulatory Commission’s (NRC) fee structure and required regulatory reforms to help enable efficient licensing of advanced nuclear reactor technologies.

NEIMA included specific direction for the Commission to “complete a rulemaking to establish a technology-inclusive, regulatory framework for optional use by commercial advanced nuclear reactor applicants for new reactor license applications” by December 31, 2027.²

To implement this direction, the Commission, with congressional support, directed the NRC staff to develop the rulemaking on an accelerated schedule.³ This schedule has provided the Commission with sufficient time to address issues identified during the rulemaking drafting process, while still complying with the statutory deadline.

Following the Commission’s direction, the NRC staff took an iterative approach that resulted in extensive public interaction as the proposed rule was developed.⁴ By September 2022, some 130 public comments were submitted in response to the proposal.⁵

¹ P.L. 115-439.

² NEIMA defines the term “technology-inclusive regulatory framework” as a “regulatory framework developed using methods of evaluation that are flexible and practicable for application to a variety of reactor technologies, including, where appropriate, the use of risk-informed and performance-based techniques and other tools and methods.”

³ <https://www.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/part-53.html>

⁴ <https://www.nrc.gov/docs/ML2116/ML21162A095.pdf> (“Since September 2020, the NRC staff has held 24 public meetings with external stakeholders and 16 public meetings with the [Advisory Committee on Reactor Safeguards] to discuss the Part 53 rulemaking.”).

⁵ <https://www.regulations.gov/document/NRC-2019-0062-0012/comment>

On March 1, 2023, the NRC staff provided the Commission with the proposed rule, known as the “Part 53” rule.⁶ The proposed rule includes 1,173 pages and is supported by a draft environmental assessment, a draft regulatory analysis, and a staff analysis of alternative approaches to selected topics.⁷

We recognize the NRC staff’s efforts to draft a proposal that balances flexibility for different technologies while providing sufficient predictability for applicants. Throughout the NRC’s staff work on the rulemaking, a few key issues were consistently identified that are left for the Commission to resolve.⁸ There is general agreement among stakeholders that some of the most important issues that a final Part 53 rule must address include:

- a two-framework structure that limits the proposed rule’s overall benefit;
- the use of Quantitative Health Objectives (QHOs) as performance criteria;
- the inclusion of the principle of “As Low As Reasonably Achievable” (ALARA) as a design requirement;
- the requirement to protect against “beyond-design-basis-events” (BDBEs) in the design basis;
- the inclusion of a facility safety program; and
- inconsistent application of new programs and terminology.

Any newly established Part 53 regulations must enable the NRC to fulfill its mission to “provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security and to protect the environment.”⁹ We appreciate the NRC staff’s hard work, but it is incumbent on the Commission to ensure that the final rule meets the intent of the law.

We all agree that a successful Part 53 regulatory framework should reflect congressional intent and be used to license the next generation of nuclear reactors. In order to be effective, we urge the Commission to work to address any outstanding issues prior to issuance of a final rule. Your review and modifications of the proposed rule will determine if that success is achieved. We appreciate that all five Commissioners recently agreed that the framework must be usable, and you committed to provide specific direction to resolve outstanding issues.¹⁰

While the initial advanced reactor applications are expected to use existing licensing frameworks, it is critical and urgent that the new framework is established with the capacity to

⁶ The proposed rule is referenced as the “Part 53” rule for its expected location in the Code of Federal Regulations.

⁷ <https://www.nrc.gov/docs/ML2116/ML21162A102.pdf>

⁸ See, for example, Patrick White on behalf of Nuclear Innovation Alliance “[NIA Public Comment on Part 53 Rulemaking Process](#),” August 31, 2022; Adam Stein on behalf of Breakthrough Institute, “[Comment on Part 53 \[Regulation Identified Number RIN-3150-AK31; Docket ID NRC-2019-0062\]](#),” August 31, 2022; Brett Rampal on behalf of Clean Air Task Force, “[Comments on Clean Air Task Force in Response to the U.S. Nuclear Regulatory Commission’s Proposed Rule on ‘Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors.’](#)” 85 Fed Reg. 71,002 (Nov. 6, 2020), Docket ID No. NRC-2019-0062.”

⁹ <https://www.nrc.gov/about-nrc.html>

¹⁰ US Senate Committee on Environment and Public Works, “The Nuclear Regulatory Commission’s Proposed Fiscal Year 2024 Budget,” April 19, 2023.

license the large volume of applications necessary to meet our energy and national security priorities, provide grid reliability, and achieve our environmental goals.

As you provide your specific revisions to the proposed rule, we urge you to consider previous and ongoing efforts by public stakeholders, and to utilize the public comment portion of the rulemaking process to seek specific information that may be incorporated into the final rule.

We thank you for your thoughtful consideration of our request.

Sincerely,



Thomas R. Carper
Chair
Committee on Environment & Public Works



Cathy McMorris Rogers
Chair
Committee on Energy & Commerce



Shelley Moore Capito
Ranking Member
Committee on Environment & Public Works



Frank Pallone, Jr.
Ranking Member
Committee on Energy & Commerce



Tammy Duckworth
United States Senator



Michael C. Burgess, M.D.
Member of Congress



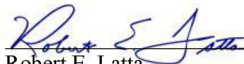
Chris Coons
United States Senator



Diana DeGette
Member of Congress



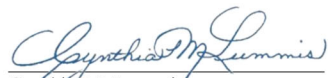
Pete Ricketts
United States Senator



Robert E. Latta
Member of Congress



Deb Fischer
United States Senator



Cynthia M. Lummis
United States Senator



Martin Heinrich
United States Senator



Ted Budd
United States Senator



James E. Risch
United States Senator



Kevin Cramer
United States Senator



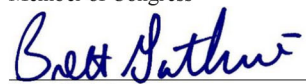
Benjamin L. Cardin
United States Senator



Roger F. Wicker
United States Senator



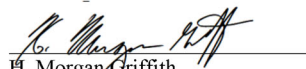
Doris Matsui
Member of Congress



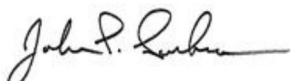
Brett Guthrie
Member of Congress



Kathy Castor
Member of Congress



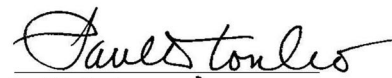
H. Morgan Griffith
Member of Congress



John P. Sarbanes
Member of Congress



Bill Johnson
Member of Congress



Paul D. Tonko
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Gus M. Bilirakis
Member of Congress



Sheldon Whitehouse
United States Senator



Tony Cardenas
Member of Congress



Lindsey O. Graham
United States Senator



Larry Bucshon, M.D.
Member of Congress



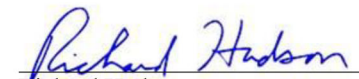
Mark Kelly
United States Senator



Scott H. Peters
Member of Congress



Mike Crapo
United States Senator



Richard Hudson
Member of Congress



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United States Senator



Marc A. Veasey
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Kyrsten Sinema
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Tim Walberg
Member of Congress



Joe Manchin III
United States Senator



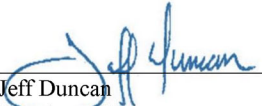
Ann McLane Kuster
Member of Congress



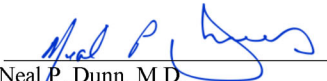
Earl L. "Buddy" Carter
Member of Congress



Lisa Blunt Rochester
Member of Congress

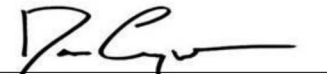

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 Neal P. Dunn, M.D.
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 Debbie Lesko
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 Dan Crenshaw
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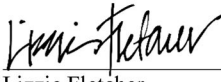

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 Rick W. Allen
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 Darren Soto
 Member of Congress

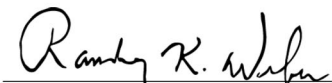

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Russ Fulcher
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August Pfluger
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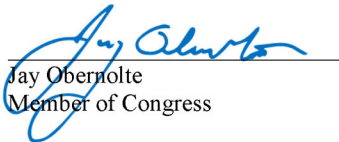
Diana Harshbarger
Member of Congress



Mariannette Miller Meeks, M.D.
Member of Congress



Kat Cammack
Member of Congress



Jay Obernolte
Member of Congress

Identical letter sent to:

The Honorable Christopher T. Hanson
Chairman
US Nuclear Regulatory Commission

The Honorable David A. Wright
Commissioner
US Nuclear Regulatory Commission

The Honorable Annie Caputo
Commissioner
US Nuclear Regulatory Commission

The Honorable Bradley Crowell
Commissioner
US Nuclear Regulatory Commission

June 9, 2008

The Honorable Nancy Pelosi
Speaker of the House of Representatives
Washington, D.C. 20515

Dear Madam Speaker:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am pleased to provide an NRC draft bill that would amend the Atomic Energy Act of 1954 (AEA) and the Energy Reorganization Act of 1974. These provisions are intended to enhance the efficiency of NRC operations, the security of NRC-regulated facilities, and compliance with NRC regulatory requirements.

More specifically, this legislation would accomplish the following objectives:

- (1) Eliminate the requirement to hold uncontested hearings on applications to the NRC for granting a construction permit for a utilization or production facility, or for granting a combined construction and operating license under the AEA, or for issuance of a license under AEA sections 53 and 63 for the construction and operation of any uranium enrichment facility;
- (2) Reduce the program briefings of the Commission on NRC's Equal Employment Opportunity program from two to one per year;
- (3) Ensure that NRC certificate holders and their contractors and subcontractors will be subject to civil penalties for AEA violations and violations of certain provisions of the Nuclear Waste Policy Act of 1982; and
- (4) Provide the Commission with authority to require fingerprinting of (a) individuals designated by licensees or certificate holders to review the trustworthiness and reliability of individuals who are already required to be fingerprinted under AEA section 149, (b) employees of licensees or certificate holders who have authority to grant unescorted access to a utilization facility, or to designated radioactive material or other property, and (c) principal operating officers (or their equivalent) of individuals and entities already required to conduct fingerprinting under AEA section 149.

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A draft bill and a legislative memorandum explaining the need for the provisions of the bill are enclosed with this letter.

Sincerely,

/RA/

Dale E. Klein

Enclosures:

1. Draft Bill
2. Legislative Memorandum

Identical letter sent to:

The Honorable Nancy Pelosi
Speaker of the House of Representatives
Washington, D.C. 20515

The Honorable Richard B. Cheney
President of the Senate
Washington, D.C. 20510

The Honorable Thomas R. Carper
Chairman, Subcommittee on Clean Air
and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510
cc: Senator George V. Voinovich

The Honorable Barbara Boxer
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, D.C. 20510
cc: Senator James M. Inhofe

The Honorable Rick Boucher
Chairman, Subcommittee on Energy
and Air Quality
Committee on Energy and Commerce
United States House of Representatives
Washington, D.C. 20515
cc: Representative Fred Upton

The Honorable John D. Dingell
Chairman, Committee on Energy
and Commerce
United States House of Representatives
Washington, D.C. 20515
cc: Representative Joe Barton

The Honorable Peter J. Visclosky
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States House of Representatives
Washington, D.C. 20515
cc: Representative David L. Hobson

The Honorable Byron Dorgan
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, D.C. 20510
cc: Senator Pete V. Domenici

DRAFT BILL

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that this Act may be cited as the "Act to Streamline the Nuclear Regulatory Commission's Licensing Process and Administrative Efficiency".

SEC. 2. HEARINGS UNDER ATOMIC ENERGY ACT OF 1954.

(a) Section 189 a.(1)(A) of the Atomic Energy Act of 1954 (42 U.S.C. 2239(a)(1)(A)) is amended by--

(1) in the second sentence--

- (i) deleting that portion of the sentence that begins with "The Commission" and ends with "Federal Register, on" and inserting "On";
- (ii) inserting "or an operating license" after "construction permit" each time "construction permit" is used in the sentence; and
- (iii) deleting the period at the end of the sentence; and

(2) in the third sentence--

- (i) deleting that portion of the sentence that begins with "In cases" and ends with "such a hearing";
- (ii) deleting "therefor" and inserting "for a hearing"; and
- (iii) deleting "issue an operating license" and inserting "issue a construction permit, an operating license,".

(b) Section 189 of the Atomic Energy Act of 1954 (42 U.S.C. 2239) is further amended by--

- (1) in the second sentence of subsection a.(2)(A) (42 U.S.C. 2239(a)(2)(A)), deleting "required hearing" and inserting "hearing held by the Commission under this section"; and

(2) in subsection b. (42 U.S.C. 2239(b)), revising paragraph (2) by deleting "to begin operating" and inserting "to operate".

(c) The first sentence of subsection b. of section 185 of the Atomic Energy Act of 1954 (42 U.S.C. 2235(b)) is amended by deleting "After holding a public hearing under section 189 a.(1)(A)," and inserting "After holding a hearing under section 189 a.(1)(A), or if the Commission has determined that no hearing is required to be held under section 189 a.(1)(A),".

(d) Section 193(b) of the Atomic Energy Act of 1954 (42 U.S.C. 2243(b)) is amended by—

(1) in paragraph (1), deleting "on the record with regard to the licensing of the construction and operation of a uranium enrichment facility under sections 53 and 63" and inserting ", if a person whose interest may be affected by the construction and operation of a uranium enrichment facility under sections 53 and 63 has requested a hearing regarding the licensing of the construction and operation of the facility"; and

(2) in paragraph (2), deleting "Such hearing" and inserting, "If a hearing is held under paragraph (1), the hearing".

(e) The amendments in this section shall apply to all applications and proceedings pending before the Commission on or after the date of enactment of this section.

SEC. 3 REPORT ON EQUAL EMPLOYMENT OPPORTUNITY PROGRAM.

Section 209(c) of the Energy Reorganization Act of 1974 (42 U.S.C. 5849(c)) is amended by deleting "semiannual public meetings" and inserting "an annual public meeting".

SEC. 4. CIVIL MONETARY PENALTIES.

The first sentence of section 234 a. of the Atomic Energy Act of 1954 (42 U.S.C. 2282(a)) is amended by—

- (1) inserting “(including a contractor or subcontractor of a licensee or certificate holder of the Commission or of an applicant for a Commission license or certificate)” after “Any person”; and
- (2) striking “any licensing or certification provision of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, 109, or 1701” and inserting: “any Commission regulatory requirement issued pursuant to or contained in this Act or section 133, 137, 180, or 218(a) of the Nuclear Waste Policy Act of 1982 (42 U.S.C. 10101 *et seq.*)”.

SEC. 5. ENHANCED FINGERPRINTING REQUIREMENTS.

Section 149 a.(1) of the Atomic Energy Act of 1954 (42 U.S.C. 2169) is amended by adding the following new subparagraph after subparagraph (B):

“(C) In addition to the foregoing fingerprinting requirements of this paragraph, the Commission may require an individual or entity described in subparagraph (A)(ii) to fingerprint—

“(i) any individual who has been designated by the individual or entity described in subparagraph A(ii) (or by a contractor or subcontractor of such individual or entity) to determine the trustworthiness and reliability of an individual who is required to be fingerprinted under subparagraph (B).”

“(ii) any individual who is in the employ of the individual or entity described in subparagraph (A)(ii) (or a contractor or subcontractor of such individual or entity) and who has authority relating to provision of unescorted

access to a facility, radioactive material, or other property described in subparagraph (B)(i)," or

"(iii) any individual who is, or holds a position equivalent to, the principal operating officer, or alternate principal operating officer, of the individual or entity described in subparagraph (A)(ii)."

LEGISLATIVE MEMORANDUMSEC. 2. HEARINGS UNDER ATOMIC ENERGY ACT OF 1954.

This section would eliminate the requirement of section 189 a. of the Atomic Energy Act of 1954 that the Commission hold a hearing in proceedings on each application for granting a construction permit for a nuclear reactor facility under section of 103 or 104 b. of the Act or for granting a construction permit for a testing facility under section 104 c. of the Act or for granting a combined construction and operating license under section 185 of the Act, even if no person whose interest is determined to be affected by the proceeding has requested a hearing or been granted intervention. Similarly, the requirement of section 193(b) of the Act that would require a hearing in an uncontested proceeding to license construction and operation of a uranium enrichment facility would be eliminated. In the latter case, the requirement that such hearings be on the record – the only such requirement with respect to an adjudicatory hearing contained in the Atomic Energy Act – would also be eliminated.

The Commission has found that there is not much added value in holding uncontested hearings. Over fifty years ago, a 1957 amendment added the requirement for mandatory hearings to the Atomic Energy Act of 1954. Since then, the means and methods for public access to the Commission's actions, both legally mandated and voluntarily undertaken, have become numerous and significant. Enactment of the Freedom of Information Act and the Government in the Sunshine Act, the advent of the internet, and web-based access to NRC's documented actions through the NRC's Agency-wide Documents Access and Management System (ADAMS) have all contributed to making NRC's actions transparent and accessible. Furthermore, even with the elimination of the mandatory hearing requirements, the agency staff

Enclosure 2

would continue to prepare a safety analysis report and an environmental statement, and the Advisory Committee on Reactor Safeguards would continue to provide an independent assessment of each power reactor application. The Commission could not issue a license until it had concluded that all regulatory requirements had been satisfied. And, of course, this would in no way affect the right of persons whose interest are affected from requesting a hearing on specific matters.

The changes in Commission licensing procedures addressed in this section would take effect upon enactment of the legislation, and would apply to new applications and proceedings, as well as any pending proceedings. This would obviate the need for the Commission to expend resources on uncontested proceedings.

These changes will streamline the Commission's licensing process under the Atomic Energy Act, saving time and scarce resources in a period in which a large number of reactor licensing applications are expected to be submitted to the Commission.

SEC. 3. REPORT ON EQUAL EMPLOYMENT OPPORTUNITY PROGRAM.

The Energy Reorganization Act of 1974 currently requires two annual program briefings of the Commission on the NRC's Equal Employment Opportunity (EEO) Program. These briefings involve extensive research and data-collection related to the agency's accomplishments, program assessments, and challenges, and are resource-intensive. History has demonstrated that the agency does not experience substantial changes in a six-month period and that annual briefings would be sufficient to keep the Commission apprised of the EEO and related programs.

To the Commission's knowledge, the NRC is the only Federal agency that is required to hold public briefings on the agency's EEO program. Holding only one briefing per year would not detract from the purpose of the EEO briefings, and would conserve agency resources.

Furthermore, this reduction would not negate the agency's efforts to ensure that equal employment opportunity is, as required by Executive Order 11478, an "integral part of every aspect of personnel policy and practice in the employment, development, advancement, and treatment of civilian employees in the Federal Government."

SEC. 4. CIVIL MONETARY PENALTIES.

This section would expand the Nuclear Regulatory Commission's authority to issue civil penalties. The Commission currently has authority, under section 234 of the Atomic Energy Act of 1954 (AEA), to issue civil penalties to licensees and certificate holders of the Commission. However, that authority only extends to violations of licensing or certification provisions listed in section 234 of the AEA (or any rule, regulation, or order, or any term, condition, or limitation of a license or certificate issued thereunder). The amendment would also clarify that contractors and subcontractors of a Commission licensee or certificate holder, or of an applicant for a Commission license or certificate, are subject to civil penalties.

Congress amended section 234 of the AEA in the Omnibus Consolidated Rescissions and Appropriations Act of 1996 (Public Law 104-134), to give the Commission authority to issue civil penalties for violations related to gaseous diffusion enrichment plants, which must receive a certificate of compliance from the Commission, rather than a license, under section 1701 of the AEA. That amendment made certificate holders subject to civil penalties, but only if the certificates were issued pursuant to one of the statutory provisions listed in section 234.

However, the current authority does not extend to all certificate holders. For example, certificates of compliance are also issued by the NRC for the design of spent fuel storage casks under provisions of the Nuclear Waste Policy Act of 1982 (NWPA). Since these provisions are not listed in section 234 of the AEA, the Commission does not currently have the authority under section 234 of the AEA to issue civil penalties based on these certificates of compliance.

Broadening the scope of section 234 of the AEA would authorize the Commission to assess civil penalties based on violation of any Commission regulatory requirement issued pursuant to, or contained in, the AEA or specified sections of the NWPA.

The proposed amendment is necessary to extend the Commission's civil penalty authority over holders of or applicants for certificates of compliance. There is no real basis to distinguish certificate holders from licensees for the purpose of allowing a civil penalty to be imposed as an enforcement sanction.

SEC. 5. ENHANCED FINGERPRINTING REQUIREMENTS.

Currently, NRC is required to direct certain individuals and entities (generally, those licensed or certified to engage in or who have filed an application for a license or certificate to engage in activities subject to NRC licensing or certification, or who have given written notice to the NRC of an intent to file an application for licensing, certification, permitting, or approval of a product or activity subject to NRC regulation) to require fingerprinting of individuals who have unescorted access to certain facilities or to designated materials or other property, or who are permitted access to safeguards information. This amendment would expand that authority with respect to certain other individuals who have security-related responsibilities.

For example, this amendment would authorize the Commission to extend fingerprinting requirements to any individual designated by a licensee or certificate holder to review the trustworthiness and reliability of individuals who are fingerprinted under section 149 a.(1) of the Atomic Energy Act of 1954, based on the results of the identification and criminal records check information obtained from the Attorney General. Because some licensees' reviewing officials or

Trustworthiness and Reliability Officials¹ do not have unescorted access to a utilization facility or to designated radioactive material or other property or access to safeguards information, the Commission currently is not able to require their fingerprinting.

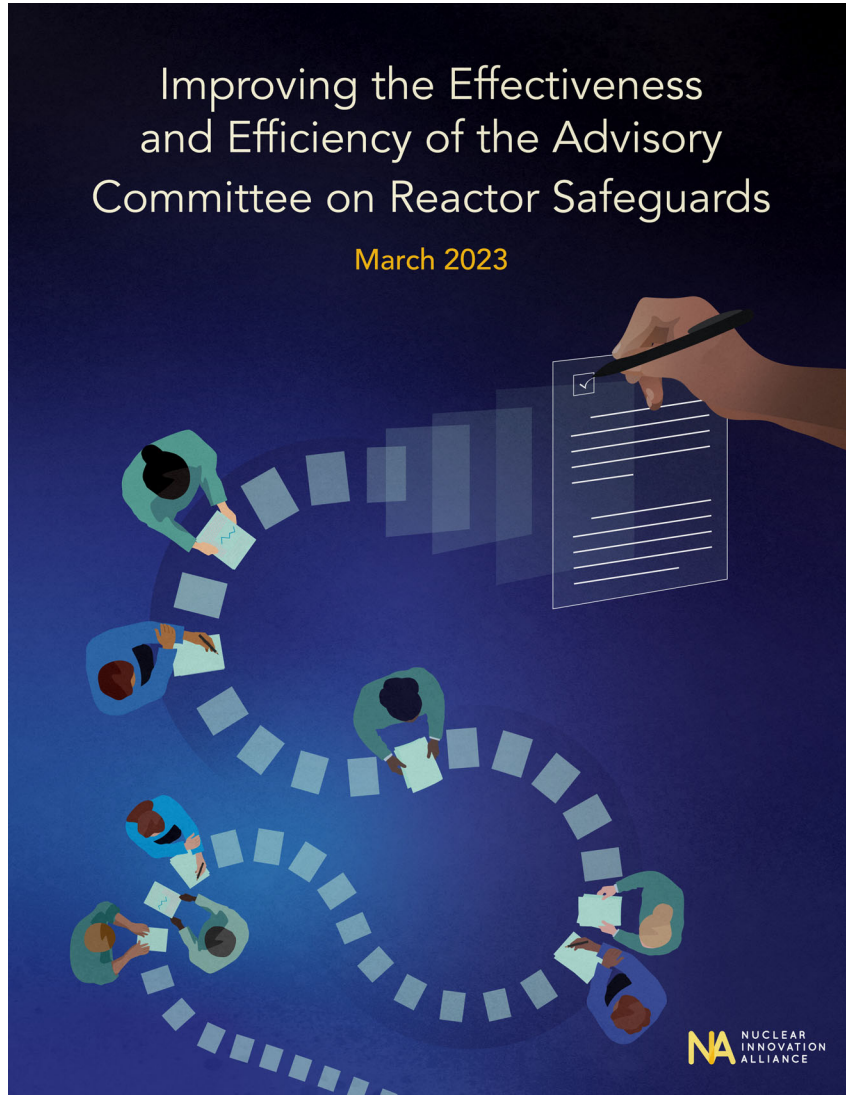
Other examples of individuals in positions that may be subject to NRC fingerprinting requirements under this amendment are individuals who have authority relating to provision of unescorted access to a facility, radioactive material, or other designated property, and individuals who hold the position of principal operating officer or an equivalent position in an enterprise. It is obvious that individuals who are employed in these types of positions can be in a position to do considerable harm. This amendment would enhance security by authorizing fingerprinting and a subsequent FBI criminal history check of those individuals.

The proposed amendment does not direct the Commission to immediately require fingerprinting of the individuals covered, but gives the Commission discretion to determine which of those employees and officers need to be fingerprinted and when such a program should be implemented.

¹ In this context, the terms "reviewing official" and "Trustworthiness and Reliability Official" are used to designate individuals who are assigned the responsibility for analyzing the results of identification and background checks based on the fingerprints of employees currently required to be fingerprinted under section 149 of the Atomic Energy Act of 1954.

Improving the Effectiveness and Efficiency of the Advisory Committee on Reactor Safeguards

March 2023



Improving the Effectiveness and Efficiency of the Advisory Committee on Reactor Safeguards



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Acknowledgements:

The contents of this report are based on interviews with over thirty-five individuals, including current and several former members of the ACRS, current and former ACRS staff, several former NRC Commissioners, former NRC Staff, and members of the ACRS stakeholder community.

Disclaimer:

The views expressed herein are those of the authors and the Nuclear Innovation Alliance.

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This full report is available online at: <https://nuclearinnovationalliance.org/resources>

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I. Executive Summary

The Nuclear Innovation Alliance’s (“NIA’s”) previous report, *Promoting Efficient NRC Advanced Reactor Licensing Reviews to Enable Rapid Decarbonization*,¹ suggested that “the Commission should systematically evaluate the [Advisory Committee on Reactor Safeguards] ACRS review process and how this can be appropriately aligned with the expectations that Congress set out for the Commission under [Nuclear Energy Innovation and Modernization Act (“NEIMA”)].”² In light of this suggestion, NIA undertook its own extensive review of the ACRS to determine how it should better align with Congressional expectations under NEIMA without diminishing the significant role the ACRS has in the review and resolution of key technical issues associated with nuclear power plant regulation. Based on this review, the authors produced four main recommendations accompanied by specific proposed solutions. These recommendations broadly align with ACRS’ own suggestions for the self-transformation presented to the Commission in 2019.³ A brief description of each overarching recommendation and the takeaways from that recommendation are described briefly below.

1. **The first overarching recommendation is to “Re-focus the Scope and Depth of ACRS Reviews.”**

In accordance with this recommendation, the ACRS should:

- focus on safety-significant matters and assist the NRC in meeting its statutory mandate to determine “that there is reasonable assurance”⁴ “that the utilization or production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public.”⁵ (pg. 14)
- increase training, focus the scope of reviews, and use an action plan to further prioritize matters needing review. (pg. 15)
- consolidate duplicative Full Committee and Subcommittee meetings. (pg. 18)
- provide dates in the schedule for placeholder meetings. (pg. 18)

The Commission should:

- direct the ACRS to focus on novel and safety-significant issues in its reviews, and potentially refer specific matters to the ACRS with novel technical issues prior to review. (pg. 15)

¹ Alex Gilbert, *Promoting Efficient NRC Advanced Reactor Licensing Reviews to Enable Rapid Decarbonization*, Nuclear Innovation Alliance (2021), available at <https://nuclearinnovationalliance.org/licensingdurationsforclimatemitigation>.

² *Id.* at 18.

³ See e.g., Letter from Peter C. Riccardella, Chairman of NRC Advisory Committee on Reactor Safeguards to Kristine Svinicki, NRC Chairman (Oct. 17, 2019), available at <https://www.nrc.gov/docs/ML1929/ML19290F956.pdf> (hereinafter “ACRS Transformation Letter”); ACRS, *Commission Meeting with the Advisory Committee on Reactor Safeguard (ACRS)* (Dec. 6, 2019), available at <https://www.nrc.gov/reading-rm/doc-collections/commission/slides/2019/20191206/staff-20191206.pdf>.

⁴ AEA at § 185(b).

⁵ AEA at § 182(a).

- establish timelines and milestones for ACRS reviews. (pg. 16)
- have OGC available to assist the ACRS in understanding the agency's statutory mandate. (pg. 16)
- communicate topics of interest to the NRC Staff in advance of meetings. (pg. 17)
- establish a hard deadline for the NRC Staff to provide documents in advance of the meetings and allow the meeting date to slip if the NRC Staff fails to meet its deadline. (pg. 17)
- exercise greater discipline on itself to limit the demands it places on the Staff to what is essential to ensuring adequate protection. (pg. 17)

The NRC Staff should:

- improve its preparation for engagements with the ACRS to better optimize the review of topics. (pg. 16)
- review its own practices in engaging with the ACRS, identify best practices that lead to efficient and effective ACRS reviews, and promote those best practices. (pg. 16)
- provide the ACRS with documents sufficiently in advance of ACRS meetings to allow for a fulsome review. (pg. 20)
- communicate the portions of the review that have the greatest potential safety significance. (pg. 20)
- engender a culture where the NRC Staff can feel empowered to raise concerns that the Committee is raising issues that are not safety significant. (pg. 20)

Finally, Congress should:

- revise the ACRS' statutory mandate in the Atomic Energy Act to emphasize that the ACRS should review only novel and safety-significant issues, and remove the requirement that the ACRS review all construction permit and operating license and renewal applications. (pg. 16)

2. The second overarching recommendation is to “Improve ACRS Operations and Management.”

In accordance with that recommendation, the ACRS should:

- keep itself to approximately ten members. (pg. 21)
- diversify the background of ACRS members (drawing from former industry members, academics, and former national lab personnel or consultants). (pg. 22)
- relax experience requirements in certain areas of new state-of-the-art technology (e.g. artificial intelligence). (pg. 22)
- adhere to term limits. (pg. 22)
- not allow a single member to dominate the conversation for a particular subject area. (pg. 24)

The Commission should:

- implement the above suggestions for the ACRS to the extent that the ACRS cannot do so. (pg. 23)
- hire a consultant with expertise in organizational effectiveness to evaluate the manner in which ACRS members engage with the NRC Staff and licensees and suggest options for training and best practices on public and peer engagement. (pg. 25)
- incorporate components that screen for individuals who are independent yet collaborative and collegial when selecting ACRS members. (pg. 24)

The Executive Director for Operations in coordination with the ACRS should:

- not allow the ACRS to criticize, badger, or undermine individuals who are unable to answer ACRS questions on the spot. (pg. 24)
- request that ACRS members be able to set forth a brief explanation for why they are asking a question and tie it back to regulation (i.e., what is the member trying to understand and what is the safety concern). (pg. 24)

The ACRS Chairman should:

- ensure that debate among ACRS members is constructive, collegial, and within the ambit of its statutory purpose. (pg. 24)
- ensure that the views of individual ACRS members do not unduly chill or influence the views of the NRC Staff. (pg. 24)
- provide and maintain a safe space for respectful disagreement. (pg. 24)

3. The third overarching recommendation is “Reduce the Cost of ACRS Reviews.”

In accordance with that recommendation, Congress should:

- amend the Atomic Energy Act to provide that all costs associated with ACRS reviews, including the cost of ACRS time be excluded from the fee recovery requirement. (pg. 25)
- amend the Atomic Energy Act to provide that all NRC Staff time used to prepare for ACRS meetings should not be billed to licensees and should also be excluded from fee recovery. (pg. 25)

4. The fourth overarching recommendation is to “Adjust Management of the ACRS.”

In accordance with that recommendation, the Commission should:

- be more involved in the screening and selection of individual candidates who possess the knowledge, skills, and abilities necessary to address key topics before the NRC. (pg. 26)
- be more involved in selecting or identifying the ACRS Chair and engage with the ACRS Chair on a regular basis. (pg. 26)
- provide the ACRS information on topics requiring ACRS review, particularly those that are novel or have significant safety implications. (pg. 26)

- discuss budgeting and prioritization with the ACRS. (pg. 27)
- set much of the agenda for the semi-annual meetings with the ACRS. (pg. 27)
- revamp the way that it interacts with the ACRS in meetings by eliminating meetings solely focused on repeating written material in paper filings. (pg. 27)
- ensure the ACRS Executive Director position is always filled by a seasoned executive who has technical credibility and sufficient weight and standing within the Commission to push back against the NRC Executive Director of Operations as well as the ACRS Chairman and members, and who has the experience needed to garner respect, as well as the savvy needed to deal with various disparate personalities. (pg. 27)
- perform a budget review of the ACRS staffing needs to ensure the Executive Director's organization is appropriately staffed to ensure it can meet the anticipated bow-wave of new reactor reviews. (pg. 27)

The authors' hope is that these recommendations (or some semblance thereof) will be implemented to position ACRS and NRC to successfully enable safe deployment of advanced nuclear energy.

**“Reinvigorating the Nuclear Regulatory Commission by
Reflecting on its Mission”**

**Remarks of Jeffrey S. Merrifield, Partner - Pillsbury Winthrop Shaw Pittman
ANS Annual Meeting – June 13, 2023**

I would like to thank Steven Arndt, Craig Piercy and the American Nuclear Society for asking me to speak today. I am grateful for the opportunity.

On January 6, 1986, I began my first day of work in the United States Senate for Gordon J. Humphrey of New Hampshire, my home state, and the very first thing I worked on was issues associated with the construction of Seabrook Station Nuclear Power. Through 10 years in the Senate, nine years as an NRC Commissioner, 7 years as an NRC licensee, and for 8 years serving as the head of Pillsbury Law Firm’s nuclear practice, my entire 37-year career has been intrinsically interwoven with the Agency and its policies.

Being an NRC Commissioner was one of the best jobs I have ever had and to this day, and I embrace the motto of the Agency – “Protecting People and the Environment” – a tagline I helped craft. I believe the Agency is staffed by talented, bright, well-meaning and dedicated civil servants, and I firmly believe in the mission of the Agency and the value of its independent role. I also know and respect the senior managers and Commissioners, who I know are committed to trying to do the right thing to protect public health and safety.

With that preface, I believe the Agency has lost its way.

As an attorney, I am reminded of the old saw, “when in doubt” look at the law.

In Title I, Chapter 1, Section 1 of the Atomic Energy Act of 1954 it declares:

Small Reactor Speech 04-14-15 (3).docx

“Atomic Energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that –

- a. the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and
- b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.”

While those words were passed into law in 1954, almost 70 years later they ring true today and remain the law of the land. At a time when global climate change is a real and present threat to our common defense and security and given that nuclear energy is the only non-carbon, proven, energy system that can reliably deliver 24x7 energy, enabling its safe usage is an obligation of the NRC under the Atomic Energy Act and Energy Reorganization Act.

In my opinion, the NRC of 2023 fails to fully recognize the positive encouragement of nuclear energy that the Atomic Energy Act put into place that frames its oversight activities in overseeing the safe use of nuclear energy in our country. Instead, it is overly conservative and does not consistently apply common sense principles in regulating the technologies it oversees. I think the current impasse on creating a new regulatory framework for Advanced Reactors under Part 53 is the most recent example of this gap. As the late Commissioner Ed McGaffigan,

who I respected greatly, frequently stated, the Agency's mission is to "provide reasonable assurance of adequate protection, not absolute protection."

So how did this come to pass?

First, I think the Agency has a culture challenge. From where I stand, the roots of the Agency's issues go back to the late 2000's when the NRC was dubbed one of the "Best Places to Work" in the Federal Government, and even more recently when the Agency began to be referred to as the "Gold Standard of Nuclear Regulators" – a term I personally dislike. I believe these concepts fostered a trend of complacency and self-satisfaction of the type that the Agency would have found unacceptable in one of its regulated entities. While the Agency continued to claim that it too, had a self-questioning attitude and sought continual improvement, I do not believe this is consistently the case today.

I visited Palo Verde Nuclear Station toward the end of my final term on the Commission, during a time when the former INPO 1 plant had slid several tiers in the NRC's action matrix and was demonstrating repeated performance issues. As I stood in the cafeteria of the plant giving an allhands meeting, I remarked that the plant had developed a complacent attitude and the INPO 1 flags hanging around the room no longer reflected the performance of the facility – just its past history. To his credit, Bill Post, who was the CEO of Arizona Public Service at the time, and who was watching my remarks, ordered the flags to be taken down that very afternoon.

In a similar vein, I do not think the Agency is currently performing at a "Gold Standard" level and I would recommend that such references should be avoided by the Commission and its staff.

Another contributor to this adverse cultural trend is the administration of the differing professional opinion process by the senior executives of the Commission. Having lived through the Davis Besse event, and having

learned the lessons of the NASA Challenger Accident, I am well aware of the vital importance of allowing minority views to be heard and considered. We were committed to that goal when I was a Commissioner and I remain a strong proponent of that process to this day.

But, the intention of the DPO process is not to give minority views a veto to the regulatory review. DPOs should be heard, evaluated and acted upon promptly, even where the DPO does not carry the day. Ultimately, the NRC is a hierarchical organization, and senior managers must make difficult calls. Unfortunately, some NRC managers today go well out of their way to avoid DPOs, even if not justified by the regulations or the safety case. This reticence causes the regulatory process to bog down and results in the imposition of unnecessary cost and delay for the regulated licensees. In my view there needs to be much more balance in the process.

Similarly, I have heard from many licensees that the Agency staff states that it is limited in what it can say to applicants seeking clarification of Agency rules and guidance as the NRC can't act as a "consultant" due to its independent safety mission. Really?

There is absolutely nothing wrong with the Agency providing clarifications, and assistance to licensees attempting to understand and meet the complex, difficult and sometimes inscrutable guidance and rules of the NRC. Responding to questions, engaging with licensed entities with direct and fulsome responses, is the responsibility of the Agency, and it should not hide behind its role as an "independent" safety regulator.

A second area of concern is the technical prowess of the Agency, including a diversity of experience and background.

When I came to the Agency in 1998, we had a wide range of staff who had previously served in the Atomic Energy Commission, the Army and Navy Reactor Programs, the Department of Energy and its National

Labs, and individuals with experience in the industry. Many of these individuals had experience in operating reactors so they brought with them a well-rounded background which helped foster the positive regulatory record that the Agency developed in the early 2000's which resulted in significant improvement in Agency and industry performance and an embrace of risk informed regulation.

There are many individuals who have worked at the NRC for the entirety of their careers and done exceptionally well, but I do believe there are too many women and men at the Agency who lack other diverse experience, resulting in a significant amount of insularity of thought and process within the agency. With the rate of retirement that has taken place at the Agency, this diversity of experience is being further eroded, and I believe the NRC now lacks the breadth and depth of technical expertise that was present when I was a Commissioner.

In my view, far too many of the seniormost members of the NRC leadership, particularly those in technical roles, lack experience outside the Agency, and I think this makes it very difficult for the NRC to receive the diversity of thought, experiences and innovation that is needed. I applauded when former Chairman Christine Svinicki, with support from the Commission, selected Ray Furstenau, formerly at the DOE Office of Nuclear Energy, to be the Director of the NRC Office of Research. I think that was an outstanding idea and Ray has brought new ideas and a new outlook which has helped to improve that important organization and the work it provides.

So how do we address some of these issues?

First, I think the Agency needs to receive the authority from Congress to pay higher wages to its workforce, similar to the exception made for the Securities and Exchange Commission and allow the Agency to recruit exceptional talent and pay them at more market-oriented rates of pay.

Second, the Agency needs to focus on skills diversity and widen the net of individuals who should be brought into the NRC. Individuals who

served in industry, DOE, the military and elsewhere should be considered as candidates for every position within the Agency.

Third, the Agency needs to take a more robust effort to provide training, outside of the Agency, and frankly outside of the nuclear regulatory arena, to allow greater insights to create a workforce that is innovative, effective and efficient in their duties as regulators.

Finally, the Agency should consider, indeed perhaps, be required to consider at least one non-NRC and non-governmental candidate for each senior executive position within the Agency. While a lifetime of work at the NRC is not a bad thing, and indeed should be commended, it is beneficial for every organization, big or small, to have a diversity of thought and experience, and the NRC is no exception to that rule.

Another area I would touch upon, as an attorney, is the Office of General Counsel. The role of an attorney is to explain the law to their client, provide alternatives and make well-reasoned recommendations that the client is free to accept or reject. As a Commissioner, I benefited from the fact that Karen Cyr, who has an outstanding legal mind, served as the General Counsel. Karen was not afraid to disagree with my opinions, but she consistently tried to identify options for the Commission to achieve its objectives within the law, not just tell the Commission no.

There were circumstances where the Commission chose to take a legally riskier path, with the potential that we might not prevail in court, but we did so because it was the right thing to do. But that was the decision of the Commission. The Office of General Counsel is an advisor, not a gatekeeper. Their recommendations should be based on meeting the Agency's mission, consistent with the Atomic Energy Act, and not be unduly retarded by a fear that the Agency's longstanding track record for prevailing in court could be threatened. That is the same relationship OGC should have with the other parts of the NRC staff, and the Commission, not OGC, should be the final arbiter of how the Agency should proceed in its mission and policies.

Marian Zobler the General Counsel of the NRC will be retiring later this year. She has been a dedicated public servant and I have known and liked her since she served as Dick Meserve's legal counsel in the early 2000's. I think her departure will provide an opportunity for the Commission to take a fresh look at OGC and the role it plays in meeting the Agency's mission. As I stated earlier, I believe outside candidates should be considered for that role of the General Counsel, including individuals who have served as attorneys in the nuclear industry.

Finally, you may ask, what are my thoughts about the Commission itself?

As a former Commissioner, I think I have a deep understanding of the roles and responsibilities of the Commission, and thus have the license and frankly, the duty, to be clear in my concerns and thoughts.

I know and respect each and every one of the members of the Commission who are serving today. To a woman and man, I believe each believes they are fulfilling the oath to the Constitution that they repeated when they were first sworn in as Commissioners. That said, I think there are a few things the Commissioners should keep in mind.

Looking back at my votes over 9 years on the Commission, I am proud to say I did not cast a single vote on a party line driven basis, nor did I consult with either the executive or legislative branch on how I should turn out on a given issue. Commissioner Ed McGaffigan, with whom I served my entire term, and who was a Massachusetts born and bred Democrat, was someone with whom I voted almost all the time. While we had our differences of opinion, and while we most certainly had different political points of view, we did not let those differences, nor our respective political friends, let us influence how we came out in our safety decisions.

Additionally, as one thinks about an independent regulator, I always remind folks that Commissioners are independent not just from the companies and individuals that the Agency regulates. The NRC was

created to be independent from licensees, the White House, Congress, the public, the states, non-governmental organizations, and yes, independent of the NRC staff. The job of a Commissioner is to make tough decisions, much like that of an umpire, and while each member of the Commission should listen to a diversity of voices, at the end of the day the call that they make must be independent from ALL outside influence.

Beginning with Shirley Jackson, Dick Meserve, Nils Diaz, Pete Lyons, Greta Dicus and Dale Klein, I served with a variety of individuals, Democrats and Republicans, who brought strong technical expertise to the Commission, and others of us, like Ed and I, provided a balance of policy and technical background. Maintaining that balance is important. While I believe all the currently serving Commissioners are outstanding individuals, the Commission as a whole, today, does not possess this same level of technical diversity and balance as was the case for the Commissions on which I served.

Now, whose fault is it that we are in this position?

Well, certainly not the Commissioners themselves.

It is the fault of the Office of Presidential Personnel, which through the Obama, Trump and Biden Administrations has failed to put sufficient priority on identifying a diversity of expertise on the Commission.

Since Harry Reid was the Senate Majority Leader, successive Administrations have given a virtual veto to the Nevada delegation on who is qualified to serve as an NRC Commissioner. While I understand the continued concerns about Yucca Mountain, that matter should not be a litmus test for membership on the Commission.

Going forward, the White House and the Senate Majority and Minority Leaders who influence the membership of the Commission should focus on identifying individuals who are diverse in all ways, including technically, and who understand the Agency's mission is to enable the

safe use of nuclear energy to provide for the common defense and well-being of our nation.

As I close, I don't want to leave folks with the wrong impression. I am a huge supporter of the NRC and embrace its vital mission. I am proud to be an alumnus of the Agency. I also believe the Agency needs to look at itself in the mirror, recognize that it has a role in enabling nuclear technologies to provide for our common defense and security, and ensure that it is working to become a more efficient, effective, riskinformed, timely and technically adept regulator. I believe the Agency is capable of achieving those goals, and I fervently hope that it does.

Thank you,

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May 5, 2023

Honorable Cathy McMorris Rodgers
 Chair
 Committee on Energy & Commerce
 2125 Rayburn House Office Building
 Washington, DC 20515

Honorable Frank Pallone Jr.
 Ranking Member
 Committee on Energy & Commerce
 2125 Rayburn House Office Building
 Washington, DC 20515

Honorable Jeff Duncan
 Chair
 Subcommittee on Energy, Climate,
 & Grid Security
 2125 Rayburn House Office Building
 Washington, DC 20515

Honorable Diana DeGette
 Ranking Member
 Subcommittee on Energy, Climate,
 & Grid Security
 2125 Rayburn House Office Building
 Washington, DC 20515

Honorable McMorris Rodgers, Pallone Jr., Duncan, and DeGette:

On behalf of the men and women of the nuclear professional community, I am pleased to respond to your request for information regarding the U.S. Nuclear Regulatory Commission's licensing and regulatory processes for advanced reactors.

Established in 1954, the American Nuclear Society is the premier scientific organization for U.S. nuclear professionals. Our 10,000+ members have dedicated their careers to the peaceful use of nuclear science, engineering and technology for the benefit of humanity, and we serve our community by hosting scientific conferences, publishing technical journals, promulgating ANSI-certified standards, and providing professional development and leadership programs. ANS also supports activities aimed at broadening the public's understanding of nuclear science and technology, including K-12 Nuclear STEM education in classrooms and the dissemination of up-to-date, unbiased and technically sound information and insights on nuclear topics to journalists and policymakers.

In order to properly consider the question of how to improve the NRC licensing review and approval processes for advanced reactors, it is important to first provide some context. Earlier this spring, the NRC hosted its first in-person Regulatory Information Conference (RIC) since the onset of COVID. It was a well-organized event, and the plenaries and sessions were informative. However, it was hard not to sense a level of frustration in the hallways over the stringency of NRC's proposed Part 53 regulatory framework for advanced reactors; the perceived lack of preparedness for a coming onslaught of license applications, as well as a general sense that, as one friend put it, the Commission is "wrapped around the axle of administrative procedures and precedents".

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Of course, one must always view these criticisms through a filtered lens. Yes, the regulatory process is cumbersome, but nuclear technology is serious business. Yes, it's fair to argue that regulatory uncertainty is holding advanced nuclear back to some degree, but so are a host of other challenges that include project financing, siting, workforce, supply chain, and fuel availability. At any given moment, it is impossible to determine with certainty which of these headwinds are strongest. Still, there's no denying that, at least from a timing standpoint, improving NRC efficiency needs to be at the front of the line, because solving the regulatory challenge enables solutions for the others.

It is also important to remember that, in the nearly 70 years since the inception of the U.S. commercial nuclear industry, no member of the public has been killed or injured by the operations of a reactor. In that time, nuclear energy has offset billions of pounds of environmental pollutants like Sox, Nox, and fine particulates that otherwise would have caused millions of premature deaths. We challenge anyone to find a better safety record in any other industrial sector; and the NRC deserves a healthy share of the credit.

Now add the growing human and environmental impacts of climate change (using even the tamest prognostications) and any honest debate about our approach to nuclear safety has to consider the question "How many lives will we sacrifice by not acting with urgency?"

As your letter points out, federal law gives NRC the authority to consider the overall benefits of nuclear as part of their licensing and regulatory activities. We believe NRC needs to formally reframe its mission in a manner that aligns more closely with the original precepts of nuclear regulation set forth in the Atomic Energy Act of 1954, specifically its mandate that the "development, use and control" of nuclear energy be conducted in a way as to "improve the general welfare."

A clear-eyed recognition of the net positive public health impacts of nuclear energy by NRC does not equate to "promotion." The modern case for nuclear safety demands a holistic approach, one that operationalizes the urgency of the moment, applies risk assessment in the broadest possible scope, and defines the "public good" as the-most-good-for-the-most-people. This kind of recognition by NRC leadership would not require the agency to make wholesale changes to its regulations or processes, but it would send a powerful signal, both internally and externally, that timeliness in its licensing and regulatory actions is a central tenet of NRC's mission.

The lack of a bias to action on the part of the NRC can clearly be seen in the agency's inability to complete rulemaking in anything resembling a timely manner. Periodically, the NRC needs to adapt its regulations to account for new information and changed circumstances, address new regulatory issues, and incorporate lessons-learned in carrying out regulatory activities. However, at the NRC regulatory changes languish for years or even decades. One example is the sorely needed decommissioning rulemaking which the Commission kicked off in 2014, but which continues to churn

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nearly a decade later (reference - <https://www.nrc.gov/waste/decommissioning/reg-guides-comm/regulations/reg-improv-trans-to-decom.html>).

Another example is the stalled rulemaking on low-level waste that began with public workshops in 2009 and progressed to a proposed rule in 2015, but has yet to come to fruition (reference - <https://www.nrc.gov/waste/llw-disposal/llw-pa/llw-streams.html>). Rulemaking should be a routine part of doing business; however, the agency and its stakeholders have come to see it as an activity of last resort with little or no chance of success. The results are inefficient workarounds and regulatory ossification.

We also encourage the Committee to consider the behavioral implications of NRC's current financial structure, where an overwhelming majority of its monetary receipts come from its licensees, and advanced reactor developers pay for NRC licensing activities on a per person, per hour basis, similar to a law, or other professional services firm. This fee structure is bound to negatively incentivize NRC staffing decisions, even if subconsciously, leading to staff resource over utilization, excessive focus on non-safety-significant issues and overly delayed licensing timeframes. In an ideal world, NRC license application fees would be fixed, consistent and transparent like other federal regulatory agencies, such as the U.S. Food and Drug Administration.

As to specific NRC reforms, we encourage the Committee to carefully consider the recommendations included in the Idaho National Laboratory's report: "Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process." INL/RPT-23-72206. In addition, we encourage the Committee to review the recently introduced ADVANCE Act of 2023, [S.1111](#), especially the provisions regarding enhanced compensation pathways for highly skilled and experienced technical employees.

In closing, we appreciate the Committee's interest in this very important set of issues, and look forward to providing you with any additional information you may require.

Sincerely,

Craig H. Piercy

Executive Director and CEO
 American Nuclear Society



Breakthrough Institute's comment on the House Energy & Commerce
Committee's RFI
Suggestions for Nuclear Regulatory Modernization

The Breakthrough Institute (BTI) appreciates the opportunity to comment on nuclear energy regulation. BTI is an independent 501(c)(3) global research center that has advocated for the new and continued use of clean, reliable nuclear energy for years. As part of this, we have been heavily engaged with the Nuclear Regulatory Commission (NRC). Through these interactions, BTI has recognized that there are some important changes that need to be made at the NRC in order to enable nuclear energy to reach its full potential. BTI acts in the public interest and does not receive funding from industry.

I. Introduction

Leadership in new nuclear technologies will significantly benefit America's energy future. Advanced nuclear reactors are versatile, reliable, long-lasting, land-efficient, resource-efficient, geopolitically secure, and scalable sources of clean energy. Bold investments in advanced nuclear technologies in the United States will advance technological innovation, secure US leadership in international nuclear markets, and support national energy security and electricity grid resilience, all while improving environmental health and accelerating US climate action.

However, forging a promising future for the domestic advanced nuclear sector will require increased investment and policy support. Such efforts will generate far-reaching national benefits in both the near-term and long-term.¹

To assist with the deployment of new nuclear reactors, Congress passed landmark legislation that will position the U.S. toward regaining global leadership in advanced reactor deployment. This includes the Nuclear Energy Innovation and Modernization Act (NEIMA) of 2019 which aims to modernize regulation. If implemented properly, these laws will propel the U.S. in the right

¹See BTI's July 2022 Advancing Nuclear Energy report accessible here: <https://thebreakthrough.org/articles/advancing-nuclear-energy-report>

direction. However, there is clear hesitance or resistance from the NRC to adjust agency practices to comply with NEIMA. Further policy support is needed to modernize the NRC.

As one of the leading public interest organizations in the nuclear regulatory space, BTI has a unique outlook on the current landscape of regulatory challenges that inhibit progress toward effective and efficient licensing and regulation of advanced nuclear technologies. The flowchart in Figure 1, highlights the regulatory challenges that BTI has identified as current barriers to entry, as well as categorizes these challenges by priority. The remainder of this comment will cover these challenges in detail, as well as propose solutions that could address said challenges.

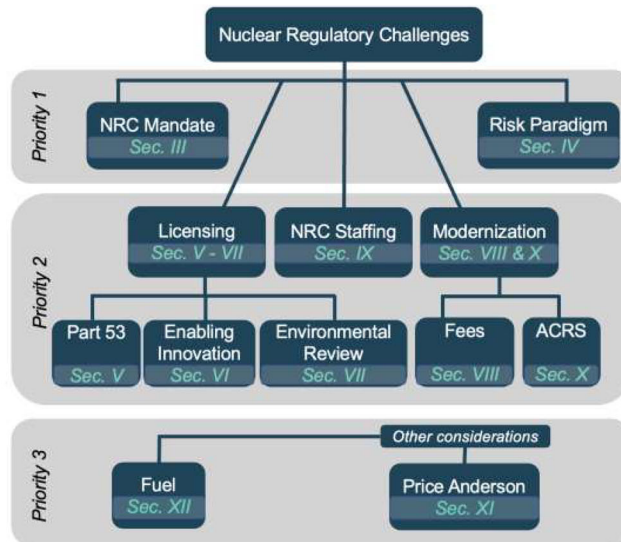


Figure 1. An overview of BTI's perspective of regulatory challenges plaguing the NRC. The figure also identifies these challenges by priority and directs the reader to their respective sections in this comment.

II. Overview



3

The Nuclear Regulatory Commission is arguably one of the most important federal agencies that could enable rapid decarbonization and bolster the security and resilience of the U.S. energy infrastructure system. But to position itself as a global model for effective and efficient licensing of advanced reactors, there are several considerations and adjustments necessary to reach its full potential. BTI has identified and binned key priorities for regulatory modernization at the NRC.

Priority 1

- The NRC needs to recognize its full mandate and consider more than just the nuclear safety aspects of licensing a reactor.
- The NRC's risk tolerance is unnecessarily strict and inconsistent with other federal agencies

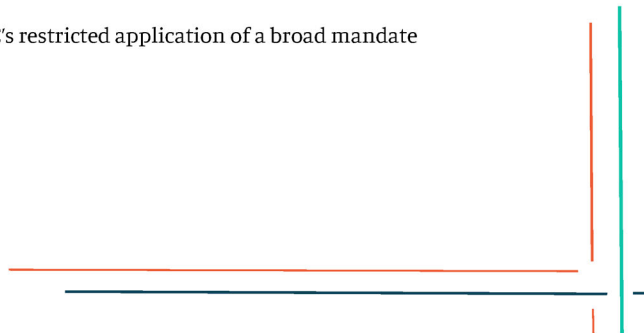
Priority 2

- Advanced nuclear reactors will require efficient licensing to be successful
- The fee structure of the NRC limits innovation and rapid deployment
- The Advisory Committee on Reactor Safeguards (ACRS) is quickly becoming a bottleneck to licensing new reactors
- The NRC will require more staff as the number of reactor applications increases

Priority 3: Other considerations

- To minimize market uncertainty, the Price Anderson Act should be extended by at least 40 years
- Securing fuel supply for new and advanced reactors is critical to advanced reactor deployment in the U.S.
- Progress towards spent fuel reprocessing and/or disposal will require regulatory readiness and transparency

III. Priority 1: NRC's restricted application of a broad mandate





Problem/Challenge. Through the Energy Reorganization Act of 1974, the NRC inherited its licensing and regulatory authority from its predecessor, the Atomic Energy Commission (AEC).² Specifically, the NRC's legal mandate is³:

The Congress hereby declares that the general welfare and the common defense and security require effective action to develop, and increase the efficiency and reliability of use of, all energy sources to meet the needs of present and future generations, to increase the productivity of the national economy and strengthen its position in regard to international trade, to make the Nation self-sufficient in energy, to advance the goals of restoring, protecting, and enhancing environmental quality, and to assure public health and safety.

Despite this broad mandate for the benefit of the nation, the NRC has a self-defined mission that is almost solely focused on a high level of nuclear safety: to regulate "the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security and to protect the environment."⁴ This is significantly pared down from its statutory mandate and creates barriers that unnecessarily delays nuclear reactor licensing. Consequently, BTI recommends that Congress reiterate the breadth of factors that the NRC should consider.

Proposed Solution. Congress should amend Section 202 of the Energy Reorganization Act of 1974 to make it explicitly clear that the NRC mandate is in line with the overall objective of the Act. This will direct the NRC to consider the broader costs and benefits of regulatory actions on society.^{5,6} While the NRC does consider the potential negative public health impacts of using nuclear power, it does not consider the consequences to public health and safety when nuclear

² The Energy Reorganization Act of 1974 divided the powers of the AEC: the "licensing and related regulatory functions" were passed down to the NRC (Sec. 2(c)) and the other powers including promotion of nuclear power were given to a different agency which later became the Department of Energy. The Act can be read here: <https://www.nrc.gov/docs/ML1327/ML13274A489.pdf>

³ Energy Reorganization Act of 1974 Sec. 2(a).

⁴ "About NRC." NRC Web. <https://www.nrc.gov/about-nrc.html>

⁵ Additional examples of federal agency missions have been compiled here: https://thebreakthrough.imgix.net/Agency-Mission_Vision-Statements.pdf

⁶ The Environmental Protection Agency (EPA) considers the broad impacts to society, economics relative to the regulation, and available technology, not just the cost to reduce the exposure.



deployment is impeded by overly restrictive standards. Further, the NRC's safety goal policy⁷ states that nuclear energy risks should be considered relative to other energy sources. However, the NRC does not actually make this comparison in decision-making.

The NRC could serve to directly reduce public health and environmental impacts and has the potential to be the most important Federal agency for addressing climate change and enabling clean energy. This limited scope for cost-benefit analysis significantly impedes or outright prevents the NRC from even considering its role in these important issues for society. To remedy this issue, Congress should clarify the mandate of the NRC to direct the agency to bring its mission into alignment.

IV. Priority 1: Reconsideration of NRC's risk paradigm

In addition to a reconsideration of the NRC's mandate, the NRC will also need to modify the current risk paradigm towards a safe yet realistic approach. One key approach to an evaluation of the current risk paradigm is to consider a more holistic set of factors, including risk relative to the deployment of alternative energy sources like fossil fuels. This section highlights the challenges with the current and proposed risk paradigm. If left unaddressed, this paradigm could have long-term and far-reaching implications that would significantly detour the U.S. from a path of global dominance in advanced reactor deployment.

1) Quantitative Health Objectives

Quantitative health objectives (QHOs) are safety goals, not a requirement of existing licensing frameworks. The QHOs are currently used to measure the effectiveness of regulations. They set a limit to health risks - latent cancer and prompt fatality - from nuclear power plants.

Problem/Challenge. Currently, the NRC staff is attempting to codify the QHOs, which are currently only guidance, by incorporating QHOs into the draft Part 53 rule. This is despite numerous past Commission decisions that the QHOs and other safety goals should not be codified as regulations but should remain goals that inform staff on how to apply regulations. The QHOs meet very few

⁷ The NRC's top line Safety Goal is that, "Societal risks to life and health from nuclear power plant operation should be comparable to or less than the risks of generating electricity by viable competing technologies and should not be a significant addition to other societal risks" <https://www.nrc.gov/reading-rm/doc-collections/commission/policy/51fr30028.pdf>



6

of the NRC guidelines for a performance-based metric. Critically, they are neither calculable nor measurable in a feasible sense. The level of risk defined by the latent cancer QHOs is **not statistically observable** in the population of a large 10-mile emergency planning zone (EPZ) even with long-term observation.⁸ Further, the NRC-defined QHOs are orders of magnitude more strict than similar metrics at other federal agencies, such as the EPA, which both Congress and the Court have upheld.⁹ BTI published a detailed analysis¹⁰ of the implications of enforcing QHOs as a requirement in the licensing framework, included in Attachment A.

Proposed Solution. The Commission should maintain consistency with prior decisions and direct staff against using QHOs as a requirement in the proposed Part 53 draft. QHOs have been safety goals in existing licensing frameworks. The proposed shift to include QHOs, or other new metrics, directly in the proposed Part 53 licensing rule would generally be only justified if and only *“if NRC or licensee operations benefit from such a change.”*¹¹ [emphasis added].

2) Theoretical risk that cannot be observed epidemiologically is below regulatory concern

Problem/Challenge. Because the NRC is narrowly focused on safety risk, it has consequently developed a series of metrics and standards by which to judge reactor performance that is, at best, unobservable in a large exposed population, and at worst, based on impossible assumptions. This would inevitably create excessive and unnecessary regulatory burdens.

Proposed Solution. Congress should explicitly define a threshold for radiological risks associated with licensing advanced nuclear reactors that is sufficient to maintain public safety. Such a threshold could be:

⁸ See BTI's whitepaper on the NRC's Quantitative Health Objectives
<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML22038A112>

⁹ Congress later codified the risk standard used by the EPA for Benzene, thereby authorizing the discretion of the EPA to consider costs and to determine that constitutes an acceptable risk threshold. See *Natural Resources Defense Council v. EPA*, 529 F.3d 1077, 1082 (D.C. Cir. 2008).

¹⁰ See <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML22038A112>

¹¹ Federal Register. Revised High-Level Guidelines for Performance-Based Activities:
<https://www.federalregister.gov/documents/2000/05/09/00-11535/revised-high-level-guidelines-for-performance-based-activities>



The threshold is defined as negative health consequences as a result of the operation of a nuclear power facility that would be epidemiologically observable in the population in the vicinity of the facility.

Congress needs to set a standard for radiological risk because the NRC uses far stricter standards than other federal agencies¹² that are not observable even in exposed populations. There are three major examples of illogical or imperceptible requirements that the NRC staff has either recently created, or has proposed their codification in the 10 CFR Part 53 rulemaking (discussed in Section V). These standards are QHOs, ALARA, and AERI.

V. Priority 2: Part 53 rulemaking for licensing new and advanced reactors

NEIMA instructs the NRC to create a technology-inclusive framework for licensing reactors: to meet this mandate, the NRC staff is developing new rule language in 10 CFR Part 53.

Challenge Summary. The NRC staff draft of the proposed Part 53 license framework¹³ raises serious questions as to the ability of the NRC to meet the Congressional mandate under NEIMA to develop a modernized, risk-informed, and performance-based license framework for advanced nuclear reactors. Some of the major challenges with the proposed Part 53 draft include the proposed codification of risk standards like QHOs, ALARA, and AERI. BTI and other stakeholders flagged these challenges on multiple occasions through presentations and public comments but the NRC staff largely ignored stakeholder feedback on these critical topics as is evident in the newest draft of the rule, which largely reproduces the existing license framework designed for light water reactors (LWRs) under Parts 50 and 52 with added requirements. In fact, most advanced reactor developers reported that they would not use Part 53 as proposed to license their technology.¹⁴ Further analysis of the draft Part 53 can be found in BTI's whitepaper, Attachment C.

1) As Low As Reasonably Achievable

¹² For example the EPA accepted a standard two orders of magnitude less strict than the NRC's QHOs in the Benzene Standard at 54 FR 38044-45.

¹³ The draft Part 53 package was sent to the Commission on Feb 28, 2023 and released to the public on March 6th. It can be accessed here: <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21162A093>

¹⁴ The full results of the 2022 study can be found here from slides 52-90: <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML22130A523>



As Low As Reasonably Achievable (ALARA) is currently an operational practice in the daily activities at nuclear research facilities and power plants, not a design requirement. The Commission has noted, “the ALARA concept is intended to be an operating principle rather than an absolute.”¹⁵

Problem/Challenge. The NRC draft Part 53 language, however, makes ALARA an absolute by codifying it as a requirement that must be met, even in the design of the reactor.¹⁶ It is unclear how the NRC proposes to apply ALARA to its approval of design features. Framework B, the second of the two licensing pathways proposed in the draft Part 53, specifically defines ALARA as¹⁷:

...as low as is reasonably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and other societal and socioeconomic considerations, and in relation to the use of atomic energy in the public interest.

This definition can be interpreted in various ways or change over time, creating regulatory uncertainty rather than reliability. The codification of ALARA in Part 53 would impose an extra cost on designs that are separately already required to meet regulatory dose limits and would also impose an endless standard of “as safe as possible” on developers instead of the NRC’s legal standard of “reasonable assurance of adequate protection.” This would provide no observable benefit to the public in trade for the additional burden.

Proposed Solution. The Commission should direct the staff to maintain the ALARA concept as an operating principle.

2) Alternative Evaluation of Risk Insights

Problem/Challenge. A third example of problematic staff proposals is the Alternative Evaluation of Risk Insights (AERI) methodology, which is intended to be an alternative to completing a Probabilistic Risk Assessment (PRA). Having a simplified yet conservative alternative method of

¹⁵ Standards for Protection Against Radiation; Final Rule, 56 Fed. Reg. 23359, 23366 (May 21, 1991).

¹⁶ November 21, 2021, Letter from NEI/USNIC to NRC’s Executive Director for Operations, Dan Dorman, re: “Comprehensive Industry Comments on the NRC’s Rulemaking on, Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors” (RIN-3150-AK31; NRC-2019-0062).

¹⁷ Framework B. 553.4730(a)(11)(i). Framework B is accessible here: <https://www.nrc.gov/docs/ML2227/ML22272A040.pdf>



risk evaluation would be beneficial. However, the assumptions that AERI relies on mathematically and physically impossible conditions, and in several cases, they are not even remotely realistic as reported in BTI's analysis of AERI, (see Attachment B).¹⁸ As currently defined, the AERI approach is unusable and does not represent a feasible alternative method of risk assessment.

Proposed Solution. The Commission should direct staff to revise the approach used in the radiation dose derivation in the AERI regulatory draft guide and base AERI calculations on a plausible assumption of one catastrophic nuclear accident during the licensing period. By revising the frequency of catastrophic events outlined in the regulatory draft guide to accurately reflect both the mathematical basis of the AERI approach and functional possibility, NRC staff can offer an alternative risk assessment approach for reactor designs that meet their qualification requirements.

What is the current status of Part 53 rulemaking? The rule is now with the Commission. Commissioners have made public remarks suggesting that the Part 53 rulemaking is on track and on schedule. This indicates that the commission is likely to move forward with a rule that largely keeps the NRC's current obstructive licensing paradigm. As such, we believe it is likely that modernization will be necessary to drive the thorough cultural and procedural shift at the NRC essential to clearing a path for the timely commercialization of advanced nuclear reactors.

Ongoing BTI-led Effort. To that end, the Breakthrough Institute is hosting two workshops with a variety of stakeholders, including public interest groups, and professional societies, as well as current and prospective reactor applicants to develop an alternative NEIMA-compliant conceptual framework for the commission to consider alongside the proposed Part 53 draft rule. There is stakeholder consensus that the rule should consist of one framework or a single set of rules that is accompanied by guidance that largely provides direction on how to satisfy the rules outlined in the framework. This approach is not reflected in the proposed Part 53 draft rule.

Other Proposed Solutions. Many of the proposed solutions to Part 53 also fall under NRC's risk paradigm in Section IV. Additionally, to help reinforce the intent of the new framework for advanced reactors mandated by NEIMA, Congress should make a few amendments to that legislation. For example, where NEIMA tells the NRC to employ risk-informed and performance-based techniques "where appropriate," NEIMA should instead direct the NRC to use these methods

¹⁸ See the BTI's analysis of the AERI methodology: <https://thebreakthrough.org/IMG/whitepaper-2.pdf>



"to the maximum extent possible."¹⁹ This would remind the NRC that this new framework is intended to be different from the prescriptive frameworks they currently use for LWRs. The wide variety of new technologies needs a flexible framework that focuses on the actual performance of the reactors and properly considers risks.

VI. Priority 2: Enabling rapid innovation

Problem/Challenge. To operate a nuclear reactor, applicants require a design approved by the NRC - a tedious and cost-intensive licensing application process. Once approved by the NRC, deviations of any kind from the license approval require additional NRC review to commence or continue plant operation. The nuclear industry is undergoing a renaissance of new and improved modular reactor designs. For example, newer reactor designs are smaller and more compact with the potential to be factory-made on an assembly line. Due to the nature and characteristics of these newer reactor designs, rapid innovation is anticipated. Provisions are currently in place for licensees to pursue changes to existing licenses under 10 CFR 50 and 52. If a licensee needs to make changes to their existing license, a licensing amendment request (LAR) is required. It is the traditional route to regulate changes in plant design and/or operation. Although the LAR process is well defined under Part 50, the regulatory framework is not technology-inclusive and was drafted with large LWRs in mind. By contrast, advanced reactors are expected to utilize a factory production model where several reactors are in process at a time and innovation can be applied as needs arise. Moreover, a LAR does not appropriately provide a streamlined pathway for license amendments since it is not only expensive but can also take up to two years²⁰ to gain approval from the NRC. In other words, a developer could be required to halt all operations for two years until a license amendment is approved. As a result, the LAR process as written is not aligned with NEIMA and can disincentivize iterative innovation of non-safety-significant components in advanced reactors.

¹⁹For example, see NEIMA, Public Law 115-439, Sec. 3 (14): "The term 'technology-inclusive regulatory framework' means a regulatory framework developed using methods of evaluation that are flexible and practicable for application to a variety of reactor technologies, including, where appropriate, the use of risk-informed and performance-based techniques and other tools and methods." Emphasis added.

²⁰ <https://www.nrc.gov/about-nrc/generic-schedules.html>



Proposed Solution. The NRC is developing 10 CFR Part 53, a regulatory framework that, in theory, will be more appropriate for licensing advanced reactors as opposed to existing regulations under 10 CFR Parts 50/52. Congress should direct the NRC to expect rapid innovation for newer advanced reactors that are widely scalable because of their factory-built characteristics. In order for the agency to prepare for license amendments, the NRC needs to develop a more streamlined amendment process in accordance with NEIMA. The NRC may need further direction from Congress to better prepare for on-the-go innovation after a design is approved.

VII. Priority 2: Modernization of environmental regulation

Modernization is a common theme throughout this comment and it extends to the existing environmental regulatory processes. During this process, consideration must be given to the positive environmental impacts of licensing reliable, carbon-free energy sources that will stand in place of fossil fuel energy sources that are considered reliable but harmful to public health, environment, and the climate. Meeting our decarbonization goals will require scaling up nuclear energy's contribution to the electrical grid. For that to be possible, environmental regulations need to consider the broad and far-reaching consequences of inhibiting or delaying the deployment of clean energy technology. Of the many processes that need to be modernized, there are two specific issues that BTI would like to address.

1) Modernizing the hearing process for contested environmental issues

Problem/Challenge. The NRC's environmental hearing process is a federal agency outlier and a source of added complexity and costs in the licensing process. For major federal actions requiring an EIS, federal agencies typically conduct scoping, provide public notice and comment on the draft EIS, review and respond to comments, and then issue a final EIS.

The NRC conducts this same type of public notice, comment, and response process, but also provides an opportunity to seek a trial-type hearing during which third parties can challenge both safety and NEPA issues before an Atomic Safety and Licensing Board. These hearings are misused by intervenors to delay or derail new nuclear projects. Using the current process, contentions must be raised after the final EIS is issued. Consequently, the issues raised and fully addressed during the public comment process for the draft EIS also may be (and often are) raised again during these proceedings. Substantial applicant and agency resources are required just to address the admissibility of those contentions. The entire process can take many months



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(sometimes years) to complete and unnecessarily complicates/extends the NEPA review process, and because these issues were already addressed during the earlier process the additional time does not result in additional benefits. Notably, this is the process that recently resulted in the roll-back of subsequent license renewals for several existing plants.

Proposed Solution. To address this issue, the Commission should direct the NRC to modify its procedures to allow the existing notice and comment provisions for an EIS to simultaneously qualify as an "informal" hearing under the Administrative Procedures Act. This approach is an accepted and well-understood option that aligns with other agencies. It would satisfy any hearing requirement without providing an additional redundant opportunity to essentially "re-adjudicate" NEPA issues in front of an administrative judge that was previously analyzed by the NRC staff in its EIS.

The informal process provides a more accessible pathway for the public to raise legitimate concerns, while limiting opportunities for unproductive intervention to delay. The informal process would reduce the overall timeline by moving the hearing forward in time to be concurrent with the public comment period. A limited scope rulemaking to revise 10 CFR Parts 2 and 51 would be appropriate to avoid undesired out-of-scope revisions.²¹

In the alternative, the hearing process could be limited as opposed to removed. This could take the form of reducing the amount of time people have to file a complaint or intervention and/or limiting who can file to those who participated in the public comment process.

2) Overuse of Environmental Impact Statements

Problem/Challenge. Environmental Impact Statements (EIS's) are the most involved form of NEPA review, and they are overused by the NRC. This is in part because a less resource-intensive Environmental Assessment (EA) is rarely considered an option. While this may make sense for certain particularly large projects, it should not be standard practice. Unless significant impacts

²¹ For more information see: O'Neill, Martin J. (2021). Forging a clear path for advanced reactor licensing in the United States: Approaches to streamlining the NRC environmental review process. Nuclear Law Bulletin No. 105. Volume 2020/2 at p. 43-45. Accessible at: https://www.oecd-nea.org/upload/docs/application/pdf/2021-05/7534_nlb_105.pdf



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from the project are strongly expected, NEPA reviews should start with an EA and move to an EIS only if a finding of medium impact or greater is determined.²²

Another reason that EIS's are overused is that the NRC considers the licensing of a new reactor to be a "major action" that requires a full EIS under 10 CFR § 51.20:

The following types of actions require an environmental impact statement or a supplement to an environmental impact statement ... Issuance or renewal of a full power or design capacity license to operate a nuclear power reactor, testing facility, or fuel reprocessing plant...

This decision was made with large LWRs in mind; however, the future of nuclear reactors is more complex. Some reactors will be far smaller, and thus will have less impact on the environment.

Proposed Solution. Congress should consider removing licensing of new reactors from the list of actions requiring an EIS, and allow the level of environmental evaluation to be determined on a case-by-case basis.

VIII. Priority 2: Modernizing NRC fee structure

Problem/Challenge. To date, approximately 90% of the NRC budget comes from fees paid by licensees and applicants. These fees are based, in part, on NRC staff hours spent reviewing and dispositioning licensing and permitting applications.²³ Licensees are unable to dispute the hourly rates or estimation of staff hours necessary to review an application, and there is no recourse if a review exceeds that estimate. Reviews can take upwards of 18,000 hours even for small reactors. Although nuclear reactors used to be built by established conglomerates that could afford those costs, many of today's developers of advanced reactors are start-ups that are less equipped to bear the extra expenses.

²² Reducing the use of unnecessary EIS's saves both time and money for all parties. For example, NASA's Radioisotope Power Systems (RPS) Program specified that the NEPA process for its missions would start with an EA, when it previously automatically began with an EIS, and they implemented a programmatic NEPA approach. These two changes could result in "NEPA process costs of \$50K as opposed to \$2M." For more information see: Eppig, Bethany et al. "NASA's Approach to Nuclear National Environmental Policy Act Compliance." Nuclear and Emerging Technologies for Space Lightning Talks, 2021. <https://nets2021.ornl.gov/wp-content/uploads/2021/08/Lightening-Talks.pdf>

²³ Currently, fees are calculated using a professional staff-hour rate of \$290 per hour. 10 CFR § 170.20, <https://www.nrc.gov/reading-rm/doc-collections/cfr/part170/part170-0020.html>



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Proposed Solutions. Congress should direct the NRC to adopt a fee structure that will better enable innovation. The recently introduced ADVANCE Act²⁴ takes a pass at reforming the NRC's fee structure. With some amendments, it could solve much of the problem. Revisions to the fee structure that reduce the percentage of fees the agency must recover from applicants would help reduce the burden on both applicants and staff, and balance this relationship. We recommend deferring NRC fees until after the applicant has a license, and thus has the ability to generate revenue from sales. In the meantime, the NRC could recover its real-time costs via a small rolling fund initially seeded by the government. Without a program in place, only large corporations or utilities will have the resources to pursue a license at multiple sites concurrently, creating a barrier to rapid deployment.

Another recommendation is to add a cost cap on the review of an accepted application; costs above that would be paid by Congressional appropriations. The cap would be determined based on recent NRC review schedules. The NRC should then set up its work plan to hold expenses down to that level. This approach will strongly incentivize the NRC to issue a license decision in a more timely manner, while avoiding objections that the NRC does not have sufficient flexibility to protect the public. Several agencies already use a flat fee system. Incorporation of these changes will likely require an increase in the NRC's overall resources and staff capacity.

IX. Priority 2: NRC staffing

Problem/Challenge. The NRC has been facing staff attrition for nearly a decade. Unless changes are made, the problem is only likely to worsen since there are significant senior staff retirements on the horizon in the next several years, and the NRC continues to fail in achieving hiring goals.

Due to the attrition of experienced staff, the same staff is often associated with multiple applications and must switch back and forth between reviews. Additionally, the rising turnover rates mean that applicants often have new staff join an application review mid-process. The NRC has tried to address this by implementing a "core team" approach, which means many staff members do not work on a variety of applications, a "core team" is assigned to work on a specific project - an idea designed to reduce staff changes mid application. However, it can lead to knowledge concentration, limiting the number of people with the experience to work on similar

²⁴<https://www.epw.senate.gov/public/index.cfm/2023/4/capito-carper-whitehouse-introduce-bipartisan-nuclear-energy-bill-the-advance-act>



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projects in the future. This approach can also cause resentment amongst staff members who are not given the opportunity to join the team. Another noteworthy concern is that the agency's success can be influenced by the experience of the project manager assigned to an application.

These are major challenges the NRC must overcome to ensure it maintains the adequate level of staff needed to process future applications, but also to ensure that it can replenish the experienced career employees and retain the institutional knowledge those individuals possess. The NRC has sufficient staff at the moment²⁵; however, they will need to staff up in the near future as the number of advanced reactor applications grows.

Proposed Solution. In anticipation of a wave of new advanced reactor applications, the NRC will need to aggressively increase its staff capacity, especially given the agency's current attrition rate.

X. Priority 2: Modernizing the ACRS' role

Problem/Challenge. The Advisory Committee on Reactor Safeguards (ACRS) can unnecessarily belabor the license review process, presenting as a bottleneck during the NRC's review of multiple reactor designs. The ACRS is an independent committee formed to review safety studies and facility license applications on a request basis from the Commission.²⁶ However, their role is on an evolutionary track which could result in performing reviews for all license applications in the queue, which could present unnecessary delays. Moreover, their review schedule is typically full despite having only one application in process at a time. With a large number of reactor applications on the horizon, the ACRS will become a bottleneck in the licensing process.

Proposed Solution. We recommend that Congress request a report from the Commission on the function of the ACRS including its potential limitations, opportunities for increased efficiency, and recommendations for correcting those limitations while improving licensing efficiency. In addition, the ACRS' statutory mandate in the Atomic Energy Act should be amended to remove the requirement that the ACRS review all construction permit and operating license applications and instead emphasize that the ACRS should focus on novel and safety-significant issues.

²⁵ This is evidenced by the NRC's completion of the Kairos draft Environmental Impact Statement nearly two months ahead of schedule, subsequent license renewals consistently being completed in 18 months, and the timelines for the TRISO-X and ACU MSRR applications matching generic NRC schedules.

²⁶ See the ACRS Charter: <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML20337A117>

XI. Priority 3: Extension of the Price-Anderson Act

Problem/Challenge. Price-Anderson requires industry to maintain substantial insurance to cover the costs of an accident with offsite consequences, and provides a backstop where the government would provide coverage in excess of the insurance. Though a step in the right direction, the recently introduced ADVANCE Act bill would only grant a 20-year extension, half-way through the reactor licensing period under the provisions of the Price-Anderson Act. An extension of the Price-Anderson Act would provide assurance to potential investors and developers that reauthorization will not be a future barrier to starting a new project.

Proposed Solution. To minimize market uncertainty, Congress should extend the Price-Anderson Act for 40 years, the typical reactor licensing period.

XII. Priority 3: Fuel availability, spent fuel reprocessing and/or disposal

1) High Assay Low Enriched Uranium

Problem/Challenge. Domestic high assay low-enriched uranium (HALEU) fuel supply and security is threatened by dependence on foreign resources. The Russian invasion of Ukraine has made clear the dangers of relying on Russian fuels. Access to reliable domestic HALEU is critical to the deployment of new and advanced reactors in the U.S. and cannot be overstated. Increasing the availability of domestic HALEU will strengthen the U.S. national security.

Proposed Solution. Congress should support funding to secure domestic availability of fuel separate from Russian supply. This will require rapid scale up of production capabilities in the U.S. and or with allies.

2) Spent Nuclear Fuel

Problem/Challenge. As one of the countries with the largest plutonium (Pu) inventory, the U.S. is extremely cautious and cognizant of the associated proliferation concerns regarding reprocessing spent nuclear fuel. While the U.S. maintains reservations about spent fuel reprocessing, many European countries, Russia, China, and Japan have been leading the effort on used fuel reprocessing through policy. Like the U.S., these countries are aware of the proliferation concerns and yet they've managed to reprocess spent nuclear fuel, in the case of France, they've



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been reprocessing safely for decades. The policies in place for these reprocessing countries are driven by reducing the long-term radioactivity of high-level waste and minimizing the probability of Pu diversion from civilian use. One of the main challenges that needs to be addressed is the perception of spent fuel as waste instead of a reusable resource. The alternative is to bury spent fuel underground at a long-term geologic repository. The U.S. government chose Yucca Mountain as a long-term geological repository but due to opposition from the state of Nevada, this effort has been stalled. The U.S. government will need to do some work to regain public trust by being more transparent with communities near long-term geological repository candidates as the nation makes progress on spent fuel management and disposal.²⁷

Proposed Solution. A good balance of the two solutions will require legislative changes to explore reprocessing of civilian spent fuel, as well as re-open the possibility of one or more domestic repository sites. Programs like Advanced Research Projects Agency-Energy (ARPA-E), Converting UNF Radioisotopes Into Energy (CURIE) and Optimizing Nuclear Waste and Advanced Reactor Disposal Systems (ONWARD) programs move in the right direction but are still in the very early stages of R&D. A more comprehensive and scalable program is necessary.

XIII. Conclusion

Positioning the U.S. to become a global leader in advanced reactor deployment will require addressing several regulatory challenges currently facing the civil nuclear industry. BTI believes that these challenges can be addressed through modernization of the existing nuclear regulatory infrastructure. This comment identifies several critical regulatory challenges that are inhibitors of modernization, bins them in order of priority and proposes solutions to address those challenges. Many of the solutions involve intervention from Congress and or the Commission.

1) ²⁷ ANS report on Special Committee on Generic Standards for Disposal of High-Level Radioactive Waste: <https://www.ans.org/policy/repositorystandard/>

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Before the United States House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy, Climate, and Grid Security

Regulation of Nuclear Energy
Request for Information

Clean Air Task Force

May 5, 2023

Re: Clean Air Task Force Response to House Committee on Energy and Commerce Subcommittee on Energy, Climate, and Grid Security Request for Information on Improving the Licensing Review and Approval Process, Oversight of Nuclear Regulatory Commission Licensees, Nuclear Regulatory Commission Activities, and Other Pertinent Information

Clean Air Task Force (“CATF”) is pleased to respond to the House Committee on Energy and Commerce Subcommittee (“Subcommittee”) on Energy, Climate, and Grid Security Request for Information relating to the Nuclear Regulatory Commission (“NRC” or “Commission”). CATF is a global nonprofit organization working to safeguard against the worst impacts of climate change by catalyzing the rapid development and deployment of low-carbon energy and other climate-protecting technologies. With over 25 years of internationally recognized expertise on climate policy, science, and law, and a commitment to exploring all potential solutions, CATF is a pragmatic, non-ideological advocacy group focused on climate change and the clean energy transition. CATF has offices in Boston, Washington, D.C., and Brussels, with staff working remotely around the world.

To reiterate a point from Armond Cohen’s April 18, 2023 testimony, “the U.S. NRC will need to be ready to license large numbers of new advanced reactors by 2030 if nuclear energy is going to play a significant role in reaching U.S. energy and climate goals.”¹ It will need to do so while keeping to its core mission to provide for public health and safety, and, at the same time, conforming to the Atomic Energy Act’s purpose of enabling the “development and utilization of atomic energy for peaceful purposes.”²

Clean Air Task Force (“CATF”) here provides recommendations to meet that challenge, consistent with the NRC values of independence, openness, efficiency, clarity, and reliability as laid out in its “Principles of Good Regulation.”³ These recommendations are based on CATF’s singular experience and understanding of NRC activities and should not be taken as an exhaustive list of policies that could help the NRC improve to meet the demands of U.S. energy and climate goals.

Recommendations to improve the licensing review and approval process, as well as the oversight of NRC licensees.

- **NRC Hearings:** The NRC hearing process can be overly complicated, time-consuming, repetitive, and, in the case of National Environmental Policy Act (“NEPA”) reviews, out of line with normal federal practice. At a minimum, the following should be done:

¹ *American Nuclear Energy Expansion: Powering a Clean and Secure Future: Hearing Before the H. Subcomm. on Energy, Climate, and Grid Security*, 118th Cong. 61 (2023) (written testimony of Armond Cohen, Executive Director, Clean Air Task Force) [hereinafter Cohen, *Testimony*].

² 42 U.S.C. § 2013(d).

³ Nuclear Regulatory Commission (“NRC”), *NRC: An Independent Regulatory Agency*, at 2, <https://www.nrc.gov/docs/ML2028/ML20282A656.pdf> (last visited Apr. 16, 2023); see also NRC, *Principles of Good Regulation*, <https://www.nrc.gov/docs/ML1413/ML14135A076.pdf> (last visited Apr. 16, 2023) (expounding on the agency’s regulatory principles).

- Simplify contested hearings, reduce unnecessary administrative burdens like discovery, and eliminate hearings on topics with no impact on the adequate protection of public health and safety.
 - Revise the Atomic Energy Act (“AEA”) Section 189a.(1)(A) to clarify that NEPA issues should not be part of the scope of hearings granted on request of any interested person.
- Advisory Committee on Reactor Safeguards (“ACRS”): As the Nuclear Innovation Alliance (“NIA”) noted in a [March 2023 report](#), “changes in the NRC and its scope of work over the decades along with a static statutory mandate has [sic] increased ACRS engagement in matters where the ACRS provides less overall value... It is timely to consider a different role for the ACRS as it no longer serves the same role as its predecessor did in the 1950s-60s during the dawn of the nuclear age.”⁴
 - Revise the Atomic Energy Act to narrow ACRS reviews to only those that present new and significant safety issues as designated by the Commission.
- Public and Applicant Engagement: The NRC has a self-imposed practice of limiting substantive conversations between NRC staff and license applicants to public fora. This practice is done in the name of transparency but creates unnecessary burdens and significant delays. At the same time, the NRC’s website, document management system, and public engagement processes need to be updated.
 - Clarify to the Commission that the NRC staff can and should engage in non-public meetings to resolve issues directly and quickly, while still maintaining transparent information exchanges with the public by maintaining licensing submittals and written communications in ADAMS.
 - Direct the Commission to update its website, modernize the Agencywide Documents Access and Management System (“ADAMS”), and improve the public meeting process by encouraging NRC engagement and two-way communication.

Recommendations on the NRC’s implementation of the Nuclear Energy Innovation and Modernization Act (“NEIMA”) mandate to develop a “technology-inclusive, risk-informed, performance-based regulatory framework” (“TI-RIPB”) for advanced reactors.

- The most urgent issue facing the NRC today is the creation of a new licensing and regulatory framework for advanced reactors. Unfortunately, the draft proposed advanced reactor regulatory framework (10 C.F.R. Part 53), submitted by the NRC staff to the Commission on March 1, 2023, does not carry out NEIMA’s mandate of a truly TI-RIPB rule. Instead, the proposed Part 53 framework further builds on the prescriptive requirements and framework designed for conventional reactors, creating a rule that would make licensing advanced reactors under Part 53 even more challenging than it would be under Parts 50 and 52. Although the public (including industry and NGOs)

⁴ Danielle Emche et al., Nuclear Innovation Alliance, *Improving the Effectiveness and Efficiency of the Advisory Committee on Reactor Safeguards* 11 (2023), <https://www.nuclearinnovationalliance.org/index.php/improving-effectiveness-and-efficiency-advisory-committee-reactor-safeguards>.

have submitted extensive and detailed comments addressing the flaws in the proposed rule and have proposed tangible solutions, these comments have not been addressed.⁵

- Direct the Commission to direct the NRC staff to pull the proposed Part 53 rule package back and modify it to incorporate public comments with the goal of truly addressing NEIMA's mandate before releasing it for public comment.

Information and recommendations about improving NRC efficiency, management of regulatory costs and fees, public health and safety, staff effectiveness and culture, collaboration with the Department of Energy, and International Activities.

- NRC Fees, Funding, and Compensation: The NRC's fee, funding, and compensation structure can be reformed in several ways to enable many of the reforms above and reduce the undue and often restrictive burden on applicants, while also allowing it to hire and retain the best talent. The following recommendations are adapted from the ACRS report noted above and the [NIA summary Draft Report](#) Armond Cohen referred to in his April 18 testimony.⁶
 - Revise the Atomic Energy Act to provide that all costs associated with ACRS reviews, including the cost of ACRS time, be excluded from the fee recovery requirement.
 - Revise the Atomic Energy Act to provide that all NRC staff time used to prepare for ACRS meetings should not be billed to licensees and should also be excluded from fee recovery.
 - Increase or modify the corporate support cap for NRC to provide adequate resources for management.
 - Increase or modify NRC off-fee funding to enable greater project management training for NRC staff and management.
 - Increase or modify the corporate support caps for NRC to enable more effective hiring, retention, and staffing.
 - Provide NRC with more flexible hiring and compensation authority for technical positions within agency (like the Securities and Exchange Commission does).
 - Provide off-fee funding to expand and accelerate future-focused research at the NRC in order to support the development of regulatory processes that can enable industry to utilize new or novel technologies while still allowing the NRC to meet its public health and safety mission.
 - Increase off-fee funding for NRC development of new digital information tools and frameworks (e.g., update its website, improve ADAMS, improve the public meeting process).
 - Increase off-fee funding for dedicated staff to bolster transparency and public confidence in NRC programs by conducting proactive, two-way engagement with the public and developing simplified and accessible technical documents

⁵ See, e.g., Cohen, *Testimony*, *supra* note 1, at 64-65, and sources cited therein.

⁶ See generally *id.*; Patrick White & Judi Greenwald, NIA, *2023 NRC Reform Recommendations: Discussion Draft* (2023), <https://www.nuclearinnovationalliance.org/index.php/nia-discussion-draft-nrc-reform-recommendations>; and Cohen, *Testimony*, *supra* note 1.

- **Regulatory Innovation and Efficiency:** The NRC will need to increase the effectiveness of its technical and project management as well as adopt more innovative practices if it is to license advanced reactors at the needed scale. To this effect, the following recommendations are adapted from the NIA summary Draft Report Armond Cohen referred to in his April 18 testimony.⁷
 - Establish a Blue Ribbon Committee to conduct a one-year review and audit of NRC effectiveness - heavily weighted with former NRC staff, management, and senior leadership.
 - Provide direction and funding to NRC Commission to develop an Office of Regulatory Innovation.
 - Direct the GAO or NRC to assess and draw lessons from regulatory innovation in other sectors (e.g., aviation regulation) and report on process improvements or changes.
- **Nuclear Liability:** The Price-Anderson Act (“PAA”), which was enacted in 1957 as an amendment to the AEA, has established a system of financial protection that has allowed the participation of private companies in the nuclear industry in the United States for the past 65 years and has provided protections to members of the public in the unlikely case of a nuclear incident. Further, the PAA is necessary for the United States to comply with its obligations under the Convention on Supplementary Compensation for Nuclear Damage (“CSC”). The CSC provides nuclear liability protections to U.S. nuclear exporters for projects overseas, and as such, is highly important in allowing the United States to participate and thrive in the quickly growing nuclear market, facilitating decarbonization and national security initiatives.
 - Extend the PAA for at least 40 years past its expiration in 2025.
- **Foreign Investment:** The AEA prohibits the NRC’s issuance of a license to own or operate a power or research reactor to any company owned, controlled, or dominated by a foreign entity. Under the NRC’s current interpretation of the AEA’s requirements, all owners of a nuclear power plant—including even those with a small minority interest—are required to obtain an NRC license to hold such interest and may not do so without the NRC’s finding of an absence or sufficient negation of foreign ownership, control or domination (“FOCD”). This provision and the NRC’s interpretation of it have hindered nuclear projects with U.S. allies in the past. Further, this provision is duplicative because the AEA already contains a requirement that the NRC refrain from issuing licenses that “would be inimical to the common defense and security or to the health and safety of the public.” Accordingly, even without the FOCD prohibition, the NRC already reviews potential investment by foreign interests into companies that operate power and research reactors from a national security and public interest standpoint.
 - Eliminate altogether the AEA’s FOCD restrictions with regard to power and research reactors.
 - Alternatively, the ADVANCE Act’s “Investment by Allies” section would change the AEA requirements to allow foreign ownership of reactors by companies in nations that do not pose security risks. However, the list of permitted countries in

⁷ White & Greenwald, *supra* note 6.

the ADVANCE Act is too exclusive and leaves out several U.S. allies and key players in the nuclear industry. Our recommendation is to waive the FOCD restrictions for companies not located in nations whose policies are deemed inimical to the common defense and security or to the health and safety of the public (e.g., “Restricted Countries”). A list of Restricted Countries could be maintained and updated from time to time by the NRC.

Other issues that may be pertinent to regulation or deployment of nuclear reactor technologies

- NRC Mission: The NRC’s public health and safety mission is paramount, but it leaves out other important elements from the Atomic Energy Act’s original mandate, elements that would put the NRC in a better position to facilitate the U.S. achieving its clean energy and climate goals. This creates a condition where NRC operates under a different approach from other regulatory agencies like the Federal Aviation Administration.
 - Clarify the NRC’s mission to incorporate timeliness and efficiency.

We appreciate the opportunity to submit this information and look forward to discussing with Committee Members and professional staff.

Respectfully submitted,

Clean Air Task Force

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CLEARPATH ACTION

May 5th, 2023

Chair Cathy McMorris Rodgers
Energy and Commerce Committee
The House of Representatives
Washington, DC 20515

Ranking Member Frank Pallone
Energy and Commerce Committee
The House of Representatives
Washington, DC 20515

Subcommittee Chair Jeff Duncan
Energy, Climate, and Grid Security
Subcommittee
Energy and Commerce Committee
The House of Representatives
Washington, DC 20515

Subcommittee Ranking Member Diana DeGette
Energy, Climate, and Grid Security
Subcommittee
Energy and Commerce Committee
The House of Representatives
Washington, DC 20515

Dear Chair McMorris Rodgers, Ranking Member Pallone, Chair Duncan, and Ranking Member DeGette:

Thank you for the opportunity to respond to the House Energy and Commerce Subcommittee on Energy, Climate, and Grid Security's request for information (RFI) that will inform new legislation and oversight activities to modernize the Nuclear Regulatory Commission (NRC). ClearPath Action, a 501(c)(4) organization, advocates for clean energy innovation, modernized permitting and regulatory reform, American manufacturing competitiveness, and unlocking America's natural resources.

ClearPath Action would like to thank the Committee for its leadership on U.S. nuclear energy, including the Nuclear Energy Innovation and Modernization Act (NEIMA) of 2019, which helped bring attention to the vital role of the regulator in enabling innovation. This RFI is an important next step in gathering information and developing comprehensive NRC-modernization legislation that provides the NRC with the incentive, ability, and direction to handle the increased variety and volume of new reactor applications.

Significant bipartisan support for nuclear energy, including the support from this Committee, has cleared the path for multiple first-of-a-kind demonstrations in the near future and primed the industry for widespread deployment shortly thereafter. In fact, the NRC has publicly stated it anticipates at least 13 applications for advanced reactors by 2027.¹ This domestic momentum is gaining international attention. At least eight U.S.-based companies have publicly-announced international partnerships to explore deployment in more than 10 countries, and more are in conversation.

The expeditious deployment of nuclear energy domestically will have many benefits. Nuclear energy contributes to our nation's energy and national security; provides a strong tax base and high-paying, sustained jobs for local communities; and accelerates the world toward meeting

¹ <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML22038A001>

clean energy and climate targets. Nuclear energy is also a reliable source of 24/7 clean electricity. To date, billions of public and private dollars have been invested in enabling the development of new nuclear reactors, and deploying these reactors should have an efficient, effective, and predictable licensing process.

Additionally, the U.S. should be a reliable ally in international nuclear deployment to the dozens of countries interested in building new nuclear facilities. Russia currently supplies the majority of the nuclear export market, and one-third of all reactors under construction in the world today are in China. The U.S., in partnership with our allies, must provide an alternative to Russia and China for countries that want to utilize nuclear energy.

One mechanism to enhance nuclear deployment domestically and spur innovation is to modernize the NRC, and Congressional direction is needed. Over time, the culture of the NRC has trended toward indecision and excessive caution. The resulting regulatory uncertainty has limited investment, stifled innovation, and delayed the deployment of safe, emissions-free nuclear technologies. For example, the NRC's lack of experience with new technologies has led to the applicants educating NRC staff on technologies at the applicant's expense. High NRC staff attrition and turnover exacerbates this preventable waste of small-business resources.

A successful regulator would change the deployment landscape. It would be trusted by the public, inspire confidence in the licensing process, and lend credibility to the projects it licenses. Predictably and efficiently issuing licenses that uphold the NRC's important safety and security mission would enable nuclear innovation. Improved NRC credibility and accelerated technology deployments would unlock new markets and improve the common defense and security by creating a U.S. alternative to Russian and Chinese energy dominance. In addition, each reactor deployment provides incredible benefits for a global clean energy future. Finally, a successful regulator would foster internal NRC staff trust in leadership and constantly improve organizational culture to reverse the downward trend in workplace satisfaction and foster a culture of proactiveness and innovation.

Today, the nuclear industry is headed towards an optimistic future, but all new reactor designs, and their chance for deployment face hurdles at the NRC. These next few years are crucial to enabling wide-scale deployment. The NRC will need to balance necessary modernization activities with reviewing the initial wave of license applications. Congress must provide the NRC with the proper incentives, abilities, and direction to review the variety and volume of nuclear technologies under development. To be successful, Congress must take a holistic approach to legislative action.

Below are ClearPath Action's recommendations to comprehensively address the human capital, process, procedure, and legislative challenges at the U.S. Nuclear Regulatory Commission. The U.S. nuclear industry is growing to address increased domestic demand and the global market. There must be broad, comprehensive changes at the NRC to transition it to an agency that can efficiently license and oversee hundreds of new reactors. A successful NRC will be vital for energy security, national security, clean energy deployment, and public safety.

Again, thank you to the Committee for the opportunity to provide our feedback on this matter.
We look forward to working with the Committee on this important topic.

Sincerely,

A handwritten signature in black ink, appearing to read "Rich Powell". The signature is fluid and cursive, with the first name "Rich" and last name "Powell" clearly distinguishable.

Rich Powell
Chief Executive Officer
ClearPath Action

Nuclear Regulatory Commission Purpose, Employee Retention, and Continuous Improvement

Update the Nuclear Regulatory Commission's purpose to enable the safe, secure, and environmentally responsible use and control of atomic energy.

The NRC's culture has trended toward indecision and excessive caution. There are numerous examples of public meetings, especially on Part 53, where the NRC staff do not directly answer questions from industry or public stakeholders. It is common for staff to say their inaction is caused by the belief that being proactive is equivalent to promoting the industry or nuclear technology. The staff also see adapting to industry trends as promotional and not focused on public health and safety. However, as overseers of the regulatory framework for the civilian nuclear energy industry, the Commissioners and NRC staff should be able to confidently respond to questions on applicable regulatory requirements for a company or explain regulatory safety decisions to the public.

This philosophical and cultural challenge does not allow the NRC to prepare to license a budding domestic industry expeditiously. It also prevents the NRC from further engaging with new nuclear countries to ensure they can safely regulate nuclear energy within their borders.

Recommendation: Amend the Atomic Energy Act of 1954 to statutorily require that the NRC's purpose includes "enabling the safe, secure, and environmentally responsible use and control of atomic energy." This change provides direction to the NRC to serve the public interest as well as its important safety and security mission.

Recommendation: Update the Atomic Energy Act of 1954 section that establishes the NRC's Office of Nuclear Reactor Regulation (NRR) to clarify that part of the Office's responsibilities are to enable the deployment of nuclear technologies and be efficient, effective, predictable and anticipatory of industry trends.

Require an external, continuous modernization audit of the NRC.

Comprehensive modernization of the NRC will be an iterative process over several years as it continues to build staff capacity and capabilities. An external, continuous audit of the NRC would draw from NRC lessons learned; the lessons of other nuclear and non-nuclear industries; foreign regulators such as the Canadian Nuclear Safety Commission; and domestic regulators such as the Federal Aviation Administration, Food and Drug Administration, and Federal Energy Regulatory Commission. It would also be able to impartially gather feedback from NRC licensees, applicants, and external stakeholders to recommend process improvements to facilitate efficient licensing.

Recommendation: Authorize an external management and accounting audit to provide ongoing recommendations for how the NRC can better its project management practices. This audit should include recommendations that can be implemented at the staff level, management level, and Commission level. It should also identify areas that require Congressional action. This audit should be conducted every five years to ensure the NRC continuously seeks to improve and innovate its processes.

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Reform compensation structure to attract and retain industry leaders.

In June 2022, the NRC staff stated to the Commissioners that 42 percent of staff are eligible to retire within the next five years.^{2,3} Furthermore, 22% of the workforce is under the age of 40, and 57% of the workforce is over the age of 50.⁴ Concurrently, the nuclear industry is rapidly expanding with dozens of innovative companies looking to hire highly technical engineers and scientists. This competition for talent puts additional strain on the NRC, which has also decreased in total employees by nearly 25% since 2016, to ensure that it has the correct staff and expertise to license and oversee the industry. A technically-compromised NRC will negatively impact the industry. Even if processes and procedures are properly aligned to accelerate licensing, a lack of technical expertise will slow the licensing process.

The GS payscale can also make hiring expert mid-career professionals challenging for the NRC. For example, due to the locality pay in the Washington DC region, top technical staff do not receive a promotion or step change (salary increase) once they reach GS-15 step 7. Additionally, the NRC's Senior Level Service pay group, which are non-managerial technical experts, is only about 1% of the NRC's staff.⁵ Not offering growth and development potential for high-performing staff limits the recruitment and retention of staff who are objectively world leaders in their fields. To address similar challenges, several financial regulatory agencies⁶ pay their employees different salaries than the GS scale and offer meaningful differences in benefits to attract staff competitively with the private sector. The NRC must be able to attract ambitious and capable staff at all career stages to create a robust regulatory body for the nuclear industry.

Recommendation: Require the Government Accountability Office, in conjunction with the Nuclear Regulatory Commission and the Office of Management and Budget, to develop a report comparing the NRC's pay structure to other federal agencies and recommend changes to attract and retain high-performing staff. To permit the NRC to incorporate changes, the Atomic Energy Act requires an amendment.

Regulatory Changes for Modernized Licensing Reviews

Improve the licensing process for subsequent reactor builds.

After a reactor has been deployed, its construction and operating experience can provide confidence in licensing subsequent builds of that design. Changes to NRC regulations, processes, and procedures can allow the staff to thoughtfully incorporate this construction and operating experience to facilitate the rapid deployment of new technologies.

Overall, ClearPath Action broadly urges the Committee to consider policies that can enable subsequent builds. This response contains specific recommendations to retool both licensing

² <https://www.nrc.gov/docs/ML2217/ML22175A025.pdf>

³ <https://www.nrc.gov/docs/ML2216/ML22161A036.pdf>

⁴ <https://www.nrc.gov/about-nrc/employment/workingatnrc.html>

⁵ <https://www.federalpay.org/employees/nuclear-regulatory-commission>

⁶ For example, the agencies listed in 12 U.S.C. 1833b, as amended; the Securities and Exchange Commission; the Board of Governors of the Federal Reserve Board; and the Office of the Comptroller of the Currency.

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and environmental review processes that accelerate the deployment of new technologies while maintaining the NRC's important safety and security mission and protecting the environment.

Recommendation: Require several targeted rulemakings to expedite the NRC licensing process for subsequent deployments of proven designs. For example:

1. Create a pathway for operating reactors licensed by the NRC to qualify for a Design Certification more easily. Design Certifications are a way to reduce licensing timelines by gaining NRC approval for an essentially complete design.
2. Create an optional, expedited licensing procedure for reactors that have been licensed and built so that a final licensing decision can be made in less than 18 months.
3. Implement targeted changes that would improve licensing efficiency:
 - a) Extend the duration for which a manufacturing license is valid.
 - b) Clarify the amount of commercial power activity permitted at research and test reactors. This would benefit the deployment of new and upgraded research and test reactors.

Improve the internal adjudicatory process.

According to a recent report by Idaho National Laboratory,⁷ NRC hearings have a significant impact on licensing processes. They can potentially increase timelines for every licensing action by 4-7 months without providing any additional safety benefits. These delays significantly impact financing timelines and increase the cost of projects. The report offers several recommendations to improve the hearing process, decrease timelines, and maintain stakeholder engagement. The NRC should modify its regulations and procedures to minimize hearings with no benefit to public safety or the environment. This would accelerate the licensing timeline, improve the use of staff and applicant resources, and allow the staff to focus on important topics related to their safety and security mission.

Recommendation: Require that the NRC use informal adjudication to the maximum extent possible in the circumstances when –

- a) a license renewal is similar to a previously approved license renewal of a similar reactor design;
- b) a license application for which a reactor of a similar design has already been licensed;
- c) a license is transferred for a licensee; and
- d) a license is amended.

Recommendation: Require the Comptroller General to conduct a study on further improving NRC adjudicatory procedures' efficiency, effectiveness, and predictability.

Recommendation: In accordance with the INL report, require the NRC to remove the contested hearing opportunity on environmental topics to align with the traditional public comment and challenge process under NEPA, as well as amend the Atomic Energy Act

⁷ Idaho National Laboratory, "Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process," INL/RPT-23-72206 Revision 0, dated April 2023

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of 1954 to remove the requirement for the NRC to hold an uncontested “mandatory hearing.”

Improve information systems and resources for stakeholder engagement.

The NRC is difficult to engage with due to outdated document management and conferencing systems, convoluted record-keeping procedures, aging online infrastructure, and the broad stakeholder groups that the NRC engages with. Due to the highly technical nature of the NRC’s work, the NRC needs to communicate effectively with stakeholders; however, the document search system is opaque, and the method for finding meeting information is not intuitive. It is a difficult task to be accessible, and the NRC must make an effort to foster the public’s trust, build confidence in the licensing process, and provide credibility to the projects it licenses.

Recommendation: Direct the NRC to add public engagement into its guiding laws. This can be accomplished by adding a definition for “public engagement” to the Nuclear Energy Innovation and Modernization Act fee-relief activities and by adding a public information and engagement mandate to the Energy Reorganization Act of 1974 regarding NRC activities.

Enable the Use of Modern Technologies to Remediate Legacy Uranium Mine Sites.

Legacy uranium mining activities continue to be a burden on communities and a significant barrier to the deployment of new nuclear technologies. New remediation technologies hold promise to clean up these sites quickly and cheaply; however, the Atomic Energy Act of 1954 did not envision these new technologies and currently requires a specific type of license that is not appropriate. This creates a significant barrier to their deployment. Recently, the Commissioners issued a letter⁸ stating that they directed the NRC staff to provide different options for the licensing of emerging technologies used for remediating mine waste. To accelerate and codify that change, Congress can take action to enable these new remediation technologies.

Recommendation: Amend the Atomic Energy Act of 1954 to enable the use of modern technologies to help remediate uranium mine sites. The current regulatory framework must be updated to recognize the environmental benefits that can be provided by novel technologies and approaches to remediation at uranium mining sites that are contaminated by uranium and other constituents of concern.

Create a design-specific general license.

New nuclear technologies can be built more quickly than large light water reactors. In many cases, they can be built in a factory and shipped to be constructed at sites around the country and the world. This business model has been successful for other industries, such as aerospace and combined cycle natural gas, but the nuclear regulatory framework currently impairs the pace and scale envisioned.⁹ Enabling a general license for new nuclear technologies would fundamentally change the deployment rate of clean, reliable nuclear technologies.

⁸ <https://www.nrc.gov/docs/ML2308/ML23089A233.pdf>

⁹ The NRC can currently issue general licenses for other technologies that it regulates.

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Recommendation: Amend the Atomic Energy Act of 1954 to require the NRC to establish a design-specific general license for a production or utilization facility, including non-power facilities, similar to a design the NRC has already licensed. In addition, the NRC should include, as part of the design-specific general license review, a generic environmental review that meets the National Environmental Policy Act requirements. Any generic environmental review shall be updated every 10 years to maintain relevance. The designs would still be subject to Commission rules and regulations related to their safe operation, maintenance, and decommissioning. Any changes to the design, as defined by an appropriate change control process, would still be subject to further review by the NRC.

Clarify the definition and regulation of fusion energy.

Recently the Commissioners unanimously voted to regulate fusion energy under a byproduct material framework.¹⁰ This was a positive development and will continue through the NRC's processes. However, this would not fix any underlying statutory confusion about the relationship between fusion and fission energy production facilities.

Recommendation: Update the Nuclear Energy Innovation and Modernization Act to remove "fusion" from the December 31, 2027 timeline to complete the technology-inclusive regulatory framework rulemaking.

Recommendation: Amend the Atomic Energy Act to clarify that a fusion facility should be regulated as a byproduct material facility, not a utilization facility. This change would remove ambiguity relating to the Commissioner's vote pathway for fusion energy systems.

Extend the Price-Anderson Act.

The United States is one of the few countries with an accident liability and compensation framework in place. Nuclear energy has unique liability needs, and the U.S. must retain this framework to ensure liability is assigned and the public is protected in the case of a major accident. Reactors are initially licensed for a period of 40 years, so any built now through 2050 would be subject to Price-Anderson if it were extended by a least 75 years.

Recommendation: Extend the sunset date of the Price-Anderson Act for at least 75 years.

Recommendation: Require the Government Accountability Office to review and recommend changes to Price-Anderson every 15 years due to the advances in the nuclear industry.

¹⁰ SECY-23-0001

Regulatory Changes for Modernized Environmental Reviews

Prepare for new instances of National Environmental Policy Act implementation.

In addition to a technical review, the NRC performs an environmental review in accordance with the National Environmental Policy Act (NEPA). The current environmental review framework requires an environmental impact statement (EIS) regardless of the project; however, decades of operation have shown that nuclear energy has minimal environmental impacts. Advanced reactors, which have smaller footprints and passive safety features, would further reduce the potential environmental impact. Changing requirements like this can provide flexibility to regulate in a performance-based and risk-informed manner, remove redundancy, and support the safe, environmentally protective deployment of new nuclear technologies.

Recommendation: Require the NRC to promulgate a comprehensive rule to update how it complies with the NEPA to alleviate the administrative burden on the NRC staff, licensees, and applicants while continuing to ensure a robust, risk-informed, and environmentally protective process.

- a) Establish or revise a Generic Environmental Impact Statement for facilities in energy communities to make it easier to site and permit nuclear reactors on brownfields and former fossil fuel sites.
- b) Modify which actions require an EIS, and could utilize an Environmental Assessment of Categorical Exclusion.
- c) Remove hearings on uncontested issues.
- d) Remove the six-month maximum separation between filing the two parts of a license application.
- e) Create a modified early site permitting process for sites in energy communities.

Expand access for Energy Communities to early site permits.

Advanced reactors can be worthwhile for communities with retiring or retired thermal generating facilities. Because advanced reactors are also thermal generating facilities, many of the job skills are transferable. Unlike solar panels and wind turbines, an advanced nuclear facility creates hundreds of sustained, high-paying, and directly-related skilled jobs for a community. However, the regulatory process can be daunting for areas going from fossil-based to nuclear-based thermal generation; policies that make this option more accessible are crucial.

Recommendation: Amend the Nuclear Energy Innovation Capabilities Act of 2017 to give energy communities access to the Advanced Nuclear Energy Licensing and Cost-Share Grant program for early site permits.

International Regulatory Coordination, Support, and Harmonization

Increase international cooperation and leverage harmonized reviews.

New nuclear energy will have a global impact, and regulatory practices can be shared to strengthen international partnerships, accelerate the learning curve of global regulators to improve safety and security, and ease the burden on U.S. innovators deploying internationally.

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Furthermore, as Russia and China dominate the current nuclear energy market, it is critically important that the United States remains a global leader. Regulation plays a role, and the NRC cannot be a passive observer.

Recommendation: Expand the NRC's authority to coordinate international and interagency cooperation, including –

- a) efforts to pursue regulatory harmonization and compatibility with non-U.S. regulators;
- b) exchange programs and training activities; and
- c) joint reviews of regulations with trusted international partners to create consensus codes and standards.

Recommendation: Require the NRC to incorporate and leverage harmonized license reviews performed by non-U.S. regulators.

Fee Modernization to Unlock Innovation

Commence a study to assess NRC funding.

The NRC's current fee structure inhibits innovation. High costs, now \$300/staff-hour in Fiscal Year 2023,¹¹ create a significant barrier to new entrants. Additionally, this fee-based system, in which the NRC is responsible for recovering 100% of its total budget authority except for specific fee relief activities,¹² prevents the NRC from proactively considering and implementing actions with long-term benefits. This stifles a culture of innovation and continuous improvement. While there are several recent proposals¹³ on modifying the NRC's fee structure, this would be a significant effort. A study to recommend a long-term structural change that enables a proactive and innovative NRC should be considered; otherwise, most of the modernization efforts proposed will not be successful.

Recommendation: Require a review that results in a report to study current NRC funding and make recommendations to improve the long-term fee structure to ensure that –

- a) the fee structure is not an unnecessary barrier to new entrants;
- b) any fee restructuring does not impose overly burdensome fees on existing licensees;¹⁴
- c) the NRC has sufficient resources to meet its safety and security mission;
- d) the NRC fosters a culture of innovation and continuous improvement;
- e) decision making is efficient, effective and predictable; and

¹¹

<https://www.federalregister.gov/documents/2023/03/03/2023-03940/revision-of-fee-schedules-fee-recovery-for-fiscal-year-2023>

¹² <https://www.congress.gov/bills/115/congress/senate/bills/512/text/Sec.102>

¹³

<https://www.nuclearinnovationalliance.org/unlocking-advanced-nuclear-innovation-role-fee-reform-and-public-investment>

¹⁴ In FY23, the annual fee on operating large light water reactors is \$5,753,000. While the NRC has proposed annual fee changes for smaller reactors, any long term change will need to ensure that it does not impose overly burdensome annual fees on the variety of reactor designs under development.

**ClearPath Action Response to the Request for Information from
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- f) the study considers funding models for similar regulatory agencies, international regulatory agencies, and private industries which regularly bill hours.

Implement interim changes to NRC fees.

Before implementing the best long-term path forward to modify the NRC's fee structure, there are near-term, straightforward, and simple changes to the fee structure that would significantly improve the circumstances. Implementing these changes will minimize barriers to early entrants and lay the groundwork for a culture of continuous improvement at innovation at the NRC.

Recommendation: Give small businesses an option to delay collection on a portion of their application fees that are accumulated until they begin operation.

Recommendation: Remove generic, cross-cutting, and broadly-applicable regulatory processes from the fee base in order to reduce the fee burden on specific applicants or licensees. In addition, allow the NRC staff to perform administrative and preparatory activities apart from its safety-critical licensing and oversight activities.

Recommendation: Amend the Nuclear Energy Innovation and Modernization Act to extend the duration of time that new regulatory infrastructure development for advanced nuclear reactor technologies is a fee-relief activity.

Remove the administrative burden from technical staff.

The cost restriction placed on centrally managed activities, imposed through previous legislation, has unintentionally led to the underutilization of human capital. Due to decreased administrative and support staff, technical staff now perform additional administrative tasks. If related to a license application or licensee, then it's likely that these costs are directly passed along to companies as fees. It is important that the NRC has robust corporate support so the NRC's technical experts are not overly burdened by performing administrative tasks.

Finally, other challenges around corporate support have been identified, including reductions to staff that directly support the Commissioners on legal matters, adjudicatory matters, and public affairs.¹⁵ Removing corporate support from the fee base eliminates these challenges and provides Congress with greater oversight.

Recommendation: Amend the definition of corporate support costs, remove the cost cap on centrally managed activities, and remove those activities from the fee base.

Advisory Committee on Reactor Safeguards Modernization

Modernize the role of the Advisory Committee on Reactor Safeguards (ACRS).

The ACRS plays an important role. However, currently, the ACRS is required to review every application for a new reactor as well as other topics. In the short term, this presents a significant

¹⁵ Letter to the Honorable Thomas R. Carper, et al., submits the NRC's report on NEIMA - Implementation, Impacts, and Recommendations for Improvement on the NRC's Annual Budget Justification; Fees and Charges; Performance Reporting and Milestones; and Accurate Invoicing
<https://www.nrc.gov/docs/ML2123/ML21238A132.pdf>
<https://www.nrc.gov/docs/ML2123/ML21237A033.pdf>

**ClearPath Action Response to the Request for Information from
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bottleneck to licensing new reactors, especially if the review covers technologies or topics that are well understood or have no impact on safety and security. Furthermore, after a design has significant operating experience, an ACRS review may not be necessary. Additionally, there should be greater flexibility for the Commissioners to seek input when warranted, such as for new and novel features or applications of nuclear energy technology. These changes would empower ACRS to focus on the highest-impact areas.

Recommendation: Amend the scope of the role of the Advisory Committee on Reactor Safeguards so it can better perform its important role within the NRC and retain its core statutory functions.

Recommendation: Reduce the administrative and bureaucratic burden on the ACRS by making a review of a portion of an application contingent on a Commission request.

Part 53 and other Rulemakings

The Nuclear Energy Innovation and Modernization Act (NEIMA) directed the NRC to develop a technology-inclusive framework for advanced reactor licensing. The rule development process started in November 2020. In March 2023, the NRC published its draft proposed rule for licensing advanced nuclear reactors for the NRC Commissioners to review and vote on. Unfortunately, despite the thoughtful comments from stakeholders and future licensees, the draft proposed rule does not enable the rapid deployment of new nuclear technologies.¹⁶

While the draft proposed rule falls short, the principles of NEIMA are still valid, and ClearPath Action currently does not believe legislation is required on the topic of Part 53. There must be robust Congressional oversight to get Part 53 in line with its mandate in NEIMA. Furthermore, speed should not take priority over a successful rule, and the Committee should balance these two priorities in its oversight of the NRC. Finally, there are additional important ongoing and future rulemakings beyond Part 53, for which this Committee should oversee proper implementation.

Recommendation: Continued Committee oversight over the Part 53 rulemaking, other important rulemakings, and NRC actions.

¹⁶ <https://clearpath.org/our-take/new-nuclear-energy-needs-new-licensing-process/>



April 26, 2023

The Honorable Cathy McMorris Rodgers
Chair, Energy and Commerce Committee
House of Representatives
2125 Rayburn House of Representatives
Washington, DC 20510

The Honorable Frank Pallone, Jr.
Ranking Member, Energy and Commerce
Committee
House of Representatives
2125 Rayburn House of Representatives
Washington, DC 20510

The Honorable Jeff Duncan
Chair, Subcommittee on Energy, Climate,
and Grid Security
House of Representatives
2125 Rayburn House of Representatives
Washington, DC 20510

The Honorable Diana DeGette
Ranking Member, Subcommittee on Energy,
Climate, and Grid Security
House of Representatives
2125 Rayburn House of Representatives
Washington, DC 20510

SUBJECT: Response to April 14, 2023 Request for Information - Nuclear Regulatory
Committee Improvements Report

Dear Chairwoman McMorris Rodgers, Chairman Duncan, and Ranking Members Pallone and
DeGette:

Thank you for your interest in and support for nuclear energy and your efforts to ensure regulation, licensing and oversight of nuclear systems and technologies that are effective and efficient and serve the interests of the nation. As the Director of Idaho National Laboratory – the nation’s center for nuclear energy research, development, and demonstration – I very much appreciate the opportunity to provide our input to your Subcommittee’s considerations to improve the Nuclear Regulatory Commission (NRC) licensing review and approval processes.

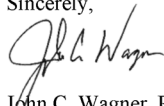
The United States benefits from having an agency such as the NRC, which is viewed internationally as the leader in nuclear safety licensing and regulation. While acknowledging the NRC’s important role and reputation, it is apparent that one of the most significant time and resource intensive activities for developers of new nuclear systems, including advanced nuclear reactors, is the NRC licensing process. The time and cost to obtain NRC licenses represent significant fractions of the total time and cost for new nuclear projects and may result in abandonment of projects or failure to even begin new projects. This situation presents a particularly troublesome risk for the nation given the urgency in which utilities and other significant energy generators are working to transition to clean, firm, non carbon-emitting energy sources like nuclear energy.

Committee on Energy and Commerce
April 26, 2023
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Thankfully, reforms to the NRC licensing process have the potential to greatly increase efficiency and predictability and support the successful progress of new reactors. I believe that the NRC can retain its world-class nuclear safety reputation while becoming a world leader for regulatory efficiency and a critical enabler to the clean energy transition. The attached report describes potential NRC reforms, focusing on those with a statutory connection. Recognizing the potential tradeoffs with any proposed changes, the report attempts to highlight those considerations in the analysis of the reforms. The recommendations are presented as a set of options for consideration. Although difficult to calculate precise time improvements for some of the changes, the reforms have the potential for substantial improvements, perhaps even by a factor of two.

We believe that reforms to the NRC licensing process will help ensure that the U.S. remains the world leader in nuclear energy development and deployment and help enable a global clean energy transition. Again, thank you for your subcommittee's interest in this critically important topic and for the opportunity to provide input to your efforts.

Sincerely,

A handwritten signature in black ink, appearing to read "John C. Wagner".

John C. Wagner, Ph.D.
Director, Idaho National Laboratory
and President, Battelle Energy Alliance, LLC

ALH:MRR

Attachment: Recommendations to Improve the Nuclear Regulatory Commission Reactor
Licensing and Approval Process



NUCLEAR
CARBON-FREE ENERGY

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May 4, 2023

The Honorable Cathy McMorris Rodgers
Chair
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20510

The Honorable Frank Pallone, Jr.
Ranking Member
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20510

The Honorable Jeff Duncan
Chair
Subcommittee on Energy, Climate, and
Grid Security
Washington, D.C. 20515

The Honorable Diana DeGette
Ranking Member
Subcommittee on Energy, Climate, and
Grid Security
Washington, D.C. 20515

Dear Chair Rodgers, Chair Duncan, Ranking Member Pallone and Ranking Member DeGette,

On behalf of the nuclear industry, NEI¹ appreciates your efforts to ensure that the regulation of the commercial nuclear power industry is consistent with the Atomic Energy Act and the Nuclear Regulatory Commission's (NRC) own Principles of Good Regulation. This is an important time for the nuclear industry, as it is being called on to play an increasingly critical role in meeting the nation's carbon reduction and energy security goals and prepares for the long-term operation of its existing plants and construction of new, advanced plants. For the nuclear industry to fulfil this mission, the NRC must aggressively modernize itself to improve the efficiency, timeliness, and predictability of its licensing and oversight processes significantly.

Current State

The U.S. nuclear fleet is performing at unprecedented levels of safety and reliability.² Advances in nuclear technology offer new opportunities to improve upon this outstanding performance and will enable nuclear energy to better support a reliable and affordable clean energy transition. Nuclear power is the safest, most reliable form of electricity production.³ As the Department of Energy (DOE) recently reported,⁴ advanced nuclear energy's value proposition lies in its generation of carbon-free electricity,

¹ The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

² NEI 20-04, "[The Nexus Between Safety and Operational Performance in the U.S. Nuclear Industry](#)," March 2020; [Nuclear by the Numbers Fact Sheet](#), August 2020.

³ Department of Energy – "[Nuclear Power Most Reliable Energy Source and its not even close](#)"
World Nuclear Association – [Safety of Nuclear Power Reactors](#)
OurWorldinData.org – [Safest Sources of Energy](#)

⁴ U.S. Department of Energy, "[Pathways to Commercial Liftoff: Advanced Nuclear](#)," March 2023

May 4, 2023

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ability to provide firm power that complements other sources, low land-use requirements, and low transmission requirements relative to distributed sources. It also offers appreciable regional economic benefits, can aid in an equitable transition to a net-zero grid, and has a wide variety of use cases that enable grid flexibility and decarbonization beyond the grid. By the DOE's estimates, the U.S. could triple the amount of nuclear power utilized by 2050 and reestablish itself as the world leader in nuclear energy, supporting our national security goals and the energy security goals of countries around the world.

The road to meeting this opportunity runs directly through the NRC, an agency that has spent the last 40 years focused predominantly on the safety of the operating fleet of large light water reactors. Unfortunately, because of the relatively static nature of the industry during that time, the NRC's processes have become cumbersome and do not consider the important metric of efficiency. Too often, the NRC diverts its time and attention into activities that have a negligible effect on safety. As the industry reaches an inflection point at which demand grows and new technologies move from design to deployment, the NRC must modernize and become an efficient safety regulator so that it is not an impediment to letting commercial nuclear power play a key role in meeting the nation's goals. The NRC must streamline its processes to support the expanded production of power from the current fleet and make possible the timely deployment of simpler and inherently safer advanced technologies. The NRC can accomplish this without compromising its strength or independence.

NRC Mission

In enacting the Atomic Energy Act of 1954, as amended (the Act or AEA), Congress declared it to be "the policy of the United States that . . . the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security."⁵ Although Congress later separated the Atomic Energy Commission's regulatory and promotional functions,⁶ that separation did not change the overall U.S. policy with respect to the use of atomic energy. Today, however, the NRC's mission focuses solely on the safety and security of nuclear plants and omits the need to maximize the contribution to the general welfare. This omission has fostered the development of unnecessarily burdensome regulatory practices. Consequently, having for decades been siloed off from this policy, NRC processes, culture, and values have developed in a manner that does not fulfill the fundamental Congressional policy set forth in the AEA. Now, at a time when nuclear power is essential to national security, electricity reliability, electricity affordability, and our nation's goals for a clean energy economy, it is essential that Congress reinforce these original intentions of the Act. Enclosure 1 of this letter provides more details on how this can be achieved.

Opportunities for Change

The NRC's mandate under the AEA does not stand in the way of evolution. Rather, the AEA has provided enduring deference allowing the agency to evolve and adapt the regulatory framework alongside advancements in science and technology. The NRC's statutory mandate is to provide reasonable assurance of adequate protection while maximizing the contribution to the general welfare.

⁵ Atomic Energy Act of 1954, as amended (P.L. 83-703), at §. 1.a, 42 U.S.C. § 2011(a) (emphasis added).

⁶ See Energy Reorganization Act of 1974, as amended (P.L. 93-438).

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Unfortunately, the NRC's regulatory modus operandi has evolved from providing reasonable assurance of adequate protection to, practically speaking, providing absolute protection. As the NRC has itself acknowledged time and time again, reasonable assurance is not absolute assurance or zero risk. Nevertheless, there are numerous examples where the NRC's day-to-day regulatory actions and decision making reflect an absolute assurance/zero risk mentality. The NRC's focus must shift back to the core mandate of reasonable assurance of adequate protection, and many existing NRC policies and practices could benefit from revision.

Recently, the NRC staff have begun revisiting long-standing operating plant practices requiring new licensee actions for issues with no clear safety significance. These unnecessary changes cannot be justified on the basis of safety and undo decades of accepted practice that has supported the industry's high safety and reliability performance. These practices are not consistent with the philosophy of the AEA, are inconsistent with the Backfit Rule (10 CFR 50.109) and raise questions as to the NRC's preparedness for regulating new technologies.

Enclosure 2 offers a slate of legislative recommendations for driving toward more efficient, flexible, and predictable licensing, permitting and oversight processes and decisions, while continuing to ensure that public health, safety, security, and environmental protection are not compromised. These recommended legislative actions are in line with NRC's own Principles of Good Regulation and focus on implementing the clarified mission for the NRC, eliminating redundant or unnecessary processes, and setting accelerated timelines for NRC actions in the licensing activities that would be most impactful.

Although the NRC has taken some positive steps, more aggressive action is needed to support key licensing activities for the operating nuclear fleet and the projected scale of advanced reactor deployment. The NRC must increase its focus on developing and implementing modernized regulatory processes that are timely and right-sized for the long-term operation of existing nuclear plants, and the next generation of advanced reactor designs. As the trade association for the industry, NEI and its members stand ready to support these critical efforts to advance the safe use of nuclear energy.

Thank you for your consideration.

Yours very sincerely,

A handwritten signature in cursive script that reads "Maria Korsnick".

Maria Korsnick

Enclosure 1
AEA Basis for Refocusing the NRC's Mission

The NRC should view and implement its mission through the lens of the broader context of the U.S. policy, which establishes that nuclear energy should make the “maximum contribution to the general welfare.” To be clear, the NRC’s decision making on specific issues related to the operation of nuclear power reactors should continue to ensure that “utilization or production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public.”⁷ The Atomic Energy Act of 1954, as amended (the Act or AEA) is clearly focused on protecting the public from radiological hazards associated with production and utilization of special nuclear material.⁸ That said, it is also well-established that the Commission’s discretion in the how it regulates radiological safety is so “broad” and “free of close prescription” that it is “virtually unique.”⁹ The NRC must remain focused on radiological safety. However, this does not mean that the agency has license to overlook how inefficiencies in its regulatory processes adversely impact the general welfare. At this critical stage in the country’s push to meet climate and energy security goals, it is essential that the NRC establish goals that reflect an understanding of the broader policy context within which the agency has been given regulatory authority. Specifically, we encourage the NRC to redouble its efforts to ensure that it operates as a modern, risk-informed regulator and executes its radiological safety and security mission in the most effective, efficient, predictable, and least burdensome manner possible. This will ensure that in executing its safety mission, the NRC removes current unnecessary burden, and does not inadvertently erect new barriers to achieving the broader policy objectives of the AEA and more recent legislation¹⁰ – particularly given nuclear power’s vital role in addressing the climate crisis.

In enacting the Atomic Energy Act of 1954, as amended, Congress declared it to be “the policy of the United States that . . . the development, use, and control of atomic energy shall be directed so as to make the *maximum contribution to the general welfare*, subject at all times to the paramount objective of making the maximum contribution to the common defense and security.”¹¹ Although Congress later separated the Atomic Energy Commission’s (AEC’s) regulatory and promotional functions,¹² that separation did not change the overall U.S. policy with respect to use of atomic energy.

Congress also found that “[t]he development, utilization, and control of atomic energy for military and for all other purposes are vital to the common defense and security.”¹³ At the same time, Congress recognized that “regulation . . . of the production and utilization of atomic energy . . . is necessary”¹⁴ in the national interest to assure the common defense and security and to protect the health and safety of the public.¹⁵ Thus, from the beginning, the Act’s primary purpose has been to establish a program for the safe, secure, and widespread use of atomic energy to maximize the contribution to the national

⁷ Atomic Energy Act of 1954, §. 182a.; See also *Union of Concerned Scientists v. NRC*, 824 F.2d 108 (DC Cir. 1987).

⁸ See *New Hampshire v. AEC*, 406 F.2d 170, 14-75 (1st Cir. 1969).

⁹ *Segel v. AEC*, 400 F.2d 778 (D.C. Cir. 1968).

¹⁰ See, e.g., “Nuclear Energy Innovation and Modernization Act,” Pub. L. 115-439, at Sec. 103 “Advanced Nuclear Reactor Program” (Jan. 14, 2019) (directing the NRC to establish a risk-informed, technology-inclusive framework to license and oversee advanced nuclear technologies).

¹¹ Atomic Energy Act of 1954, as amended (P.L. 83-703), at §. 1.a, 42 U.S.C. § 2011(a) (emphasis added).

¹² See Energy Reorganization Act of 1974, as amended (P.L. 93-438).

¹³ *Id.* at §. 1.b.

¹⁴ *Id.* at §. 1.b.

¹⁵ *Id.* at §. 2.e

Enclosure 1

welfare.¹⁶ Given the threat posed by climate change, meeting this objective is more urgent now than ever before.

In short, the NRC must refocus its mission and workforce on modernized regulatory processes that are efficient, timely and right-sized as it prepares for the long-term operation of existing plants and the next generation of simpler and inherently safer designs.

¹⁶ Id. at §. 3.c, d (purposes of the Act include providing for a program "to make the maximum contribution to the common defense and security and the national welfare" and "to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public")

Enclosure 2
Legislative Recommendations to Drive Increased Efficiency of NRC Processes
and Decision Making

We offer the following recommendations for achieving more efficient, flexible, and predictable licensing and oversight of today's operating reactors, as well as improved processes for the siting, licensing, construction, and oversight of advanced nuclear reactor technologies. We believe these recommendations achieve these goals while also continuing to ensure that public health, safety, security, and environmental protection are not compromised.

NRC Mission

1. Direct NRC to modify the agency's mission.

- Direct the NRC to modify or reformulate the agency's mission, and formal mission statement, to accurately reflect the intent of Congress, as described in the Atomic Energy Act, to expressly include nuclear energy's role in contributing to the maximum benefit of society.
- The NRC mission should address the two primary functions of the agency: 1) provide reasonable assurance of adequate protection of the public health and safety and the common defense and security, and 2) ensure that the regulation of nuclear activities is efficient and does not unnecessarily limit the potential of nuclear technology to maximize its contribution to the benefit of society.
- Direct the NRC to submit to Congress a report, within 90 days, that describes the plan to adopt the revised the agency mission, including plans for training of leadership, staff and new employees to ensure they all understand their part in maximizing the contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security.

Operating Plants

2. Require more efficient application reviews for license renewal and power uprate applications.

- Require the NRC to establish review schedules for power reactor license transfer, initial license renewal, subsequent license renewal, and power uprate amendment applications as identified below.
 - License transfer – Complete review within 6 months of docketing
 - Initial license renewal – Complete review within 12 months of docketing
 - Subsequent license renewal – Complete review within 12 months of docketing

Enclosure 2

- Measurement Uncertainty Recapture (MUR) power uprate – Complete review within 6 months of docketing
 - Stretch power uprate – Complete review within 9 months of docketing
 - Extended power uprate – Complete review within 12 months of docketing
 - Resource reductions for these reviews should target the level of efficiency met by the top quartile of historical reviews. For subsequent license renewal, review resource reductions should target the level of efficiency met by the top quartile of historical reviews for initial license renewals.
 - Require that the Commission provide a periodic report to Congress on license application reviews that demonstrates the improvements being achieved.
- 3. Direct the NRC to ensure an overarching focus in its regulatory programs on what is most important to safety.**
- Require that the NRC periodically re-train its staff and leaders on its decision making processes, including the agency's backfitting regulations in 10 CFR 50.109 and associated NRC guidance, and the application of NRC's reasonable assurance of adequate protection standard.
 - Require that the NRC expand the use of qualitative risk insights into areas that have been traditionally approached deterministically, including security, emergency preparedness and aging management.
 - Require that the NRC implement a more streamlined license amendment review process for matters of low safety significance using either quantitative or qualitative risk insights.
 - Require that the NRC implement a more streamlined topical report review process, including improved timeliness metrics and an appeal process.
 - Require that the NRC conduct an evaluation of the measures that can be taken to improve the efficiency, timeliness, and safety focus of the Advisory Committee on Reactor Safeguards (ACRS).
 - Require that the NRC expeditiously complete its rulemaking effort to modernize nonemergency reporting requirements, which is currently anticipated to last eight years despite a sound regulatory basis that was developed by the NRC staff.
 - Require that the Commission provide a report to Congress on new activities undertaken to modernize its regulatory programs.
- 4. Direct the NRC to evaluate measures to improve efficiency of its oversight programs.**

Enclosure 2

- Require that the NRC conduct an evaluation of measures that can be taken to improve the efficiency of its oversight programs. This evaluation should include organizational changes such as reducing the number of NRC regional offices and their reporting structure, improvements in guidance and training, increased use of templates in documenting inspection results, and identification and elimination of areas of duplication or otherwise unnecessary inspection.

5. Direct the NRC to improve the disposition of differing professional opinions.

- The NRC's differing professional opinion processes are important to ensuring that agency leadership has a broad perspective to support decision making. However, the current processes hamstringing NRC leadership's decision making ability and do not expressly include safety thresholds. Require that the NRC streamline its process for resolving differing views such that a safety threshold must be met to enter the process, and issue resolution must not impact the project schedule.

New Plants

6. Direct the NRC to facilitate the deployment of advanced reactors to the maximum extent possible.

- Direct the NRC to establish a policy for "Appropriate Regulation of Advanced Reactors," consistent with the hazard, that seeks to eliminate requirements and practices that result in unnecessary regulation.
- Direct the NRC to pursue organizational enhancements that enable timely and efficient regulation of advanced reactors.

7. Direct the NRC to streamline application reviews for new reactor license applications.

- Establish the following generic milestones for construction permit, operating license, early site permit, design certification, and combined license applications. These generic milestones are targets that are expected to be met for the large majority of applications, but may be exceeded in extraordinary cases.
 - Issuance of any draft environmental impact statement (EIS) no later than 12 months after the application is docketed,
 - Issuance of any safety evaluation report and final EIS or environmental assessment (EA) no later than 18 months after the application is docketed,

Enclosure 2

- Issuance of a decision on the requested permit, license, or certification no later than 24 months after the application is docketed.
 - Require NRC staff and each applicant to agree on application-specific milestones, which may be shorter or longer than the generic milestones, and which can be modified with the consent of both parties.
 - Establish a streamlined review process, with accelerated generic milestones, for NRC licensing actions to allow repetitive deployments of a standard design, at multiple levels.
 - Require that the Commission report to Congress if any application-specific milestones are not met and describe the reason for the delay and the NRC's plan for timely completion of the applicable action.
 - Require that the Commission report to Congress with recommendations to further facilitate expedited licensing and environmental reviews for new reactors.
 - Require that the Commission provide a periodic report to Congress on new plant application reviews that describes the agency's progress toward meeting licensing goals.
- 8. Require the development of an appeal process for timely resolution of new plant licensing issues.**
- Require the appeals process be designed to minimize the NRC resources spent on staff concerns that do not have a regulatory basis or are of low safety significance to accelerate agency decision making.
- 9. Provide an efficient timeline for application reviews by the Advisory Committee on Reactor Safeguards (ACRS).**
- Require the ACRS to begin its review of a referred application within one month of receiving the application and submit its report on the application to the Commission no later than 6 months after initiating its reviews.
 - Clarify that ACRS's independent review of the NRC staff's work need not essentially duplicate the staff's review scope and depth, nor intrude upon the staff's day-to-day performance of their review. Thus, the ACRS review should focus only on unique and safety significant aspects of the design to ensure that all factors were considered in the design and safety review.

Enclosure 2

10. Allow an applicant's environmental report to serve as a draft Environmental Impact Statement (EIS).

- Instead of the NRC staff re-writing the applicant's detailed environmental report, authorize the use of the report as the draft EIS, consistent with current CEQ regulations (40 CFR 1506.5).

11. Direct the NRC to begin any contested hearing on environmental contentions upon issuance of the draft EIS.

- Rather than delay contested hearings until the NRC staff issues the final EIS, require the NRC hold its environmental hearings upon issuance of the draft EIS, unless it determined that doing so will adversely impact the staff's ability to complete its final EIS in a timely manner.

12. Direct the NRC to use informal adjudicatory procedures (as opposed to trial-type evidentiary hearings) unless the Commission determines that formal procedures are needed to develop a sufficient record or to achieve fairness.

- In conjunction with clarifying that the NRC may use informal procedures, direct the agency to use legislative hearings (i.e., paper only hearings) in licensing proceedings and consider additional changes to its hearing procedures to streamline the adjudicatory process.
- Align discovery obligations with Federal Rule of Civil Procedure 26 such that applicants and intervenors must produce documents that support their positions rather than the currently overly broad directive to produce all "relevant" documents.

13. Authorize the NRC to issue and make immediately effective new reactor licenses and permits when there is a pending request for a hearing.

- Establish that notwithstanding an outstanding hearing request, the NRC may issue and make immediately effective a construction permit, operating license, early site permit, or combined license once the Commission has found that the application satisfies relevant statutory and regulatory requirements.

14. Eliminate the uncontested "mandatory" hearing for construction permit, early site permit, and combined license applications.

- Removing this artifact of early licensing proceedings would not affect the public's right to request a hearing and would not change the need for the NRC staff to conduct sufficient safety and environmental reviews under the AEA and NEPA and to conclude those reviews before issuing a license or permit.

Enclosure 2

15. Authorize the use of streamlined environmental documentation in any proceeding referencing an early site permit.

- Direct that the NRC use a supplemental EIS or Environmental Assessment (EA) in any construction permit or combined license proceeding referencing an early site permit.
- Require incorporation by reference of information from the EIS for the early site permit and the inclusion of additional information only if necessary to address new and significant information that materially changes prior findings or conclusions.

16. Direct the NRC to amend its Part 51 regulations to make them more technology-inclusive to support environmental reviews of advanced reactors and fuel cycle facilities.

- Direct the NRC to amend 10 CFR 51.20(b) to allow the staff to determine on a case-specific basis whether an EA (rather than an EIS or EIS supplement) is appropriate for a particular advanced reactor or fuel cycle facility licensing proceeding, including in those proceedings in which the NRC relies upon its proposed advanced reactor generic EIS (GEIS).
- Direct the NRC to consider the possible expanded use of categorical exclusions, including mitigated categorical exclusions, categorical exclusions of other agencies, and new categorical exclusions that could be applied to advanced reactor and fuel cycle facility licensing actions.

17. Facilitate the use of previously approved information in new reactor license applications for sites that already have an existing nuclear facility.

- Require that in any proceeding for a new reactor that would be located at the site of an existing reactor, NRC must rely upon information that was part of its decision to issue the license for the existing reactor.



May 5, 2023

The Honorable Cathy McMorris Rodgers
Chair
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Jeff Duncan
Chair
Subcommittee on Energy, Climate, and Grid Security
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Frank Pallone, Jr.
Ranking Member
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Diana DeGette
Ranking Member
Subcommittee on Energy, Climate, and Grid Security
U.S. House of Representatives
Washington, D.C. 20515

Dear Chair Rodgers, Ranking Member Pallone, Subcommittee Chair Duncan, and Subcommittee Ranking Member DeGette,

The Nuclear Innovation Alliance (NIA) appreciates the opportunity to respond to the U.S. House of Representatives Committee on Energy and Commerce request for information on improving the licensing review, approval, and oversight process for the U.S. Nuclear Regulatory Commission (NRC). The Subcommittee on Energy, Climate, and Grid Security specifically requested information and recommendations on topics including:

- siting, licensing, construction, and oversight of advanced nuclear technology,
- NRC licensing efficiency,
- management of regulatory costs and fees, and
- staff effectiveness and culture.

The NIA has developed detailed recommendations on improving NRC licensing processes through engagement with stakeholders including advanced nuclear energy developers, utilities, non-governmental organizations (NGOs), the NRC Commission, NRC staff and management, and policymakers. This letter and attached reports and papers provide information and recommendations on many of the topics requested by the Committee. NIA believes that this information and recommendations can help support the Committee's NRC oversight activities and consideration of legislative proposals to improve NRC regulation.

NIA's top four recommendations for the Committee to improve NRC regulatory activities are:

1. Establish an independent panel to conduct a comprehensive examination of NRC's organizational effectiveness (with a focus on NRC's leadership, operations, and organizational culture) and make recommendations for improvements.

2. Require the NRC to provide regular reports to the Committee on project management and organizational communication (including relevant staff and management training activities). These reports should include qualitative and quantitative assessments of NRC staff and management performance, and surveys of applicants and licensees.
3. Require the NRC to provide regular reports to the Committee on new reactor licensing (including relevant staff preparation and training activities). These reports should include qualitative and quantitative assessments of applicant and NRC staff performance.
4. Conduct regular Committee oversight hearings that focus on cross-cutting NRC organizational performance factors including agency leadership, culture, project management, and communication.

This letter provides background on NRC licensing, NIA's identification of barriers to the efficient and effective licensing of advanced reactors, and recommendations for NRC reform, including both legislative and Congressional oversight activities that can help maximize the contribution of nuclear energy to the general welfare. Relevant NIA briefings and reports with additional discussion and recommendations are included as attachments to this letter to provide more detailed information on improving NRC operation.

We hope that the information and recommendations in this letter contribute to the Committee's ongoing work to ensure the predictable, efficient, risk-informed, and performance-based regulation of nuclear technology as a safe, clean, and reliable energy source. We thank the Committee for the opportunity to support its oversight and legislative work. Please contact me (jgreenwald@nuclearinnovationalliance.org) or Dr. Patrick White (pwhite@nuclearinnovationalliance.org) if you have any follow-up questions or requests related to this letter or any other Committee activities.

Sincerely,



Judi Greenwald
Executive Director
Nuclear Innovation Alliance



Background and Motivation

The NRC will play a critical role in the development and deployment of advanced nuclear energy. More than a dozen advanced reactor companies are engaging with the NRC on various stages of pre-application interaction, application review, or construction oversight in 2023, with the number of applications expected to grow significantly over the course of this decade. The NRC will need to license hundreds of new reactors in the next two decades for advanced nuclear energy to make a significant contribution as a climate and energy solution in the United States. Effective NRC licensing and regulation in the next several years for the first-of-a-kind reactors and over the coming decade for subsequent deployments will be critical to the successful commercialization of advanced nuclear energy.

The NRC already values independence, openness, efficiency, clarity, and reliability as “Principles of Good Regulation.” These principles must be effectively implemented to enable deployment of advanced nuclear energy at the scale and pace essential to combat climate change. The NRC prides itself as a continuously learning organization and should be intrinsically motivated to improve the NRC’s capacity, capabilities, and processes as a modern regulator that can effectively license novel advanced reactor technologies.

For the purposes of this response, effective licensing is generally defined as licensing processes that are:

- mission-focused (fulfilling the NRC’s stated mission to protect public health and safety, to promote the common defense and security, and to protect the environment)
- timely (providing licensing decisions on a timeline that facilitates commercial deployment),
- cost-effective (avoiding excessive taxpayer or applicant costs to resolve application questions),
- efficient (making best use of staff and applicant time),
- predictable (establishing and meeting NRC and applicant expectations for duration, cost, and requirements for both one-time and repeatable licensing processes),
- transparent (ensuring applicant and public understanding of regulatory processes and information)

Enabling effective licensing and regulation for advanced reactors would help transition the NRC into an innovative regulator that recognizes and internalizes the importance of nuclear power as a climate solution into its core regulatory mission.

Policymakers are increasingly interested in resolving any actual and perceived barriers to the effective licensing and regulation of advanced reactors using existing as well as new processes. Both federally and privately supported advanced reactor development projects have targeted reactor operation by the end of this decade, with some developers targeting deployment in the next 5 to 10 years (e.g., TerraPower, X-energy, Kairos, Oklo, NuScale, GE Hitachi, BWXT, Westinghouse, Holtec, and USNC).

Identification of Barriers to Advanced Reactor Licensing

NIA sought input from many stakeholders on their perspectives of advanced reactor licensing activities and potential barriers at the NRC. NIA has identified six specific barriers to advanced reactor licensing that relate to many of the major topic areas specified by the Committee in the information and recommendation request:

1. Challenges to hiring, training, and retaining qualified staff and management with technical and project management expertise necessary to lead licensing reviews of advanced reactors

2. Insufficient accountability for NRC staff in terms of schedule, breadth of scope, depth of review, or regulatory basis for technical and environmental reviews of advanced reactors
3. Inadequate leadership support and prioritization of innovative practices or processes for reviews, licensing, communication, and management
4. Inconsistent stakeholder understanding and trust in the licensing process and the role of different NRC committees and offices in the licensing process
5. Inconsistent project management and staff performance that can result in inefficient use of regulatory resources and applicant fees
6. Inconsistent external communication between stakeholders and the NRC as well internal communication between NRC staff and management can result in unpredictable regulatory processes or decisions

These barriers represent cross-cutting challenges to licensing and oversight activities by the NRC but are of particular interest and concern for the licensing of new advanced nuclear reactors.

Additional discussion and details are provided below for each of these six barriers:

1. *Challenges to hiring, training, and retaining qualified staff and management with technical and project management expertise necessary to lead licensing reviews of advanced reactors*

Efficient and effective regulation requires that the NRC has the right people with the right skills in the right role at the right time to review license applications. NRC technical staff with specific areas of expertise are needed to review all aspects of the application including topics as diverse as reactor design, radiation protection, environmental impacts, and security. NRC project managers must coordinate reviews by both NRC staff and external consultants to ensure the timely completion of licensing reviews conducted both in parallel and in series. NRC senior management and the Commission must be prepared to make timely regulatory decisions on novel policy or technical issues. NIA's discussion with stakeholders revealed concern that the NRC is facing significant challenges related to staffing the licensing reviews for advanced reactors. This includes the NRC's ability to recruit, hire, train, and retain qualified staff due to external perceptions of the NRC as a workplace, competing opportunities (including more attractive pay, benefits, or remote work options) from advanced reactor developers or other employers, and routine retirement of a largely aging NRC work force. These factors may also contribute to low staff morale that limits organizational effectiveness and performance. The NRC is struggling to both maintain its current workforce and grow the agency to fill entry level, highly specialized, and management roles.

2. *Insufficient accountability for NRC staff in terms of schedule, breadth of scope, depth of review, or regulatory basis for technical and environmental reviews of advanced reactors*

Licensing reviews by the NRC technical staff requires the staff to reach a determination of safety on all aspects of an application. While the process for performing reviews is clearly outlined in NRC guidance, the burden of proof necessary for NRC staff is much less well defined. The process relies on the training, experience, and expertise of NRC technical staff, management, and reviewers to ensure a consistent level of regulatory oversight. NIA heard repeatedly from both applicants and licensees of experiences with NRC staff who were unable or unwilling to reach a determination of safety when reviewing applications. These experiences resulted in overly lengthy or detailed reviews where it was unclear to licensees or applicants whether the NRC staff's line of questioning or duration of review was appropriate. These stakeholders felt that NRC management could not (or would not) hold NRC staff accountable for the schedule, breadth of

scope, depth of review, or regulatory basis for technical and environmental reviews. It is critical that NRC staff have the time and resources to perform adequate reviews, but licensing reviews conducted without accountability can result in ineffective and inefficient reviews that do not benefit the public.

3. *Inadequate leadership support and prioritization of innovative practices or processes for reviews, licensing, communication, and management*

Licensing advanced reactors by the NRC will occur over a variety of time horizons. In the near term (next 5 years), the NRC will license first-of-a-kind and initial commercial deployments of advanced reactors using the existing regulatory frameworks, processes, and procedures found in 10 CFR Part 50, 10 CFR Part 52, and current NRC guidance. In the mid term (next 5 - 10 years), the NRC is expected license subsequent commercial deployments of advanced reactors using both existing regulatory frameworks and new regulatory frameworks currently under development for advanced reactors in 10 CFR Part 53. In the long term (after 10 - 15 years), the NRC may be asked to license the deployment of large numbers of standardized advanced reactors that enable us to meet clean energy goals while ensuring energy reliability, affordability, resiliency, and security.

Each of these licensing time horizons will require the NRC to utilize different regulatory practices and processes to meet the needs of applicants and licensees and the public interest, while effectively and efficiently incorporating lessons learned from initial licensing reviews of advanced reactors. While the NRC has historically worked to incorporate lessons learned as a continuous learning organization, it is less clear that the NRC has consistently prioritized and supported the implementation of innovative practices that can produce significant improvements in the licensing process. The NRC's evolutionary versus innovative approach to licensing is exemplified by the 10 CFR Part 53 rule development process where the NRC staff has thus far been unable to produce a rule that could result in significant regulatory process improvements for advanced reactors. Consistent support and prioritization of innovative practices at all levels of NRC staff and management is critical to the development and implementation of more effective licensing processes.

4. *Inconsistent stakeholder understanding and trust in the licensing process and the role of different NRC committees and offices in the licensing process*

Stakeholder understanding and trust in the licensing process is critical to the successful regulation of advanced nuclear energy. Applicants' and licensees' understanding and trust in the licensing process facilitates more effective engagement because they can more efficiently navigate the regulatory system and meet the expectations of the regulator. Public and other stakeholder understanding and trust in the licensing process builds confidence in the capability of the regulator to carry out their regulatory function and helps create social license for the operation of nuclear power plants. NIA's interactions with stakeholders suggest that there may be significant gaps in stakeholder understanding of the NRC for both applicants and licensees, as well as with the broader public and other stakeholder groups. For applicants and licensees, the expectations for regulatory reviews and the specific roles and responsibilities of internal NRC committees and offices such as the Advisory Committee on Reactor Safeguards (ACRS) and the Office of General Counsel (OGC) were highlighted as topics requiring additional clarification. For the public and other stakeholders, transparency on access to NRC documents and participation in public meetings and other licensing processes have been mentioned as areas for improvement.

5. *Inconsistent project management quality and staff performance that can result in inefficient usage of regulatory resources and applicant fees*

One of the most important, yet least recognized, factors in the licensing review outcomes is the NRC project manager. NIA's discussions with stakeholders highlighted applicant concerns about the inconsistent quality of NRC project managers. The NRC project managers are the NRC staff responsible for overseeing a specific license application review. The NRC project manager is responsible for a wide range of activities including engaging with applicants on all application submittals and review processes, managing activities by NRC staff technical reviewers, coordinating NRC resource availability and allocation for reviews, ensuring vertical communication alignment with NRC management, and working to ensure overall review quality and execution. An effective NRC project manager can deftly manage these internal and external challenges and help keep licensing reviews on track. An inexperienced, inadequately trained, or insufficiently supported NRC project manager may struggle with one or more of their activities and contribute to unnecessary review delays, technical or policy conflicts, or ineffective use of limited NRC resources on activities that do not contribute to effective project completion and support overall NRC goals. NRC project managers may not be sufficiently empowered to effectively manage challenging staff or projects. Questions raised during a February 9, 2023, Commission briefing about whether project managers have the authority to enforce discipline and focus during licensing reviews went unanswered.¹

The NRC is unique among federal regulators with respect to its fee recovery structure that requires that a majority of the NRC budget is paid for by hourly fees charged to applicants and licensees. The current proposed professional hourly rate for FY2023 charged to applicants for NRC reviews and activities is \$300 per hour². This hourly fee structure, combined with inconsistent project management quality and staff performance during licensing reviews, can have significant impacts on both the NRC and applicants and licensees. This fee structure results in a complicated regulator-regulated entity dynamic where the NRC staff may have no incentives (or in some cases potentially perverse incentives) to efficiently complete licensing reviews. The fee structure also creates challenges for NRC organizational planning. Since the NRC budget is paid for primarily by operating reactors, current licensees may push back against the NRC workforce investments that will only benefit future applicants and licensees. Having the overwhelming majority of its budget dependent on fees complicates longer-term NRC workforce and organizational planning, particularly for licensing activities where there is significant uncertainty related to the quantity, duration, and submission timing for NRC staff reviews.

The NRC fee structure also has significant impacts on applicants and licensees. New reactor license applications have both high total costs and a high degree of cost variability. Table 1 lists the NRC staff's expected effort and cost for several typical licensing activities while Table 2 lists the NRC lower-, typical, and upper-bound costs for a combined operating license review for a new nuclear reactor³. High licensing fees can represent a significant barrier to engagement with the NRC, particularly for smaller applicants or companies early in the development process, and the large variability in the fees is a significant project risk. While the NRC has limited flexibility to provide

¹ February 9, 2023 Commission Meeting Transcript, NRC Accession Number ML23048A237, pg. 91-92.

<https://www.nrc.gov/docs/ML2304/ML23048A237.pdf>

² FY 2023 Proposed Fee Rule Work Papers, NRC Accession Number ML23040A277, pg. 9.

<https://www.nrc.gov/docs/ML2304/ML23040A277.pdf>

³ New Reactors Business Line Fee Estimates (January 2023), NRC Accession Number ML23018A174.

<https://www.nrc.gov/docs/ML2301/ML23018A174.pdf>

fee relief for some applicants, the current funding structure would necessitate use of standard review fees for most applicants. Finally, applicants using new regulatory processes or licensing new technologies would be unfairly burdened by the NRC fee structure. Inherent delays and inefficiency associated with any new activity would result in additional billed hours and an increase in the total licensing costs for “first movers”. These additional fees effectively disincentivize regulatory or technological innovation.

Table 1. Average NRC Fees for Typical License Review Activities⁴

<i>Licensing Activity</i>	<i>Average Staff Hours</i>	<i>Average Cost (\$300/staff hr)</i>	<i>Additional Average Contractor Costs</i>	<i>Total Average Cost</i>
Early Site Permit	29,104	\$8,731,200	\$2,760,000	\$11,491,200
Combined Operating License	89,261	\$26,778,300	\$5,020,000	\$31,798,300
Standard Design Certification	179,395	\$53,818,500	N/A	\$53,818,500

Table 2. NRC Fees Ranges for Combined Operating License Review⁵

<i>Combined Operating License</i>	<i>Average Staff Hours</i>	<i>Average Cost (\$300/staff hr)</i>	<i>Additional Average Contractor Costs</i>	<i>Total Average Cost</i>
Lower Cost Estimate	44,269	\$13,280,700	\$2,760,000	\$16,040,700
Average Cost Estimate	89,261	\$26,778,300	\$5,020,000	\$31,798,300
Upper Cost Estimate	178,160	\$53,448,000	\$8,880,000	\$62,328,000

6. *Inconsistent external communication between stakeholders and the NRC as well internal communication between NRC staff and management can result in unpredictable regulatory processes or decisions*

The success or failure of the advanced reactor licensing process largely depends on the people involved and their ability to reach consensus on technical and policy questions. Communication is key to an efficient licensing process because it enables applicants to develop license applications that facilitate staff reviews, NRC staff to reach timely resolution on questions or issues that arise during review, and NRC management and the Commission to help resolve policy questions and ensure staff accountability on review processes. More effective communication at all levels combine to create a more efficient licensing process for all advanced reactors designs.

NIA’s discussions with stakeholders highlighted the importance of external communication between stakeholders and the NRC as well internal communication between NRC staff and management. Inconsistent external communication between stakeholders and the NRC can result in inefficient licensing reviews as stakeholders fail to provide the information necessary for the NRC staff to make a safety determination and NRC staff fail to provide actionable feedback on license submittals. These types of communication gaps can result in lengthy, costly, and ineffective licensing review cycles. Inconsistent internal communication between NRC staff and management can result in inconsistent, unpredictable, or changing regulatory requirements and interpretations within a single licensing review or across different licensing reviews. This

⁴ Fees calculated based on New Reactors Business Line Fee Estimates (January 2023), NRC Accession Number ML23018A174. <https://www.nrc.gov/docs/ML2301/ML23018A174.pdf>

⁵ Ibid.

variability has a significant impact on the effectiveness of NRC regulatory reviews as well as on the efficiency of the NRC review process. Inconsistent and inadequate communication can be a significant barrier to the effective licensing of advanced reactors by the NRC.

Recommendations for NRC reform through legislative and Congressional oversight activities

NIA's analysis of the identified barriers to advanced reactor licensing at the NRC focused on the development of practical solutions that could make a meaningful impact on near term, mid term, and long term reactor licensing activities. Adapting existing processes or developing new processes within the NRC's existing statutory mandate and regulatory frameworks provides the greatest likelihood of successful licensing of advanced reactors in the near term. Development of new regulatory frameworks or other major regulatory changes may create significant improvements in the mid term or long term, but their successful development and implementation will largely depend on the NRC's competence at core regulatory activities such as communication, project management, and organizational culture. Major legislative actions may provide an opportunity for transformational regulatory, organizational or process changes, but these solutions may inadvertently delay near term advanced reactor licensing processes or increase applicant uncertainty regarding project cost, timelines, and outcomes. It is important that a comprehensive set of regulatory reform recommendations are implemented to ensure that the NRC can effectively and efficiently regulate nuclear energy in the near term, mid term, and long term.

The NIA developed detailed recommendations for improving NRC licensing processes through engagement with stakeholders including advanced nuclear energy developers, utilities, non-governmental organizations (NGOs), the Commission, NRC staff and management, and policymakers. NIA's recommendation development process examined changes that could be made by different stakeholders in the licensing process, including NRC staff and management, the Commission, applicants and licensees, and Congress. This letter highlights specific actions that the Congress (and specifically this Committee) could take to help improve the NRC's operation and the licensing of advanced reactors. NIA's prior work on improving advanced reactor licensing at the NRC highlights the importance of all stakeholders in improving licensing outcomes and provides recommendations for all stakeholders, not just Congress (see listing of additional NIA licensing recommendations below).

Congress, and specifically this Committee, can play a critical role in directing NRC to prioritize and support organizational improvements, authorizing additional funding to support NRC licensing activities, and holding the NRC accountable for longer-term cultural and operational improvements through effective and productive oversight. NIA's top four recommendations for the Committee to improve NRC's licensing processes and NRC oversight of licensees are:

1. Establish an independent panel to conduct a comprehensive examination of NRC's organizational effectiveness (with a focus on NRC's leadership, operations, and organizational culture) and make recommendations for improvements.
2. Require the NRC to provide regular reports to the Committee on project management and organizational communication (including relevant staff and management training activities). These reports should include qualitative and quantitative assessments of NRC staff and management performance, and surveys of applicants and licensees.
3. Require the NRC to provide regular reports to the Committee on new reactor licensing (including relevant staff preparation and training activities). These reports should include qualitative and quantitative assessments of applicant and NRC staff performance.
4. Conduct regular Committee oversight hearings that focus on cross-cutting NRC organizational performance factors including agency leadership, culture, project management, and communication.

These four recommended solutions would address underlying organizational and cultural issues that limit NRC's effectiveness and efficiency as a regulator and are the root causes of many of the observed barriers to advanced reactor licensing. Additional discussion and details are provided below for each of these four recommended solutions.

1. *Establish an independent panel to conduct a comprehensive examination of NRC's organizational effectiveness (with a focus on NRC's leadership, operations, and organizational culture) and make recommendations for improvements.*

Nearly all barriers to advanced reactor licensing at the NRC can be tied back to organizational performance. Barriers such as staffing challenges, insufficient review accountability, inadequate prioritization of innovation, and inconsistent staff performance can all be linked to agency leadership, organizational culture, and other organizational challenges that limit NRC effectiveness.

Congress should establish an independent panel to examine NRC's organizational effectiveness, leadership, operations, and agency culture, including the functional relationship between NRC's Office of General Counsel (OGC) and its client (the Commission and NRC staff), how that relationship affects regulatory decision-making, and the effectiveness of OGC in providing legal services and advice to staff and senior leadership (including the Commission) in carrying out their responsibilities.

Panel members should include a diverse range of experts external to the NRC, including individuals with demonstrated success in leading large organizations of around 3,000 employees, professional experience in or relating to commercial nuclear energy generation, expert knowledge of applicable law and legal policy, and expertise in Government administration. The Panel should retain a third-party management consultant to assist them in evaluating the NRC's leadership and organizational culture issues. This Panel would provide an independent assessment of NRC practices and offer specific recommendations that could help improve NRC operational effectiveness and efficiency. Improvements to organizational culture could also have significant benefits for the hiring, training, and retention of NRC staff and management.

External independent reviews have been previously used by the NRC to evaluate performance and recommend organizational and operational changes. One specific example is the 1994 Towers Perrin report ("Nuclear Regulatory Review Study"), which uncovered "chronic and persistent problems with the NRC's management of the regulatory process", traced those problems to "weak senior management oversight", and concluded that NRC's senior leadership was not sufficiently responsive to prior independent investigations and calls for regulatory reforms.⁶ These direct and impactful findings helped spur the NRC to prioritize significant internal reform activities in the 1990s to improve regulatory effectiveness.

⁶ Towers Perrins "Nuclear Regulatory Review Study" Final Report, Executive Summary, October 1994.

2. *Require the NRC to provide regular reports to the Committee on project management and organizational communication (including relevant staff and management training activities). These reports should include qualitative and quantitative assessments of NRC staff and management performance, and surveys of applicants and licensees.*

High quality project management and organizational communication are critical to any activity but are particularly important to ensuring effective and efficient licensing reviews at the NRC. To be effective, NRC project managers must be empowered to hold NRC staff and other NRC management accountable for conducting focused, disciplined licensing reviews, and they must be empowered to keep both applicants and NRC staff aligned on critical-path review activities. When combined with effective internal and external organizational communication, high quality project management keeps all stakeholders aligned and increases the predictability of the licensing review process. This also further reduces the licensing costs by ensuring more efficient allocation of NRC resources.

Congress should require that the NRC provide regular reports on project management and organizational communication to the Committee. This reporting requirement helps emphasize the importance of project management and organizational communication and enables Congress to hold NRC accountable for operational and organizational changes that will improve reactor licensing. Specific requirements on qualitative and quantitative assessment of NRC staff and management performance, and surveys of applicants and licensees help provide clear insights to Congress on the NRC performance and areas for additional improvement.

3. *Require the NRC to provide regular reports to the Committee on new reactor licensing (including relevant staff preparation and training activities). These reports should include qualitative and quantitative assessments of applicant and NRC staff performance.*

The outcomes of NRC licensing reviews are the product of many factors. Improving new reactor licensing requires a clear understanding of the actual challenges encountered during licensing reviews. A clear assessment of the need for organizational, regulatory, process, procedural, or administrative changes is foundational to creating more effective regulatory frameworks and review processes at the NRC. This includes both the performance of NRC staff as well as the performance of applicants to meet submission deadlines and other regulatory milestones. Effective and efficient regulatory processes require high quality and timely licensing submissions and reviews.

Congress should require that the NRC provide regular reports on new reactor licensing to the Committee. This reporting requirement should include details related to relevant staff preparation and training activities to help Congress understand funding required to support the development of advanced reactor regulatory frameworks. This reporting requirement helps emphasize the importance of effective licensing and enables Congress to hold NRC accountable for operational and organizational changes that will improve reactor licensing. Specific requirements on qualitative and quantitative assessment of NRC staff and applicant performance help provide clear insights to Congress on the internal and external factors affecting licensing reviews and areas for additional improvement.

4. *Conduct regular Committee oversight hearings that focus on cross-cutting NRC organizational performance factors including agency leadership, culture, project management, and communication.*

The first three recommendations to the Committee focus on encouraging the NRC to review and identify underlying organization and cultural issues that limit the NRC's effectiveness and efficiency as a regulator and are the root causes of many of the observed barriers to advanced reactor licensing. These recommendations alone, however, will not help ensure effective and efficient licensing if the NRC is unable or unwilling to act on the recommendations arising from these reports and studies. Ultimately, Congress and this Committee have the responsibility to hold NRC accountable and ensure that the NRC has the direction and resources to effectively carry out its reactor licensing and oversight activities.

This Committee should conduct more regular oversight hearings that focus on cross-cutting NRC organizational performance factors including agency leadership, culture, project management, and communication. The goal of these hearings is to evaluate the NRC's progress in implementing organizational and cultural changes critical to improving operational effectiveness and efficiency and hold the Commission and senior management accountable for making necessary changes. The NRC must retain its independence as a regulatory organization, but the Committee is well positioned to ensure that NRC leadership is making necessary changes to effectively fulfill its mission and maximize the contribution of nuclear energy to the general welfare.

These oversight hearings should include testimony from the Commission, NRC senior leadership, advanced reactor developers, NGOs, and any other stakeholders who can provide insight on challenges faced by the NRC in implementing effective regulatory processes or on the NRC's activities to increase the effectiveness and efficiency of advanced reactor licensing reviews.

This letter highlights that there are many challenges to advanced reactor licensing that can be addressed by NRC management, the Commission, and Congress. Congress can play a critical role in reducing or eliminating challenges to the effective licensing and regulation of advanced reactors. Congressional funding for advanced reactor licensing programs and additional authorizations can provide the NRC the resources and tools it needs to accelerate advanced reactor licensing. Congressional oversight will also be invaluable to holding the Commission and senior management accountable for improvements to licensing processes. In other cases, additional Congressional legislative direction may be an effective method to prompt and guide agency changes.

An on-going dialogue among NRC, Congress, industry, and other stakeholders is critical to assessing how to best shape the NRC into a more effective regulatory agency that can enable the safe deployment of advanced nuclear energy in the public interest.

Additional recommendations for Congress, NRC staff, management, the Commission, and applicants

NIA believes that Congress, NRC staff and management, the Commission, and applicants and licensees all have important roles to play in ensuring effective and efficient licensing reviews. Many challenges to advanced reactor licensing can be addressed by NRC staff and management, the Commission, and applicants and licensees without the need for additional authorizing legislation from Congress. NIA has published numerous previous reports that provide specific recommendations for the NRC, Congress, applicants, and other stakeholders. Relevant recent NIA reports, briefs, and papers include:

- [2023 NRC Reform Recommendations Discussion Draft Paper](#)
- [Unlocking Advanced Nuclear Innovation: The Role of Fee Reform and Public Investment](#)
- [NIA Brief: Bridging the Gap on 10 CFR Part 53](#)
- [Promoting Efficient NRC Advanced Reactor Licensing Reviews to Enable Rapid Decarbonization](#)
- [Nuclear Innovation Alliance Licensing Efficiency Workshop Summary Report](#)
- [Improving the Effectiveness and Efficiency of the Advisory Committee on Reactor Safeguards](#)

Major NIA reports, briefs, and papers with additional relevant recommendations for Congress, the NRC, and applicants are listed below with a short summary for each NIA report or paper. The complete reports, briefs, and papers with detailed recommendations are included as an attachment to this letter and are also available on NIA's website.

- [2023 NRC Reform Recommendations Discussion Draft Paper](#)

This discussion draft paper identifies challenges to advanced reactor licensing based on interactions with stakeholders including NGOs, advanced reactor developers, utilities, and policymakers. NIA developed draft policy reform recommendations to address these challenges, specifically identifying actions that could be taken by NRC management, NRC Commissioners, and Congress to increase the effectiveness of advanced reactor licensing.

The draft NRC reform recommendations are intended to serve as a common basis for stakeholder engagement and discussion with policymakers during the 118th Congress. This discussion draft will be updated in late May 2023 (and thereafter) based on continued input and feedback from policymakers and stakeholders on how to improve advanced reactor licensing at the NRC.

Link to report: <https://www.nuclearinnovationalliance.org/index.php/nia-discussion-draft-nrc-reform-recommendations>

- [Unlocking Advanced Nuclear Innovation: The Role of Fee Reform and Public Investment](#)

This report evaluates the history and effects of the licensing fee system at the NRC, compares it to other regulatory agencies, finds that the current fee system poses a barrier to carbon free advanced nuclear energy, and recommends options for reform. Alternative fee approaches can encourage nuclear innovation activities while achieving greater public benefits. Fee reform is especially important in the short term as the inefficiency of current NRC regulations leads to higher fee expenses for near-term applications by first movers.

In this report, NIA recommends that Congress:

- Significantly reform, modify, or replace the licensing fee cost recovery model to exclude or substantially reduce fees for new license applicants at NRC.

- Alternatively, expand options for Department of Energy (DOE) funding of advanced reactor licensing.
- Expand funding for advanced reactor regulatory infrastructure.
- Reevaluate the NRC funding model for operating reactors to ensure that it is consistent with U.S. climate goals.

Additional details on the effect of the history and effects of the licensing fee system at the NRC as well as on the NIA recommendations are available in the full report.

Link to report: <https://www.nuclearinnovationalliance.org/index.php/unlocking-advanced-nuclear-innovation-role-fee-reform-and-public-investment>

- [NIA Brief: Bridging the Gap on 10 CFR Part 53](#)

This brief summarizes the NRC's Part 53 rulemaking process for advanced reactors and discusses the different stakeholder critiques of the preliminary rule development process and proposed draft rule. NIA believes that while the current draft proposed Part 53 rule would not facilitate the effective and efficient licensing of advanced reactors, the NRC could create a transformative new rule by making specific changes to the rule structure. The brief describes how the NRC could restructure the draft rule to focus on ensuring applicant compliance with performance-based regulatory requirements and create a regulatory framework that resolves major differences between NRC staff and external stakeholders on the proposed draft rule.

In this report, NIA recommends that the Commission:

- Revise the proposed draft rule structure to better align with a performance-based safety requirement framework described by NIA and other stakeholders,
- Work with external stakeholders and NRC staff to address questions related to the introduction of NRC policy positions as new regulatory requirements, and
- Direct NRC staff to convert existing draft safety requirements and operational program requirements into optional regulatory guidance or non-mandatory appendices of the rule text for applicants.

These changes could help the NRC efficiently complete the 10 CFR Part 53 rulemaking process in a way that balances regulatory flexibility and predictability for advanced reactors and enables the commercialization and deployment of advanced nuclear energy. Additional details on the Part 53 rulemaking process and complete NIA recommendations are available in the full brief.

Link to report: <https://www.nuclearinnovationalliance.org/nia-brief-bridging-gap-part-53-rule-development>

- [Promoting Efficient NRC Advanced Reactor Licensing Reviews to Enable Rapid Decarbonization](#)

This report discusses the need to promote the efficient licensing of advanced nuclear energy by the NRC to enable the U.S. to meet its clean energy goals. Specifically, it highlights the long duration of the licensing review process (five or more years for some reactor license applications) and the significant uncertainties with duration of the licensing process as a barrier to the investment in and deployment of advanced nuclear energy. The report provides recommendations on how the NRC and industry can both take actions to shorten licensing review timelines while ensuring adequate protection of public health and safety.

In this report, NIA recommends that the Commission and industry focus on process improvements in four main areas:

- Rethinking pre-application engagement to improve process effectiveness and reduce the risk of licensing delays or an unacceptably lengthy licensing process,
- Restructuring the NRC's safety evaluation process to eliminate redundant or outdated process requirements and streamline processes for standardized reactor reviews,
- Prioritizing early management and Commission involvement on key policy issues to identify and resolve important issues early in each license proceeding, thereby reducing uncertainty, inefficiencies, and delays, and
- Establishing effective communication during application review to facilitate more timely reviews, reduce process bottlenecks, and enable more efficient licensing processes.

These changes could help the NRC complete licensing reviews more efficiently, reducing the duration of advanced reactor license reviews while still ensuring adequate protection of the public health and safety. Additional details on reducing licensing review durations and complete NIA recommendations are available in the full report.

Link to report: <https://www.nuclearinnovationalliance.org/licensingdurationsforclimate mitigation>

- [Nuclear Innovation Alliance Licensing Efficiency Workshop Summary Report](#)

This report summarizes NIA's 2022 Chatham House Rules workshop on Advanced Reactor Licensing Efficiency. The 2022 workshop was held as a follow-up to the 2021 NIA report "Promoting Efficient NRC Advanced Reactor Licensing Reviews to Enable Rapid Decarbonization". The workshop convened stakeholders from both industry and public interest groups to share experiences and insights from prior licensing activities, best practices for licensing engagement and activities, and emerging best practices for new reactor licensing. This report synthesizes workshop presentations and discussions, and provides recommendations on how applicants, NRC staff and management, and the NRC Commission can work together to improve the efficiency and effectiveness of advanced reactor licensing reviews.

In this report, NIA recommends that the Commission and industry focus on process improvements in five main areas:

- Achieving and maintaining alignment between applicant and NRC on the licensing review process and creating clear lines of communication
- Preparing the application content and performing the safety review based on clear, definitive, and consistent expectations
- Ensuring efficient use of staff resources as the NRC receives an increasing number of advanced reactor license applications
- Developing processes to identify and resolve challenges encountered during reviews
- Ensuring uniform understanding and expectations on the role of specific NRC offices and committees in the licensing process.

Detailed recommendations on each topic for applicants, NRC staff and management, and the NRC Commission are provided in this report. Specific detailed examples from the workshop and recommendations from participants are also highlighted as "focus areas" for each topic and help provide additional insights on best practices for efficient licensing. Additional details on improving

the efficiency and effectiveness of NRC licensing reviews and complete NIA recommendations are available in the full report.

Link to report: <https://www.nuclearinnovationalliance.org/nuclear-innovation-alliance-licensing-efficiency-workshop-summary-report>

- [Improving the Effectiveness and Efficiency of the Advisory Committee on Reactor Safeguards](#)

This report evaluates the NRC's Advisory Committee on Reactor Safeguards (ACRS) to determine how the ACRS could better align with Congressional expectations under the Nuclear Energy Innovation Modernization Act (NEIMA) without diminishing the significant role the ACRS has in the review and resolution of key technical issues associated with nuclear power plant regulation. The evaluation included legislative and agency documents on ACRS, meeting transcripts, and interviews with individuals with first-hand experience with ACRS including several current and former members of the ACRS, current and former ACRS staff, several former NRC Commissioners, former NRC Staff, and members of the ACRS stakeholder community.

This report includes four main NIA recommendations to improve the ACRS accompanied by specific proposed solutions:

- Refocus the scope and depth of ACRS reviews to maximize ACRS effort on the most safety-significant matters relevant to Commission and NRC licensing reviews,
- Improve ACRS operation and management to increase the efficiency and effectiveness of ACRS reviews
- Reduce the cost of ACRS reviews to applicants by eliminating the applicant fees associated with reviews and staff preparation, and
- Adjust the management of ACRS to help improve the efficiency of staff and ACRS operations and ensure alignment with Commission priorities.

These changes could help the ACRS operate more effectively and help position the ACRS and NRC to enable the safe and successful deployment of advanced nuclear energy. Additional details on improving ACRS operations and complete NIA recommendations are available in the full report.

Link to report: <https://nuclearinnovationalliance.org/improving-effectiveness-and-efficiency-advisory-committee-reactor-safeguards>



July 17, 2023

The Honorable Cathy McMorris Rodgers
Chair
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Jeff Duncan
Chair
Subcommittee on Energy, Climate, and Grid Security
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Frank Pallone, Jr.
Ranking Member
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Diana DeGette
Ranking Member
Subcommittee on Energy, Climate, and Grid Security
U.S. House of Representatives
Washington, D.C. 20515

Dear Chair Rodgers, Ranking Member Pallone, Subcommittee Chair Duncan, and Subcommittee Ranking Member DeGette,

Advanced nuclear energy can play a significant role in meeting our nation's growing need for reliable, affordable, secure, and clean energy. Enabling the full potential of advanced nuclear energy requires that we create the conditions for success for advanced reactor developers and energy users to deploy and operate new nuclear energy. One condition for success is ensuring that we have a regulatory environment in the United States that enables the effective, efficient, and predictable licensing of new nuclear power plants. Congress can play a critical role providing the U.S. Nuclear Regulatory Commission (NRC) and other regulatory agencies legislative direction, authorization, and oversight, and appropriations to ensure that the agencies are meeting the needs of the American people. The House Energy and Commerce Committee and the Subcommittee on Energy, Climate, and Grid Security have an especially important role to play.

The Committee and Subcommittee's activities during the 118th Congress exemplify the active and productive role that Congress can play in creating the conditions for success for advanced nuclear energy. The Subcommittee's legislative hearing on July 18th, 2023, titled "American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment" is a unique opportunity for the Subcommittee to discuss specific regulatory barriers to the deployment of advanced nuclear energy at scale and review specific legislative proposals that can help ensure effective, efficient, and predictable regulations for licensing new nuclear power plants.

The Nuclear Innovation Alliance (NIA) has been performing analysis and actively engaging with stakeholders (including advanced nuclear energy developers, utilities, non-governmental organizations, the NRC Commission, NRC staff and management, and policymakers) to identify barriers to advanced reactor licensing at the NRC and develop detailed recommendations on improving NRC licensing processes. This letter summarizes our key insights from this analysis and engagement that we believe can help inform the Committee's ongoing legislative and oversight activities and provides specific feedback

on several of the pieces of legislation discussed during the Subcommittee’s legislative hearing on July 18th, 2023.

NIA’s analysis and stakeholder engagement has revealed that while NRC can license advanced reactors under existing law, a combination of operational, cultural, and staffing issues limit the ability of the NRC to provide effective, efficient, and predictable licensing for advanced reactors. The Congress, the Commission, and NRC staff all have important roles to play in overcoming these barriers and creating a regulatory system that can enable advanced nuclear energy deployment. They need to work together to meet the following objectives:

1. Ensure adequate staff capacity and capability to effectively license advanced reactors
2. Ensure existing regulatory procedures and processes enable effective staff review
3. Develop new regulatory processes to improve effectiveness of future regulatory reviews
4. Develop regulatory processes that enable timely commercialization of advanced reactors at scale
5. Establish consistent stakeholder understanding and trust in the regulatory process

If these five objectives are not satisfied, the NRC and the new reactor licensing process will be a significant barrier to the deployment of advanced nuclear energy at scale. NIA believes that addressing the underlying organizational effectiveness, leadership and culture challenges at the NRC and holding NRC leadership accountable for implementation and performance will empower the agency to make internal changes necessary and complete the five objectives listed above.

The NRC must be intrinsically motivated to meet the needs of the moment – external changes to the agency will not produce a more effective licensing process if the NRC staff, management, and Commission do not have aligned motivations and priorities. This letter provides additional details on NIA’s recommendations for how the Committee can most effectively address operational, cultural and leadership challenges at the NRC, most important of which is enacting legislation that establishes an independent panel to conduct a comprehensive examination of NRC’s organizational effectiveness (with a focus on NRC’s leadership, operations, and organizational culture) and make recommendations for improvements. This recommendation would be a critical first step in realigning NRC operations, culture and leadership to create and implement effective and efficient licensing processes for advanced nuclear energy.

NIA has reviewed the legislation to be discussed during the Committee legislative hearing on July 18th, 2023. Many of these pieces of legislation address specific barriers to advanced reactor licensing in existing legislation (e.g., the Atomic Energy Act of 1954) or that the Commission does not have clear legislative direction or authority to address (e.g., applicant fees for certain advanced reactor projects or expedited licensing for new nuclear power plants at existing energy sites). NIA is pleased to provide additional discussion and comments on specific pieces of legislation in this letter including:

- H.R. ___, NRC Mission Alignment Act
- H.R. ___, Modernize Nuclear Reactor Environmental Reviews Act
- H.R. ___, Nuclear Licensing Efficiency Act
- H.R. ___, Nuclear Advisory Committee Reform Act
- H.R. ___, Efficient Nuclear Licensing Hearings Act
- H.R. ___, Advanced Reactor Fee Reduction Act
- H.R. ___, Advanced Nuclear Reactor Prize Act
- H.R. ___, Advancing Nuclear Regulatory Oversight Act
- H.R. ___, Nuclear for Brownfields Site Preparation Act

- H.R. ___, Advanced Nuclear Deployment Act
- H.R. ___, Nuclear Fuel Security Act
- H.R. 4528, Strengthening the NRC Workforce Act of 2023 (Rep. DeGette)
- H.R. 4530, NRC Office of Public Engagement and Participation Act of 2023 (Rep. Levin)

We believe that overall, this proposed set of bills is a step forward towards a more effective and efficient regulatory framework for advanced nuclear energy, but that it must be conducted in parallel with addressing the underlying operational, cultural, staff, and leadership challenges at the NRC. If Congress only addresses legal barriers to advanced reactor licensing without addressing operational barriers, we will continue to have an NRC that appears to be positioned for success but continues to struggle to license new nuclear power plants effectively, efficiently, and predictably.

We hope that this input helps inform the Committee's on-going work to create the conditions for success for advanced nuclear energy to meet our nation's growing need for reliable, affordable, secure, and clean energy. We thank the Committee for the opportunity to support its oversight and legislative work.

Please contact me (jgreenwald@nuclearinnovationalliance.org) or Dr. Patrick White (pwhite@nuclearinnovationalliance.org) if you have any follow-up questions or requests related to this letter, the Subcommittee's legislative hearing on July 18th, 2023, or any other Committee or Subcommittee activities.

Sincerely,



Judi Greenwald
Executive Director
Nuclear Innovation Alliance



Background and Motivation

The NRC will play a critical role in the development and deployment of advanced nuclear energy in the United States. With numerous advanced reactor companies engaging with the NRC, the number of licensing applications will increase significantly in the coming years. The NRC must successfully license and regulate hundreds of new reactors in the next two decades if advanced nuclear energy is to play a significant role in our future energy mix.

The NRC values independence, openness, efficiency, clarity, and reliability as “Principles of Good Regulation.” These principles must be effectively implemented to enable deployment of advanced nuclear energy at the scale and pace essential to combat climate change. The NRC prides itself as a continuously learning organization and is intrinsically motivated to improve the NRC’s capacity, capabilities, and processes as a modern regulator that can effectively license novel advanced reactor technologies. Enabling effective licensing and regulation for advanced reactors would help transition the NRC into an innovative regulator that recognizes and internalizes the importance of nuclear power as a climate solution into its core regulatory mission.

In the short term, about a dozen advanced reactor developers are engaging one-on-one with NRC to obtain approvals under existing rules. This is challenging because the current licensing pathways have been tailored to conventional, large, light water reactors. There are many things that NRC and industry license applicants can do to make these early engagements go well. NRC staff and applicants have been making good progress on licensing the Hermes test reactor and the Abilene Christian University research reactor, incorporating lessons learned from NuScale’s design approval, which took too long and cost too much. But licensing timelines and costs are uneven, often attributable to inconsistent quality in mundane but important practices like disciplined project management and clear internal and external communication.

The NRC Commission is beginning to dig into the details to improve licensing efficiency. Former Commissioner Baran proposed in June that the Commission request staff input on a proposed Commission policy statement to communicate the Commission’s expectations to the NRC staff, the Advisory Committee on Reactor Safeguards, and external stakeholders on the effectiveness, efficiency, and timeliness of new reactor licensing reviews. In a complementary effort, Commissioners Wright and Caputo are working together on a proposal to establish performance metrics to measure NRC’s progress in improving licensing efficiency. Under Chairman Hansen’s leadership, NRC staff is, for example, piloting an analytics portal that would enable the Commission and the public to track and assess progress.

For the medium term, NRC is in the midst of a multi-year rulemaking on risk-informed, performance-based and technology-inclusive licensing (referred to as “10 CFR Part 53”, or more simply “Part 53”). This rulemaking is required under the 2019 Nuclear Energy Innovation and Modernization Act (NEIMA), and a draft rule is before the Commission. As described in NIA’s Part 53 paper, the rule is flawed but fixable with leadership by the Commission. And the Commission is stepping up. At its public briefing by NRC staff on May 16th, all five Commissioners asked the staff tough questions and are reportedly working to rewrite the rule themselves or send it back to the staff with specific instructions. Commissioner Caputo in particular said the Commissioners should roll up their sleeves and vote on revisions to the proposed rule. Completion of this work is urgent and important.

For the long term, we need to re-imagine licensing in a world where NRC must license dozens, if not hundreds, of reactors per year. Ultimately, this will require streamlined and standardized NRC processes and practices as well as standardized technologies. Thinking on this topic has only just begun.

The NRC must be empowered to effectively and efficiently complete advanced reactor licensing activities over all three timescales if advanced nuclear energy is to play a role in meeting our nation's growing need for reliable, affordable, secure, and clean energy. Congress, the Commission, and NRC staff all have important roles to create the conditions for success for advanced nuclear energy. NIA has identified six specific barriers to advanced reactor licensing that all stakeholders must address to help ensure the effective and efficient licensing:

1. Challenges to hiring, training, and retaining qualified staff and management with technical and project management expertise necessary to lead licensing reviews of advanced reactors
2. Insufficient accountability for NRC staff in terms of schedule, breadth of scope, depth of review, or regulatory basis for technical and environmental reviews of advanced reactors
3. Inadequate leadership support and prioritization of innovative practices or processes for reviews, licensing, communication, and management
4. Inconsistent stakeholder understanding and trust in the licensing process and the role of different NRC committees and offices in the licensing process
5. Inconsistent project management and staff performance that can result in inefficient use of regulatory resources and applicant fees
6. Inconsistent external communication between stakeholders and the NRC as well as internal communication between NRC staff and management can result in unpredictable regulatory processes or decisions

These barriers represent cross-cutting challenges to licensing and oversight activities by the NRC but are of particular interest and concern for the licensing of new advanced nuclear reactors.

NIA Recommendations for Congressional Action

Congress, and specifically this Committee, can play a critical role in directing NRC to prioritize and support organizational improvements, authorizing additional funding to support NRC licensing activities, and holding the NRC accountable for longer-term operational and cultural improvements through effective and productive oversight. NIA's top recommendations for the Committee to improve NRC's licensing processes and NRC oversight of licensees are:

1. Establish an independent panel to conduct a comprehensive examination of NRC's organizational effectiveness (with a focus on NRC's leadership, operations, and organizational culture) and make recommendations for improvements
2. Require the NRC to develop a Commission policy statement on licensing efficiency, establish metrics for measuring its performance, and provide regular, publicly available reports to the relevant congressional committees on progress against these metrics, including reports on:
 - a. project management and organizational communication (including relevant staff and management training activities) with qualitative and quantitative assessments of NRC staff and management performance, and surveys of applicants and licensees
 - b. new reactor licensing (including relevant staff preparation and training activities with qualitative and quantitative assessments of applicants and NRC staff performance)
3. Conduct regular Committee oversight hearings that focus on cross-cutting NRC organizational performance factors including operations, agency leadership, culture, project management, and communication

4. Increase authorized funding for NRC training, rulemaking, and other cross-cutting activities through off-fee appropriations in combination with fee reform and Commission direction to provide NRC staff and management the tools and support necessary for internal agency reform

NIA believes that addressing the underlying organizational effectiveness, leadership and culture challenges at the NRC and holding NRC leadership accountable for implementation and performance is the most effective way to align intrinsic motivations at the NRC and empower the agency to develop efficient processes to license advanced reactors.

In addition to the NIA's above recommendations on organizational effectiveness, leadership and culture challenges, NIA has also identified additional barriers that can be addressed by the Committee and the Commission to improve NRC's licensing processes and NRC oversight of licensees. The following recommendations would best be addressed by Congressional legislation and the Committee because they require changes to governing legislation or it is unclear whether the Commission has the direction or authority to make the changes:

1. Improve the functioning of the Advisory Committee on Reactor Safeguards (ACRS) by revising the ACRS statutory mandate to limit reviews to unique or novel safety issues referred to it by the Commission and reallocating the costs associated with ACRS reviews to taxpayers
2. Amend the Atomic Energy Act of 1954 to eliminate the requirement for mandatory hearings in uncontested licensing reviews
3. Update the NRC public hearing process to incorporate modern best practices on public engagement and permitting reviews
4. Direct the NRC to pursue rulemaking to significantly reduce costs and duration of environmental reviews for licensing by expanding use of NEPA processes other than environmental impact statements (e.g., categorical exclusions, environmental assessments, and generic environmental impact statements) and reviewing opportunities for increased collaboration with other federal agencies
5. Clarify the Congressional direction on the NRC's mission through legislative amendments to the Atomic Energy Act of 1954 or new legislative direction to the Commission so that the agency mission reflects the importance of efficient and predictable reviews and timely regulatory decisions
6. Provide new legislative direction to the Commission to improve stakeholder understanding and trust in the regulatory process and proactively foster dialogue between NRC staff and communities on licensing and regulatory issues. This could be accomplished by directing NRC to create an Office of Public Engagement or other internal group to support on-going licensing activities outside of engagement normally handled by NRC Public Affairs

These recommendations could be implemented by the Committee and Congress through a combination of legislation and oversight and would address many of the commonly cited procedural barriers to advanced reactor licensing.

the following recommendations could be addressed by the Commission because they focus on NRC operation and could be implemented internally to the organization:

1. Improve the functioning of the ACRS by clarifying in procedure and practice Commission direction to ACRS on prioritizing and performing reviews and providing adequate support for improving staff-level ACRS operations and management
2. Clarify the role of the NRC's Office of General Counsel (OGC) in licensing reviews so that applicants and staff understand its roles, responsibilities, and scope

3. Modernize the NRC public hearing process by identifying opportunities to review and resolve environmental concerns under the National Environmental Policy Act (NEPA) provisions and reducing the scope and formality of its hearing process by adopting more informal, legislative-style hearing protocols when contentions are filed
4. Pursue rulemaking to significantly reduce costs and duration of environmental reviews for licensing by expanding use of NEPA processes other than environmental impact statements (e.g., categorical exclusions, environmental assessments, and generic environmental impact statements) and reviewing opportunities for increased collaboration with other federal agencies
5. Increase stakeholder alignment on meeting the intent of the Nuclear Energy Innovation and Modernization Act (NEIMA) by actively collaborating with stakeholders to agree in concept to licensing frameworks under Parts 50, 52 and 53 that encourage innovation through robust, risk-informed, performance-based, and technology-inclusive regulatory frameworks
6. Provide creative opportunities to proactively seek dialogue between NRC staff and communities, emphasizing the availability of plain-language and native language resources for communities, and more transparent incorporation of community concerns and questions into the regulatory process

These recommendations could be implemented by the Commission, NRC management, and staff, with the Committee and Congress holding the NRC accountable for significant changes through robust oversight and reporting requirements. Effective and lasting change at the NRC requires change from within, and continued productive oversight from the Committee can both empower the NRC and help ensure short-term and long-term accountability.

NIA Comments on Specific Pieces of Proposed Legislation

NIA has reviewed the proposed legislation to be discussed during the Committee legislative hearing on July 18th, 2023. Many of these bills or draft bills address specific procedural or legal barriers to advanced reactor licensing in existing legislation (e.g., the Atomic Energy Act of 1954 as amended) or that the Commission does not have clear legislative direction or authority to address (e.g., applicant fees for certain advanced reactor projects or expedited licensing for new nuclear power plants at existing energy sites). NIA believes that a number of these bills could help resolve barriers to advanced reactor licensing but that they would be most effective if enacted in parallel with organizational effectiveness, leadership, and culture reforms at the NRC. Comments on specific bills are provided below.

H.R.____, NRC Mission Alignment Act

NIA supports the bill's direction to NRC to support efficient, timely, and predictable reviews. NIA also supports clarifying NRC's overall mission but suggests that the Committee evaluate whether clarification of the NRC's mission is best performed directly by the Congress in new legislative direction, amendments to the NRC's enabling legislation, or by the Commission directly through internal NRC processes subject to Committee oversight to most effectively ensure NRC staff acceptance and incorporation of a clarified mission into NRC operations, culture, and regulatory activities.

H.R.____, Modernize Nuclear Reactor Environmental Reviews Act

NIA supports this draft bill since it will enable the NRC to more efficiently conduct environmental reviews for new nuclear power plants, consider expansive opportunities to streamline environmental reviews, leverage other analyses, avoid duplication, and update Part 51 to comply with the Fiscal responsibility Act. NIA suggests that the Subcommittee review the specific language in Section 2 (b)(2)(J) related to environmental review. The draft bill authorizes applicant submittal of their environmental impact statement (EIS) as the basis for the NRC draft EIS but applicants do not currently submit an EIS as part of

new reactor licensing. The bill should clarify if the applicant's submitted Environmental Report (required under 10 CFR Part 51) would be used as the basis for the NRC draft EIS or if the applicant would also be permitted to submit a draft EIS as part of their application as the basis for the NRC draft EIS.

H.R.____, Nuclear Licensing Efficiency Act

NIA supports this draft bill since it provides reasonable schedule certainty for commercial reactor applicants and improves the efficiency of environmental reviews. It also includes provisions for the NRC to review, assess, and revise, as appropriate, licensing performance metrics and milestone schedules required under the NEIMA to provide the most efficient performance metrics and milestone schedules reasonably achievable as gained through experience.

H.R.____, Nuclear Advisory Committee Reform Act

NIA supports this draft bill since it will help refocus the role of the ACRS on reviewing unique or novel safety issues referred to it by the Commission. This will help maximize the impact of ACRS on new reactor licensing and ensure they provide invaluable input to Commission decisions.

H.R.____, Efficient Nuclear Licensing Hearings Act

NIA supports this draft bill since it eliminates the need for hearings in uncontested licensing decisions and encourages the Commission to use informal hearing processes and procedures when there are intervenors. This will help increase the efficiency of NRC licensing processes without reducing public participation or transparency.

H.R.____, Advanced Reactor Fee Reduction Act

NIA supports this draft bill since it helps address the impact of licensing fees on applicants seeking licenses and permits for advanced reactors. NIA suggests that the Subcommittee consider opportunities for broader fee reform (e.g., changing the NRC's fee recovery model) or alternative methods for recovering fees (e.g., cost shares, payment of licensing fees during operation). These changes could increase the impact of the bill on the licensing and deployment of advanced reactors.

H.R.____, Advanced Nuclear Reactor Prize Act

NIA supports this draft bill since it reduces the "first-mover" risks borne by advanced reactor applicants that are attempting to use novel regulatory processes, use cases, or license types for new nuclear reactors. NIA suggest that the Subcommittee could expand the list of applicable prizes categories or provide secondary partial prize awards to incentivize multiple applicants to compete for prize categories.

H.R.____, Advancing Nuclear Regulatory Oversight Act

NIA supports this draft bill because it seeks to improve the operational efficiency of the NRC and maximizes the efficiency of reactor and materials inspection and oversight programs, and seeks to minimize overhead costs of leased office space.

H.R.____, Nuclear for Brownfields Site Preparation Act

NIA supports this draft bill because it directs the NRC to identify how to improve the effectiveness and efficiency of licensing processes at existing industrial energy sites. Incentivizing the reuse of existing environmental sites by utilizing existing environmental assessment information helps reduce the total

H.R.____, Advanced Nuclear Deployment Act

NIA supports this draft bill because it reduces the capital investment needed for reactors on Department of Energy and Department of Defense sites and established expedited review schedules for microreactors, commensurate with their impact to the environment and very low risk to the public.

H.R.____, Nuclear Fuel Security Act

NIA supports this draft bill because it provides additional authorization and direction to the Department of Energy to support the domestic availability of high-assay, low-enriched uranium (HALEU) and low-enriched uranium to meet the needs of existing and new nuclear reactors in the United States. This bill helps provide programmatic clarity to support advanced reactor projects that will require HALEU fuels for their successful demonstration and commercialization.

H.R. 4528, Strengthening the NRC Workforce Act of 2023 (Rep. DeGette)

NIA supports the purpose of this bill but recognizes that hiring and retention bonuses and incentives will not be sufficient for NRC to recruit and retain talent. Improvements to the leadership and organizational culture will be necessary to attract and retain the talent pool needed to meet the projected workload demand. NIA suggests that the Subcommittee incorporate these concerns into the draft bill and address questions related to the authority of the Chairman versus Commission consensus to prioritize supplemental hires and the determination of “severe shortage” for direct hiring authority.

H.R. 4530, NRC Office of Public Engagement and Participation Act of 2023 (Rep. Levin)

NIA supports the purpose of this bill but encourages the Subcommittee to evaluate whether improving stakeholder understanding and trust in the regulatory process is best performed by creating a new Office of Public Engagement and Participation or other internal group to support on-going licensing activities outside of engagement normally handled by NRC Public Affairs. In both cases, a combination of legislative direction with proper and thoughtful implementation by the Commission and active oversight by the Committee is critical to ensuring that the office or group proactively and effectively fosters productive dialogue between NRC staff and communities on licensing and regulatory issues. This bill can help facilitate the more effective and efficient licensing of advanced nuclear technology by increasing public trust, understanding, and participation in the licensing process.



May 8, 2023

Committee on Energy and Commerce
US House of Representatives
45 Independence Avenue SW
2125 Rayburn House Office Building
Washington, DC 20515-6115

Chair Cathy McMorris Rodgers
 Committee on Energy and Commerce
 2188 Rayburn House Office Building

Chair Jeff Duncan
 Subcommittee on Energy, Climate, and Grid Security
 2229 Rayburn House Office Building

Ranking Member Frank Pallone, Jr.
 Committee on Energy and Commerce
 2107 Rayburn House Office Building

Ranking Member Diana DeGette
 Subcommittee on Energy, Climate, and Grid Security
 2111 Rayburn House Office Building

Dear Chair Rodgers and Ranking Member Pallone:

In response to your letter dated April 14, 2023, Third Way's Climate and Energy program has prepared this letter of information and recommendations on US Nuclear Regulatory Commission (NRC) activities involving licensing and oversight of reactors. The attached response outlines the legislative and procedural improvements needed to enable the predictable, technology-inclusive, and risk-informed licensing, regulation, and oversight of the civil nuclear industry. Numerous government and independent studies have shown that the US has a major opportunity to lead the development of advanced nuclear reactor technologies. We believe Congressional direction and support is needed to secure the future of the US nuclear industry, achieve US decarbonization goals, and promote the safe, responsible use of civil nuclear technology globally. We greatly appreciate the opportunity to submit this response to the Committee, and welcome further engagement with Congress to move these developments forward.

Sincerely,

Jonathan Cowan
 President
 Third Way

Josh Freed
 Senior Vice President,
 Climate and Energy Program, Third Way

1. Update the mission of the NRC

Goal: Modernize the mandate of the NRC to better internalize the agency's role in protecting the general welfare of people, the environment, and climate.

- **Amend the Energy Reorganization Act of 1974**
 - In Section 201, to emphasize the NRC's responsibility to improve the general welfare of the public and efficiency of the nuclear regulatory process. These changes should be noted specifically in regard to the nation's interest in addressing climate change, decarbonization, fostering national security, and improving environmental quality.
 - The NRC's mission serves as the foundation for the Agency' brand and affirms the culture of the organization in regulating the industry. Updating the mission would have a long-term ideological impact on recruitment, training, and stakeholder engagement.

2. Improve Efficiency of Advanced Nuclear Licensing

Goal: Provide clear guidance to the NRC regarding Congressional expectations for efficiency and overall performance

- **Amend the Nuclear Energy Innovation and Modernization Act (NEIMA)**
 - In Section 103 (a)(2), to emphasize the application of risk-informed licensing practices to the 'maximum extent practicable' rather than simply 'where appropriate'.
- **Direct the NRC to develop review schedules that meet legislatively codified timelines for nuclear reactor licensing.**
 - The NRC generic schedule for licensing a non-LWR reactor under Parts 50 and 52 is 36 months.¹ Congress should codify this timeline in legislation by making it the performance threshold for all first-of-a-kind reactors. For any licensing activity beyond **36 months**, the NRC should have to brief the relevant committees of Congress in-person with sufficient explanation to the causes of the delay.
 - Additionally, for any subsequent build of a significantly similar design, or next-of-a-kind reactor, the NRC should be expected to develop a more efficient process that is capable of rendering a licensing decision in no more than **18 months**. Such a timeline would engender efficiency and enable the expeditious deployment of new nuclear reactors to address decarbonization needs.

¹ 'Generic Schedules'. NRC.gov. <https://www.nrc.gov/about-nrc/generic-schedules.html>

- **Direct the NRC to explore the impact of a rule change to 10 C.F.R. Part 52.104 to allow for granting of a license for a duration beyond 40 years.**
 - Current NRC regulations only allow for a combined license to be granted for up to 40 years.² However, currently operating reactors have demonstrated that the life for a nuclear plant extends well beyond 40 years. Advanced nuclear reactors benefit from innovations and improvements upon many current reactor designs that enable an ‘off-the-shelf’ life of 60 years or more. The NRC should assess changes to regulations that would enable licensing of advanced reactors for longer than 40 years. Such changes would promote efficiency and reduce the regulatory burden by avoiding unnecessary subsequent license renewals, as well as reduce costs to innovators for making safe, durable technology.

3. Increase Flexibility + Timeliness of Environmental Reviews

Goal: Reduce redundancy of environmental reviews, promote efficiency by allowing for acceptability of third-party EIS, enable broader applicability of environmental assessments for scaled technology.

- **Direct the NRC to develop schedules for environmental reviews that meet legislatively codified timelines.**
 - The NRC’s generic timeline for an environmental review related to an early site permit is 18-24 months, with a slightly shorter estimate for renewals and up to 2 years for a new permit.³ However, this range only includes activities up to the issuance of the final Safety Evaluation Report rather than the issuance of a permit. Congress should direct the NRC to update its review timelines to complete all permitting actions, including advisory committee meetings and hearings related to environmental reviews, within **24 months**. This benchmark would provide for predictability and consistency among different environmental reviews.
- **Allow for the broader application of Environmental Assessments (EA) rather than requiring a complete Environmental Impacts Statement (EIS).**
 - Scaled technology such as microreactors and small modular reactors (SMRs) can pose dramatically lessened impacts on the environment than large light water reactor projects. As such, the NRC should explore revising 10 C.F.R. Part 51.20 to expand the use of EAs, where appropriate, for various types of technology. Such changes are aligned with the mandate for a risk-informed licensing approach and could promote efficiency by reducing the staff burden to conduct more intensive site-specific EIS, or generic EIS activities.

² Part 52—Licenses, Certifications, And Approvals For Nuclear Power Plants. NRC.gov.

<https://www.nrc.gov/reading-rm/doc-collections/cfr/part052/full-text.html#part052-0104>

³ ‘Generic Schedules’. NRC.gov. <https://www.nrc.gov/about-nrc/generic-schedules.html>

- **Consider the use of categorical exclusions and harmonize standards across other relevant Federal agencies**

- The NRC should use categorical exclusions, in whole or part, for advanced reactors. This would mirror the standards of practice implemented by other federal Agencies such as the Department of Energy. Such changes would promote more streamlined reviews and allow greater flexibility for different technologies.
- Congress should also direct the NRC to harmonize the standards for radionuclide pollutants, to the maximum extent practicable, with the performance standards and statutory definitions of other Federal agencies, with specific consideration on aligning to standard of the U.S. Environmental Protection Agency as defined in Section 112 of the Clean Air Act (42 U.S.C. 7412). Aligning federal standards is good practice to improve clarity of federal regulations and consistency across regulatory agencies.

- **Amend the Atomic Energy Act of 1954 (AEA)**

- In Section 189, to remove the mandatory hearing requirement for next-of-a-kind deployments. The AEA requires the NRC to hold a hearing “on each application under section 103 or 104 b” of the Act. Such mandatory hearings can cause administrative delays due to scheduling and are furthermore required even in cases where there are no contentions, and no notable concern regarding an application from the Commission or applicant. Eliminating the mandatory requirement and rendering hearings for next-of-a-kind reactors effectively optional would provide greater efficiency and flexibility for the Commission.

4. Reduce Burden + Increase Predictability of User Fees

Goal: Engender increased predictability of licensing costs and increased accessibility of the NRC to new nuclear developers.

- **Reform the Fee-Recovery Structure for User Fees across all applications**

- The NRC is currently required to recover ~90% of its budget authority through fees. These fees come in the form of “annual fees” paid by all licensees and “user fees” paid by users for services that the NRC provides. Fees are derived from calculations in the agency’s annual “Fee Rule Work Papers” and based on costs for staff time spent on applicant activities as well as associated administrative costs and other activities.
- *At-minimum*: The fee-recovery structure should be changed to reduce the burden on users for administrative and other costs that are calculated into the fee base. An optimal solution would be to align support for the NRC with funding methods for other federal regulatory agencies and provide more substantial support through appropriations for Agency services.
- **Such changes would:** reduce the burden on developers and operators, thereby reducing costs of deploying new technology and enabling savings to be passed onto consumers or reallocated to further innovation.

- **Establish Caps on Pre-Application and Post-Docket User Fees**

- NEIMA established a cap on annual fees to be collected by the NRC. Other introduced legislation has addressed the need to reduce the hourly fee rate, and thereby overall costs to be incurred. However, there are not yet legislative provisions to implement improved predictability of costs for licensing activities. This is especially important as the length of time that companies have spent in pre-application engagements for first-of-a-kind advanced reactors has increased substantially.
- **User fees for docketed applications** should be capped at the value of the hourly fee rate multiplied by the estimated staff hours related to the NRC's generic milestone schedule or the review schedule mandated by Congress, where applicable. The NRC should be granted authority to waive the cap in the event of delays caused by the applicant, poor application quality, or if the time staff has spent on an application exceeds the estimate related to the generic schedule by more than 20%.
- **User fees for pre-application review activities** for a first-of-a-kind reactor license should also be capped to promote early and consistent engagement from developers on new technology. Such changes would allow pre-applicants to have a clear understanding of the capital needed to license new designs, which will help promote private investment. A cap would also incentivize new applicants to engage the NRC less conservatively by reducing the financial burden of regulatory outreach.

5. Update the Function of the Advisory Committee on Reactor Safeguards

Goal: Focus and streamline the engagements of the Advisory Committee and provide for the most efficient licensing and permitting practices agency-wide.

- **Amend the Atomic Energy Act of 1954 (AEA)**

- In Section 29, to allow for the ACRS to review an application in part; and to allow for the waiver of an ACRS review for constitution permits, SERs for early site permits, operating licenses for subsequent build of previously licensed designs, and license renewals.
- **Such changes would:** streamline the processes for permitting activities to reduce the timelines for final permitting decisions, reduce the risk of delays due to administrative reasons, and promote efficiency by reducing redundant assessments of functionally similar technology unless absolutely necessary.

6. Provide Direction + Necessary Resources for NRC Staffing and Training

Goal: Enable the NRC to recruit, retain, and train talent to license and oversee the next generation of nuclear reactors.

- **Direct NRC to develop and deliver to Congress a plan for operationalizing additional off-fee funding to recruit, onboard, and develop new staff.**
 - The NRC needs support for its efforts to recruit and train new staff to conduct reviews. However, the impending staff retirements pose exceptional challenges for the agency's ability to train and manage knowledge across teams, as many senior staff will be leaving the agency. To solidify support for additional resources and provide transparency of Agency direction, the NRC should provide a comprehensive report to Congress on its plans to meet this challenge. The report should identify expectations for staff efficiencies in the training process, the development of clear performance standards necessary to meet improved efficiencies, detailed summary of the NRC's use of its hiring authorities with an emphasis on identifying any occasions where greater authority may have aided retention, and all current and future efforts to educate current and prospective staff on the NRC's updated mission through recruitment activities and continuing training.
- **Expand NRC Scholarship and Fellowship programs to allow individuals to apply directly.**
 - The nuclear education supported by this NRC's University Nuclear Leadership Program (UNLP) funding is intended to benefit the nuclear sector broadly. However, the Nuclear Education Programs are designed to function institutionally, thereby benefiting specific programs. While there is significant value in this approach, expanding scholarship and fellowship programs to offer individuals the ability to apply directly could help the NRC proactively engage with prospective recruits. This addition would offer more flexibility for students who seek scholarship funding but are not already in a grant program. The NRC should also be required to collect cohort data on the students who receive support including metrics on their progress through the higher education system and into the nuclear industry.
 - The NRC could also explore allowing students to apply for a scholarship prior to being accepted in an engineering program by making the award conditional upon enrollment. This type of scholarship would increase access for students and incentivize those who may not prioritize an engineering degree to move into the field.

7. Bolster + Align International Export Readiness Activities

Goal: Enable the NRC to engage in regulatory capacity building and export readiness activities consistently and proactively.

- **Expand the Office of International Programs to include export readiness activities and provide additional funding.**
 - The NRC's Office of International Programs (OIP) advises the Commission on matters related to international activities and requests for NRC engagements overseas. The OIP acts as the NRC's liaison for foreign governments and the broader interagency. With improved coordination among the interagency lead from within the US government, OIP needs to be appropriately positioned to scale its engagement with interagency efforts on advanced reactor exports, regulatory harmonization, and global capacity building for civil nuclear energy.
 - The NRC should commit more full-time equivalents (FTEs) to OIP, as well as consider a restructuring that would align all of the agency's international activities with OIP. NRC staff should investigate how such a restructuring could be achieved by identifying potential challenges, opportunities, and any additional resources that would be needed to support enhancing OIP's international engagement.
- **Amend NEIMA to explicitly exclude international activities from the fee base.**
 - Include additional funding for international activities within the Advanced Reactor Regulatory Infrastructure Activities (ARRIA) account to support regulatory harmonization efforts and international engagement on advanced reactor licensing standards and practices.
 - Explicitly direct the Commission to coordinate NRC's work related to exports and international cooperation, as well as to prioritize the agency's international engagement based on coordination with the interagency, such as the Department of State, Department of Energy, the Executive Office of the President, and other agencies of relevance to civil nuclear cooperation.

8. Amend the Price-Anderson Act to automatically renew every 20 years

Goal: Align US policy with internationally supported practices and standards and enable the growth of the US-led and globally competitive advanced reactor industry.

- **Amend the Price-Anderson Act to automatically renew every 20 years, subject to cancellation by Congress.**
 - The Price-Anderson Act (PAA) was intended to provide support to the new US nuclear industry as it grew. Even after it became well-established, a key [argument](#) for extension in the 1970s was to enable coverage for any future industry expansion, mirroring nuclear trends today. The NRC has referred to the Act as “prudent public policy” with “negligible costs to the public”.⁴

⁴ The Price-Anderson Act -Crossing the Bridge to the Next Century: A Report to Congress. October 1998. <https://www.nrc.gov/docs/ML1217/ML12170A857.pdf>.

- **An ideal solution—automatically renew the PAA every 20 years unless rejected by Congress.** Updating the renewal process to provide for the automatic continuation of PAA unless Congress votes to reject it would make renewal much more seamless. This would ensure there are no gaps in protection or other unnecessary impacts to the industry as Congress considers the future of the Act. This method would retain Congress' ability to amend or end the PAA through legislative action that should require a three-fifths majority. Implementing a three-fifths threshold for ending the Act would ensure that such a significant action has the substantial support of Congress.
- ***If nothing else:***
 - **Extend the PAA through at-least 2065.** An extension to at least 40 years would support the deployment of new plants, as they will be licensed and insured for 40-year lifetimes. Synergizing this timeline will improve investor confidence and capital access in the financing of new nuclear projects, while also assuring insurers that legacy liability protections will exist throughout the plant's operating life.



United States Nuclear Industry Council
1317 F Street NW Washington, DC 20004

May 4, 2023

To:

The Honorable Cathy McMorris Rodgers
Chair, Committee on Energy & Commerce
U.S. House of Representatives
Washington, DC 20515

The Honorable Jeff Duncan
Chair, Subcommittee on Energy, Climate, and Grid
Security
U.S. House of Representatives
Washington, DC 20515

The Honorable Frank Pallone, Jr.
Ranking Member, Committee on Energy & Commerce
U.S. House of Representatives
Washington, DC 20515

The Honorable Diana DeGette
Ranking Member, Subcommittee on Energy, Climate,
and Grid Security
U.S. House of Representatives
Washington, DC 20515

Dear Chairs Rodgers & Duncan, and Ranking Members Pallone & DeGette:

The United States Nuclear Industry Council (USNIC) is the leading U.S. business advocate for advanced nuclear energy and promotion of the American supply chain globally. USNIC represents approximately 90 companies engaged in nuclear innovation and supply chain development, including technology developers, manufacturers, construction engineers, key utility movers, and service providers.

Over the past several years, USNIC, along with many other nuclear energy advocates, has highlighted the importance of advancing the United States' efforts to maintain leadership in the development of advanced nuclear technologies. This effort is vital to U.S. security. Nation-state nuclear offerings of China are expanding precipitously, and despite hostilities reflected in the invasion of Ukraine, Russia appears to remain an acceptable supplier— and both are a direct threat to the U.S. and our international interests. Moreover, advanced nuclear technology is perhaps the singularly most effective technology to address climate change and to provide reliable, cost-competitive, zero-carbon energy, without which it will be realistically impossible to meet the numerous and ambitious goals set for carbon reduction.

USNIC appreciates the opportunity to respond to this request for information, and thanks the committee for your leadership in nuclear energy. The companies we represent, and the industry at large, have benefited and continue to benefit from several pieces of key legislation in support of nuclear technology. USNIC understands that, pursuant to the Committee's responsibilities over the regulation of nuclear energy, its Subcommittee on Energy, Climate, and Grid Security will pursue oversight activity and legislative proposals relating to the Nuclear Regulatory Commission (NRC) and its reactor licensing and oversight activities.

As requested in your letter of April 14, 2023, to assist the Subcommittee's considerations, we are providing the following information and recommendations to improve the licensing review and approval process.

Overall, USNIC supports the Congressional statement in the Atomic Energy Act of 1954 that the use of civilian nuclear energy be directed "to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and

security" and that "the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise." The rich history of nuclear development and deployment of nuclear energy technology, at home and abroad, represents the realization of these ambitious goals; and the efforts underway industrywide to deploy new and advanced technologies will continue this legacy.

In order to further the achievement of these goals, the NRC's licensing and regulatory activities must focus on providing reasonable assurance of adequate protection of public health and safety; in doing so, the NRC must refine and redirect their actions to assure efficient, timely, and predictable regulation that provides for a robust and growing nuclear industry, consistent with the goals of the Atomic Energy Act. Furthermore, USNIC believes it is important for the licensing, regulation, and oversight of the civil nuclear industry to be predictable, efficient, risk-informed, performance-based, and protective of public health and safety.

Existing and advanced nuclear energy is vital to meet clean energy deployment, emissions reduction, and national security goals. New nuclear deployment also will enable the U.S. to compete with Russia and China, create U.S. technology jobs, restore U.S. nuclear energy leadership, and reduce adverse health effects of reliance on fossil fuels. NRC review and approval of license applications is an important and necessary step for commercialization of advanced nuclear technologies.

Initial License Reviews

Today there are several license applications under review by the NRC, and several more applications that will be formally submitted in the coming months. These include major Department of Energy cost-shared Advanced Reactor Demonstration Program awardees, and other DOE-funded advanced nuclear programs. These first movers are utilizing the existing regulatory frameworks under Parts 50 and 52 of Title 10 in the U.S. Code of Federal Regulations (10 CFR 50 and 52). It is essential that the NRC adopt and maintain a sense of urgency to review and license these advanced reactors efficiently and effectively.

10 CFR Part 53

It is unquestionably true that advanced reactors can be licensed under the existing regulatory framework discussed above. However, in the interest of long-term regulatory efficiency, 10 CFR Part 53, if properly crafted, will enable more effective, rapid, large-scale deployment of multiple new nuclear reactors. While the NRC staff have incorporated some innovative and useful licensing requirements and tools into the draft rule recently presented to the Commission, it also includes additional new regulatory requirements, resulting in a draft rule that is not only less efficient than the existing framework under 10 CFR Parts 50 and 52, but which also *increases* regulatory burden. The significance of this outcome cannot be overstated: as the industry is developing designs with significant increases in safety margin, for the NRC to propose a rule that increases the regulatory burden for those designs is not only counterintuitive, it also runs counter to Congressional direction associated with a new regulatory framework, and acts as a significant deterrent to domestic nuclear technology development. Unfortunately, due to these additional requirements, the current draft rule that is before the Commission is unworkable. Congress, NRC, and stakeholders need to take the time to get the new rule right.

The draft 10 CFR Part 53 rule must be restructured to address major concerns discussed by USNIC (and other organizations):

1. Combine into a single framework. The NRC staff's introduction of two separate frameworks (Framework A and Framework B) is problematic. The two-framework approach is difficult for developers to use because they may be using elements of both frameworks in their license

applications, and two frameworks can create extra work and confusion for both the applicant and the NRC staff.

2. Remove As Low As Reasonably Achievable (ALARA) as an expanded design requirement. Elevation of ALARA to a design requirement significantly increases regulatory burden and can greatly increase costs for no additional safety benefit beyond current practice. Additionally, the lack of NRC guidance to reliably judge what is “good enough” in meeting new ALARA requirements have the potential to make this an unbounded problem.
3. Remove the requirements to design to provide additional protection for “Beyond Design Basis Events.” In a risk-informed framework, existing requirements for protection against what are today considered Beyond Design Basis Events are adequate. Requiring the rigor applied to design basis events evaluation, beyond what is established in a risk-informed evaluation, adds significant burden without safety benefit.
4. Remove the Facility Safety Program. The proposed construct for a new programmatic layer in a facility licensing basis is duplicative to existing programs, and adds significant additional regulatory burden with no indication of any significant benefits.
5. Reconcile New Programs and Terminology. These issues include maintaining the standard of “reasonable assurance of adequate protection,” rather than picking new untested language; as well as not imposing a new requirement for a detailed probabilistic risk assessment at the construction permit phase (which is not meaningful, and often even impossible, because of the level of design detail that supports a construction permit).

A new advanced reactor regulatory framework *could* assist in more efficient licensing and deployment of advanced, U.S.-developed nuclear technology for electricity production, industrial process heat needs, hydrogen production, and other applications. However, the concerns listed above and others will need to be resolved before potential applicants will consider using the 10 CFR Part 53 rule. The overarching theme of these major concerns is the NRC putting prescriptive details into the rule language. These details are more appropriate for guidance.

Companies and trade associations have collaborated over the past two years and committed extensive amounts of resources to review and comment on preliminary 10 CFR Part 53 language as it was made available. As an example, in November 5, 2021, USNIC and the Nuclear Energy Institute submitted over 100 pages of detailed comments and concerns regarding the language ([USNIC/NEI Comprehensive Comments on Part 53; NRC Accession Number=ML21309A578](#)). These comments were supplemented in a subsequent letter on April 30, 2022. Industry also provided over 20 public sets of comments in NRC public meetings and on the [regulations.gov](#) website, as requested by NRC. NRC staff’s responses to these multiple rounds of comments was extremely limited, typically consisting of statements expressing appreciation for the comments, but in almost all cases providing little to no substantive feedback. Public meetings intended to contribute to dialog on development of the proposed rule, to ensure understanding of the significance of stakeholder comments, and to seek alignment on changes to address those comments, failed to accomplish that intent. Future public engagement is essential, but is only likely to be productive if NRC Commissioners direct the staff to host interactive and collaborative meetings with external stakeholders that afford open dialog to achieve consensus.

NRC Leadership

The NRC needs to become more efficient in achieving its mission, or else there will be ongoing delays in approval of advanced nuclear technologies. Leadership must communicate the urgency of efficient regulation and licensing of a new generation of clean energy, recognizing the competitive threats from China and Russia as they develop and deploy advanced nuclear technology domestically, and actively market their offerings internationally. Stakeholders perceive that many of the NRC staff share the desire

to be more efficient. For instance, at the 2023 NRC Advanced Reactor Stakeholder meeting, NRC staff were open to improving their audit and “Request for Additional Information” processes, and improve their project management practices. Initiatives such as these must be adopted widely within the agency, and the NRC organization must be further modernized to enable and empower the staff to meet the goal of being more efficient, particularly in light of the volume of new applications they are projected to receive.

Efficiency is touted by the NRC as a Principle of Good Regulation, but that principle is not always realized; this challenge can be resolved, however, if NRC recognizes and embraces innovative ways to move faster and maintain the same level of safety in regulatory decision making. NRC leadership must prioritize and support movement toward more efficient regulation and must monitor performance against quantitative goals in this regard.

As a separate matter, when the NRC considers public health and safety, they focus on the health and safety of people near nuclear sites. NRC practices do not provide for consideration the significant adverse public health impacts—to U.S. citizens across the country—resulting from air pollution from fossil fuel use, as well as the dangers of more intensive storms and other adverse impacts from climate change. NRC’s environmental evaluations discuss these adverse impacts only peripherally in terms of discussion of a “no action” alternative in NRC environmental impact statements. But the actual NRC safety review that establishes the licensing basis for a facility has no provisions for such an evaluation, and certainly no way to assess the impacts of delays in nuclear facility licensing from NRC inefficiency or application of requirements beyond “reasonable assurance of adequate protection.”

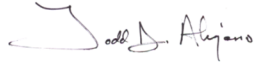
Advisory Committee on Reactor Safeguards

The Nuclear Innovation Alliance and the Pillsbury law firm prepared a March 2023 report that offered suggestions on “Improving the Effectiveness and Efficiency of the Advisory Committee on Reactor Safeguards (ACRS)” (<https://nuclearinnovationalliance.org/nuclear-innovation-alliance-statement-release-new-report-improving-effectiveness-and-efficiency>). These suggestions included consolidation of Full Committee and Subcommittee meetings to avoid duplication; Congressional direction to revise the ACRS’ statutory mandate in the Atomic Energy Act to emphasize that the ACRS should review only novel and safety-significant issues; and removal of the requirement that the ACRS must review *all* construction permit and operating license and renewal applications (irrespective of novel features). Additionally, Congress should exclude the cost of ACRS reviews, including all NRC staff time used to prepare for ACRS meetings, from fee recovery. These and other measures will focus ACRS’ efforts on novel and safety-significant matters, reduce review time on less important issues, increase overall review efficiency, and avoid financial burden on developers.

We appreciate your efforts to review NRC’s policies and actions that can allow U.S.-developed nuclear energy to make the maximum contribution to the general welfare, and contribute to the nation’s common defense and security. Thank you for requesting industry input. In addition to the issues discussed in detail above, USNRC stands ready to engage further, upon request by the committee, on matters of oversight of advanced nuclear reactor technologies, management of regulatory costs and fees, public health and safety, staff effectiveness and culture, collaboration with the Department of Energy, and international activities.

If you want additional information, please contact us.

Sincerely,

A handwritten signature in dark ink, appearing to read "Todd Abrajano". The signature is fluid and cursive, with the first name "Todd" and last name "Abrajano" clearly distinguishable.

Todd Abrajano
President & CEO
U.S. Nuclear Industry Council (USNIC)
Mobile: 913-620-0700
todd.abrajano@usnic.org

CC:
Jeff Merrifield, Chair, Advanced Nuclear Working Group, USNIC
Peter Hastings, Vice-Chair, Advanced Nuclear Working Group, USNIC
Cyril Draffin, Senior Fellow, Advanced Nuclear, USNIC



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July 18, 2023

The Honorable Cathy McMorris Rodgers
Chair, House Energy and Commerce
Committee
United States House of Representatives
Washington, DC 20515

The Honorable Frank Pallone
Ranking Member, House Energy and
Commerce Committee
United States House of Representatives
Washington, DC 20515

The Honorable Jeff Duncan
Chair, Energy, Climate, and Grid
Security Subcommittee
United States House of Representatives
Washington, DC 20515

The Honorable Diana DeGette
Ranking Member, Energy, Climate, and
Grid Security Subcommittee
United States House of Representatives
Washington, DC 20515

Dear Chair Rodgers, Ranking Member Pallone, Chair Duncan, and Ranking Member DeGette,

On behalf of the Uranium Producers of America (UPA), thank you for holding an Energy, Climate, and Grid Security Subcommittee legislative hearing on “American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment.” We thank the Committee for its recent approval of H.R. 1042 to prohibit Russian uranium imports and appreciate the release of the discussion draft of the “Nuclear Fuel Security Act.” Banning Russian uranium imports and expanding the Strategic Uranium Reserve as provided in the discussion draft are crucial steps toward reestablishing U.S. nuclear fuel cycle capabilities.

Today, uranium powers one out of every five American homes and provides half of our carbon-free power. Uranium is necessary to produce the high-assay, low-enriched uranium (HALEU) needed for several advanced reactor projects under development. U.S.-produced uranium is also required to power the nuclear Navy and for nuclear deterrence, with national defense requirements for uranium expected to expand in the years ahead. Yet in 2022, Russia, Kazakhstan, and Uzbekistan supplied nearly half of the United States’ natural uranium purchases. U.S. and other western uranium producers have been undercut in recent years by price insensitive uranium imports from state-owned entities. Russia and China continue seeking more control over global uranium markets and it is long past time for the U.S. to take swift action to rebuild its nuclear fuel cycle.

H.R. 1042, which would prohibit Russian uranium imports, would provide necessary long-term market certainty around Russian uranium supply to encourage investment across the fuel cycle, including mining, conversion, and enrichment. The discussion draft for the “Nuclear Fuel Security Act” would work in tandem with the Russian uranium import ban to ensure domestic capacity to produce both the low-enriched uranium (LEU) needed by our current reactor fleet and the HALEU needed for advanced nuclear projects. The bill would merge the existing Strategic Uranium

Reserve for mined and converted uranium into the American Assured Fuel Supply Program. This will serve as a backstop to address potential supply disruptions under which uranium cannot be obtained through normal market mechanisms or under normal market conditions. The discussion draft also directs DOE to make HALEU and LEU commercially available in such a manner that promotes diversity of supply in domestic fuel cycle capabilities. Importantly, the bill requires DOE to utilize only uranium produced, converted, and enriched in the U.S. or, if domestic options are not practicable, a country that is an ally or partner of the U.S. We urge the committee to take up the discussion draft and we look forward to working with you to advance the bill through the legislative process.

Thank you again for holding this critical hearing, and we look forward to working with you to secure our nuclear energy future.

Sincerely,

Jon Indall
Counsel, Uranium Producers of America

CATHY McMORRIS RODGERS, WASHINGTON
CHAIR

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED EIGHTEENTH CONGRESS
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August 30, 2023

Dr. Michael Goff
Principal Deputy Assistant Secretary,
Office of Nuclear Energy
Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

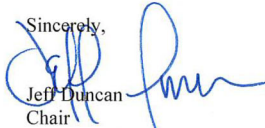
Dear Dr. Goff:

Thank you for appearing before the Subcommittee on Energy, Climate, and Grid Security on Tuesday, July 18, 2023, to testify at the hearing entitled "American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions by the close of business on Wednesday, September 13, 2023. Your responses should be mailed to Kaitlyn Peterson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515 and e-mailed to Kaitlyn.Peterson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Jeff Duncan
Chair
Subcommittee on Energy,
Climate, and Grid Security

cc: Rep. Diana DeGette, Ranking Member, Subcommittee on Energy, Climate, and Grid Security

Attachment

Attachment—Additional Questions for the Record

The Honorable Jeff Duncan

1. Several Committee Members recently returned from a trip to Japan and Korea, which included discussions on nuclear, Fukushima, and strong commercial relationships. We had a similar trip to Poland and the Czech Republic earlier this year. From these travels it is clear other nations seek American assistance and technology.
 - a. Please explain what DOE is doing to work more closely with the State Department and other agencies to provide a strong nuclear vision.

Dr. Goff did not answer submitted questions for the record by the time of publication. Replies received after publication will be retained in committee files and made available at <https://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=116255>.

House Committee on Energy and Commerce

Subcommittee on Energy, Climate, and Grid Security

Hearing Entitled, *“American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment.”*

July 18, 2023

Questions for the Record for Mr. Dan Dorman

The Honorable Jeff Duncan

1. I understand you require licensing actions to be completed within two years, what are you doing to revisit this goal, to identify actions that can – or should – be completed faster?

RESPONSE:

The NRC does not have a requirement to complete all licensing actions within two years. As directed by the Nuclear Energy Innovation and Modernization Act (NEIMA), the NRC staff established generic milestone schedules for issuing the final safety evaluation for various types of applications. The generic milestone schedules established for requested activities of the Commission (including licenses, permits, certifications, license renewals, and license amendments) are posted on the NRC’s public website at <https://www.nrc.gov/about-nrc/generic-schedules.html>. The milestone schedules for each activity type are considered “generic” and are largely based on historical data for each activity type. The NRC staff shares with each licensee or applicant a specific schedule for each request, which may be shorter or longer than the generic milestone schedule based on the specifics of the request.

The NRC tracks progress on each licensing action review to ensure that schedules are met. In FY22, the NRC staff completed 94% of licensing action reviews within established schedules. A recent example of the NRC staff’s commitment to timely and efficient licensing decisions was the completion of both the safety review and the environmental review for Kairos Power’s Hermes non-power reactor construction permit application ahead of schedule. Notably, the NRC staff issued the final safety evaluation in 18 months. The NRC staff is using lessons learned from this safety review to inform future licensing activities such as early engagement meetings with applicants. The NRC will continue benchmarking against prior tracking results to determine whether the generic milestone schedules can be adjusted to account for recognized efficiencies.

2. It has been communicated that the staff is looking at a 24-month review period for new SLR applications. This is a regression from the staff’s previously stated review schedule of 18 months.

a. Why the backsliding?

RESPONSE:

The NRC staff is committed to timely license renewal safety reviews. Over the last year, the nuclear industry has substantially increased its plans to pursue license renewals. The NRC has historically budgeted for conducting three reviews annually based on industry projections and plans. The substantial increase in industry interest will result in the NRC receiving and having 12 applications under review in FY24. This rapid acceleration in the number of applications will challenge NRC resources and may have an effect on schedules. In response to this increased workload, the NRC staff is implementing enhancements to its review process and is engaging with the nuclear industry on efforts to improve the quality and consistency of submitted applications.

- b. Given that the NRC has reviewed and approved 94 license renewals and several subsequent license renewals, shouldn't we be seeing improvements in the time it takes to review these applications?

RESPONSE:

The NRC's experience in reviewing license renewal applications has allowed the NRC to expedite the review of new applications. Where a new application adopts previously approved references that apply to the new application, the review time can be further expedited. However, each license renewal application may involve new issues that were not present in other applications. For example, a facility may have encountered unique degradation mechanisms and implemented appropriate actions to address those conditions. Accordingly, each application must be reviewed on its own.

In addition, subsequent license renewals (SLRs) may require more hours than initial license renewals for a variety of reasons. While some areas covered in the initial license renewal review may be streamlined during the SLR review, the staff has found that the new and unique variables introduced during the SLR review at a minimum balance out any efficiencies, and in some cases add additional review time.

The NRC staff is implementing enhancements to the license renewal process. Some examples include more effective use of audits, streamlining of safety evaluations, and enhanced project management tools that will reduce the resources needed to complete these reviews. In an August 2023 public meeting, the NRC staff and industry discussed a new effort to identify and prioritize further enhancements to the licensing process. The NRC staff is planning to accommodate further public engagements with the industry and other stakeholders to identify actions both the industry and staff can take to enhance the efficiency and timeliness of these reviews.

- 3. The NRC's license application review resources for license renewals and power up rates have continued to grow over time. Please discuss what actions you are taking to adopt efficiencies in your reviews to reverse this trend.

RESPONSE:

The NRC has implemented several subsequent license renewal process improvements to increase efficiencies, and we are currently engaged with the industry (through public meetings, workshops, NEI Forums, etc.) to identify additional means to streamline reviews. Completed and ongoing enhancements to process improvements include:

- Expanding the use of Requests for Confirmatory Information (RCIs) to access specific non-docketed information, which, if it is used to support a regulatory finding, will be formally docketed.
- Reducing the number of Advisory Committee on Reactor Safeguards (ACRS) meetings to one full committee meeting.
- Eliminating the inspection required as part of the licensing decision and instead leveraging information from the post-approval inspections from the initial license renewal.
- Increasing the use of remote communications, including online portals, to maximize the efficiency of in-office review time and reduce the level of staff activities at the reactor site. The upcoming revisions to the Generic Aging Lessons Learned for Subsequent License Renewal Report and Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plant would enhance generic guidance to minimize the need to review common technical issues on a plant-specific basis.
- Enhancing the Technical Review Package tool to increase project management efficiency.
- Optimizing audits to increase efficiencies and reduce the need for requests for additional information (RAIs).
- Continuing to streamline safety evaluations and audit reports by combining similar or repetitive sections.

The NRC has a well-established process for reviewing and approving power uprate applications, as demonstrated in the over 120 uprates that have been approved since 2000. The NRC has an Office of Nuclear Reactor Regulation (NRR) Office Instruction, "Power Uprate Process," for reviewing power uprate applications. The staff plans to review this NRR Office Instruction and enhance it, as appropriate, as the staff prepares for potential future reviews.

In [SECY-13-0070](#), the NRC staff established resource estimates and goals for uprate reviews. The NRC staff is reviewing past data to determine potential efficiencies in the licensing process associated with power uprate reviews. The staff will also continue to identify additional efficiencies to enhance its process, as appropriate. In order to reasonably inform any changes, staff will need additional engagement with industry to understand specific plans for applications.

To date, while the NRC has heard that the industry is generally interested in pursuing uprates, the NRC has not received any specific information or timelines. Examples of considerations important to our ability to plan include the type of power uprate review, whether the applications will rely on generic methodology (e.g., approved topical reports), and anticipated schedules for submittal.

As with all licensing reviews, the NRC staff will also leverage its data-driven project management tools to provide near real-time analytics on project execution to monitor progress. The staff intends to continue to leverage its proven process for future reviews but is also open to using more recent lessons learned and data to enhance and improve efficiency.

4. I understand that the NRC's process for resolving differing professional opinions can hamstring agency decision-making because it can slow down important decisions. The process is not built around the safety significance of issues. I am encouraged that the NRC has adopted new processes that focus on safety significance such as the very low safety significance issue resolution process. Can you commit to adopting a similar approach to make the NRC's resolution of differing professional opinions more safety focused and streamlined?

RESPONSE:

The NRC is committed to ensuring the Differing Professional Opinion (DPO) program is managed and conducted in a manner that supports agency goals for openness, inclusion, safety, efficiency, and effectiveness. We achieve this by establishing clear guidance and expectations regarding use of the DPO program, providing hands-on support for process implementation, conducting periodic assessments of the DPO program, incorporating best practices and lessons learned into program guidance, and by leveraging risk and safety insights to ensure the review effort is appropriate.

The NRC places safety as its utmost priority and has implemented a robust process to facilitate the consideration of diverse views during the decision-making process. This dedication to safety entails creating and maintaining a culture where staff are encouraged to raise safety concerns, which are assessed and resolved based on their safety significance. The NRC's dedication to safety is ingrained in our mechanisms for formally addressing safety concerns and differing views: the Open Door Policy ([Management Directive \(MD\) 10.160](#)), the Non-Concurrence Process ([MD 10.158](#)), and the DPO Program ([MD 10.159](#)). In establishing completion dates for the resolution of safety concerns, consideration is consistently given to the need for prompt action, the safety significance of the issue, and the priority of other concurrent work activities within the responsible office or organization.

The Office of Enforcement (OE) has been proactively working to ensure safety concerns submitted under the formal differing views program continue to be addressed in an effective and efficient manner. To better serve its stakeholders and in response to feedback related to the differing views program, OE revised MD 10.159, The NRC DPO Program.

The revised MD 10.159 includes several process improvements and flexibilities to ensure safety concerns continue to be addressed in an effective and efficient manner. Some of the recent relevant improvements include: 1) enhancing kick-off meetings; 2) developing a rapid resolution stage; 3) implementing a DPO Tiger Team; and 4) delegating and expanding roles involving DPO program participants. OE will monitor the impact of the recent DPO program

improvements as they relate to better focusing resources on issues of greater safety significance and will revisit integrating the very low safety significance issue resolution process as part of the differing views program in the future, as necessary.

Recent Relevant Improvements to the DPO program:

- **Enhanced Kick-Off Meeting:** OE implemented an enhanced DPO kick-off meeting where they proactively work with the DPO program participants to align on a case specific review schedule and to ensure the DPO program does not result in a schedule-driven process that fails to recognize the safety significance and complexity of the issues, priority of other work activities, and the availability of DPO participants.
- **Rapid Resolution:** OE developed a rapid resolution stage for the informal resolution of concerns. This stage is designed to identify opportunities to constructively resolve safety concerns in an effective and efficient manner before entering the formal differing views program. This process improvement also creates opportunities for earlier understanding of the involved parties' interests and enables creative resolutions, thus enhancing the timeliness associated with the resolution of highly technical and highly complex safety concerns.
- **DPO Tiger Team:** OE implemented a DPO Tiger Team, which establishes a list of subject matter experts throughout the agency that can be called upon to a conduct an evaluation of the issues, scope, and any other important circumstances. The DPO Tiger Team can help to quickly understand and assess the issues raised in a DPO submittal to the extent that it can assist in resolving differing views and recommend potential DPO program process flexibilities. This allows the agency, when appropriate, to prioritize its activities and apply the appropriate resources to resolve the issues in a timely manner.
- **Delegation and Expansion of Roles:** To balance and distribute the workload of DPO cases among highly qualified individuals, OE implemented a process improvement that allows Office Directors and Regional Administrators to delegate the disposition of DPO cases to their deputies. In addition, a recent change now allows Senior Level Advisors to serve as DPO panel chairs to lead the independent review of the safety concerns raised in a DPO and provide recommendations to a DPO decision-maker. Previously, only Senior Executive Service (SES) members were permitted to chair a DPO panel. This change is anticipated to yield substantial efficiency gains and enhance the timeliness of DPO cases reviews.

5. In developing a budget request, NRC presumably uses a labor model to manage its anticipated workload, with metrics for reviewing significant licensing actions like subsequent license renewals. For example, the FY 2004 NRC Budget Request included metrics for completing the review of initial license renewal applications: 22 months to complete the review of an uncontested application or 30 months, if contested. Looking at the FY 2024 NRC Budget Request, there are no metrics specified.

- a. Given the absence of metrics, how can NRC provide the assurance to prospective applicants that their application will be reviewed in a timely, efficient, and predictable manner?

RESPONSE:

For Fiscal Year (FY) 2024, the NRC published an Annual Performance Plan and Report containing the agency's metrics, provided to Congress to accompany the FY 2024 Congressional Budget Justification. These agency metrics are consistent with the metrics that have been included in NRC Budget Requests in recent years. As directed by NEIMA, the NRC staff established generic milestone schedules for issuing the final safety evaluation for various types of applications, including applications for license renewal. The generic milestone schedule for issuing the final safety evaluation for license renewal applications for light water reactors is 18 months. When the generic milestone schedules were established, the NRC staff noted that it will work with each licensee or applicant to establish a specific schedule for each request. A specific schedule may be shorter or longer than the generic milestone schedule based on the complexity of the review, information provided by the licensee or applicant, and agency resource availability.

- b. Absent a labor model and metrics, what is the basis for NRC's estimate on the resources needed to complete an initial or subsequent license renewal review? If there is a labor model and internal metrics, what is the rationale for not making them available to licensees and the public?

RESPONSE:

For each new license renewal application, the NRC conducts an acceptance review and issues a letter to the licensee documenting the results of that review. If the NRC accepts the application for review, the letter includes a planned schedule and resource estimate that the staff manages throughout the review. The NRC routinely communicates the status of the review to the licensee, and the licensee receives updated resource expenditures as part of the NRC's billing process. In addition, the NRC documents the status of each license renewal application review in a semi-annual report to Congress and provides resource expenditure details for significant ongoing licensing reviews, including subsequent license renewal application reviews, in a quarterly report to Congress.

NEIMA Section 102(c) required the NRC to develop performance metrics and milestone schedules for the requested activities of the Commission by July 13, 2019, and requires reporting of delays associated with certain final safety evaluations related to these activities. The generic milestone schedules established for requested activities of the Commission, including license renewal applications, are posted on the NRC's public website at <https://www.nrc.gov/about-nrc/generic-schedules.html>. The milestone schedules for each activity type are considered "generic" and are largely based on historical data for each activity type. Specifically, for license renewal applications for light water reactors, the NRC reviewed historical data for past initial and subsequent license renewal application reviews and adjusted the overall review schedules to incorporate efficiencies gained in our licensing process over the years. The NRC will continue

benchmarking against prior tracking results to determine whether the generic milestone schedules can be adjusted to account for recognized efficiencies.

The NRC continues to strive to complete its review of reactor license renewal applications within 30 months from receipt if a hearing is required or within 22 months from receipt if no hearing is required. This information is available on the NRC's public website at <https://www.nrc.gov/reactors/operating/licensing/renewal/process.html>.

6. The NRC's mission states that: *The NRC licenses and regulates the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security and to protect the environment.*

I'm told that NRC's Standard Review Plan (or SRP) – is used to ensure consistency, completeness, predictability, and repeatability of NRC licensing decisions and that every application receives the same level of scrutiny. In the past, there has been a concerted effort by the Commission to ensure discipline in the staff's reviews by limiting requests for information (or RAIs) that involve information beyond what is necessary for the agency to make a safety finding.

- a. Would you agree that using the reasonable assurance of adequate protection standard for reviewing license applications and amendments limits how far the staff can go in requesting information during licensing reviews?

RESPONSE:

The NRC has a well-established process for issuing a request for additional information (RAI). For example, for reactor applications, the NRC uses office instruction, "Processing Requests for Additional Information," to implement an effective and efficient RAI process to obtain missing, incomplete, inconsistent, or unclear information within the application or docketed correspondence. The NRC staff also engages with applicants through pre-application interactions to create an opportunity for regulatory issues to be addressed prior to submittal of the application to try and minimize RAIs during the licensing review.

The staff relies on our regulatory requirements and guidance to make findings of reasonable assurance. RAIs should be directly related to the applicable regulatory requirements associated with a licensing submittal, and used by the NRC to obtain information, not previously submitted by the applicant, that the NRC needs to make required regulatory findings in a licensing review. The NRC may also issue RAIs if necessary to make regulatory findings pursuant to the National Environmental Policy Act or related environmental statutes.

- b. Absent a disciplined and predictable review process, how does NRC limit the ability of individual reviewers' interests exceeding the bounds of what is necessary to reach a safety conclusion?

RESPONSE:

NRC staff reviewers are expected to issue RAIs that are directly related to the applicable regulatory requirements if needed to obtain information not previously submitted by the applicant. The NRC has established guidance for reviewers to facilitate a disciplined and predictable review process with respect to RAIs. For example, the NRC has guidance for reviewers for reactor applications in “Processing Requests for Additional Information,” to provide an effective and efficient RAI process. Additionally, the guidance in “Requests for Additional Information,” enhances staff’s clarity and focus when developing RAIs for fuel facilities, spent fuel storage, and transportation actions. The established guidance focuses reviewers on developing RAIs that are necessary for a regulatory finding in a licensing review. The NRC staff also holds internal deliberations on any additional rounds of RAIs prior to engaging with the licensee or applicant, including obtaining division management alignment and approval on the RAIs. The NRC staff’s review process also affords opportunities for the licensee or applicant to engage with the NRC staff on RAIs and gain more information related to staff findings or determinations, particularly on the regulatory basis of such requests.

- c. If this is occurring, isn’t this a form of NRC’s “mission creep”?

RESPONSE:

The NRC continues to focus on its safety and security mission. The NRC’s established guidance for reviewers, coupled with management oversight, maintains discipline and focus in the NRC’s licensing reviews and development of RAIs. The NRC staff will continue to work to focus RAIs on information necessary to make the required regulatory findings on an application.

7. Last year the staff completed its assessment of whether Environmental Justice (EJ) is appropriately considered and addressed in agency programs, policies, and activities, such as adjudicatory procedures and environmental reviews, given the agency’s mission. The bottom line of the staff’s analysis found the consideration of EJ in these areas is consistent with applicable law, and that it is also generally consistent with the spirit of Executive Orders (EOs) that address EJ. Nonetheless, the staff proposed potential improvements, enhancements, and updates on how the agency addresses EJ. This comes at a time when there are wide-spread concerns about the NRC’s ability to conduct timely review of licensing applications, including advanced reactor designs needed to address clean energy needs.

- a. Given the bottom-line conclusion by the staff, aren’t some of the elements of NRC’s Environmental Justice Assessment recommendations above and beyond those required by NEPA (e.g., creation of an outside Federal Advisory Committee for Environmental Justice and reversing the current prohibition on intervenor funding)?

RESPONSE:

In April 2021, the Commission directed the staff to systematically review how the agency’s programs, policies, and activities address environmental justice. As part of that direction, the

Commission directed the staff to evaluate whether the NRC should incorporate environmental justice beyond implementation through the National Environmental Policy Act (NEPA). Consistent with that direction, the staff provided a notation vote paper to the Commission that identified areas where consideration of environmental justice could be updated, enhanced, or modernized both within and outside the context of NEPA. This paper is currently under consideration by the Commission.

- b. Has NRC conducted a cost-benefit review of the EJ Assessment recommendations that exceed NEPA requirements? For example, did the staff assess the impact these enhancements have on the cost, timeliness, and predictability of NRC licensing reviews for the existing fleet, SMR applicants, and advanced reactor applicants?

RESPONSE:

The staff considered high-level resource estimates in developing its recommendations in this paper; it did not conduct a detailed cost-benefit analysis. In addition, during the development of the recommendations, the staff considered whether and how the recommendations may affect the timeliness and predictability of NRC licensing reviews.

The Honorable Rick W. Allen

1. Plant Vogtle 3 is on the cusp of commercial operation and a decision authorizing Vogtle 4 to load fuel is expected this month. This is a tremendous accomplishment for both Georgia Power and the NRC. This achievement highlights the critical importance of nuclear energy in addressing the nation's need for reliable, dependable, and clean baseload energy that is available 24/7. It also represents a significant investment in the critical infrastructure (manufacturing, supply chain, skilled craft, etc.) necessary for constructing new nuclear power plants going forward.

- a. From the perspective of the nuclear safety regulator, please share with us the key NRC lessons learned from the Vogtle 3&4 construction experience that can be applied to future new nuclear construction projects, particularly SMRs and advanced reactors.

RESPONSE:

Vogtle Unit 3 declared commercial operation on July 31, 2023. The licensee was authorized to load fuel at Vogtle Unit 4 after the NRC's finding on July 28, 2023, that the licensee met the acceptance criteria in the license. The NRC staff has continually assessed the enhancements put in place that facilitated timely regulatory activities related to Vogtle. Many of these are already being applied to advanced reactor reviews, which supported the staff's recent timely and efficient review of the first-of-a-kind construction permit for the Kairos Hermes test reactor. The staff is preparing a report documenting the lessons learned and good practices observed from the construction of Vogtle and expects to issue its report by late 2023. Some of the lessons learned and good practices from Vogtle construction that could be applied to future advanced reactor projects are:

- The creation of the Vogtle Readiness Group, which has been valuable in supporting construction oversight by using "core" teams to identify and resolve issues in licensing and inspection early, by using performance monitoring tools throughout the project, and by engaging management consistently.
- The development of an expedited license amendment review (LAR) process that could be used for low-complexity compliance issues. This revised process promotes accelerated review schedules in which some LARs could be processed in as few as 35 days.
- Scheduling weekly public meetings to allow the NRC and licensees to address emerging licensing or inspections, tests, analyses, and acceptance criteria issues quickly.
- The development of more effective processes for tracking charged hours to a project to assess the efficient use of hours, which could be valuable for the shorter time frames and smaller budgets for advanced reactors.

- Improving efficiency in licensing and inspection activities by identifying and focusing on areas of greatest safety significance.

The Honorable Frank Pallone, Jr.

1. Has the NRC reviewed the Nuclear Innovation Alliance report on ACRS reform? If so, what are the Commission's views on its content and its recommendations?

RESPONSE:

Yes, the NRC is familiar with the report; however, the Commission has not formulated any views or taken an official position on the report.

The ACRS is receptive to improving effectiveness and efficiency as it provides independent advice to the Commission. There are many recommendations in the Nuclear Innovation Alliance report the ACRS supports. In fact, a number of these items were identified by ACRS members, NRC staff, and applicants in recent years, and actions were implemented to address them. As noted in several ACRS letter reports and in ACRS Commission briefings since December 2019, significant progress has been made in areas such as enhancing focus on safety significant matters, reducing duplicative meetings, increasing Commission and Executive Director for Operations awareness of ACRS activities, increasing communications with staff, reducing costs, increasing member diversity, and ensuring members conduct tasks professionally and in an effective and efficient manner.

The Honorable Lori Trahan

1. I recently shared a discussion draft of the Fusion Energy Act with the NRC. I plan on introducing this bill shortly. Among other things, the legislation seeks to codify the Commission's unanimous decision to regulate commercial fusion energy under 10 CFR Part 30, byproduct materials. In your view, does this legislation effectively achieve its end goal to codify the Commission's decision?

RESPONSE:

In April 2023, the Commission clarified the regulation of fusion energy in the United States by directing the staff to license near-term fusion energy systems under a byproduct material framework. The NRC's planned rulemaking effort will focus on adapting the byproduct material requirements and associated guidance to be commensurate with the hazards and risks posed by fusion energy systems to protect the public health and safety and promote the common defense and security of the United States. The current definition of byproduct material in section 11e. of the Atomic Energy Act provides a foundation to regulate many planned fusion energy systems. However, there are some fusion devices that may not utilize byproduct material as fuel. Additionally, there are some fusion devices that utilize aneutronic technologies to sustain fusion reactions that incidentally produce radioactive material that may not meet the definition of byproduct material.

The Fusion Energy Act, as introduced on August 18, 2023, would add a new section 11e.(5) to the Atomic Energy Act. It would expand the definition of byproduct material to explicitly include "any material that is made radioactive directly or indirectly by use of a fusion energy machine." It would also amend the Atomic Energy Act to define the term "fusion energy machine" as a "particle accelerator that is capable of—(1) transforming atomic nuclei, through fusion processes, into other elements; and (2) directly capturing and using the resultant products . . . for a commercial or industrial purpose."

The Fusion Energy Act would achieve its end goal of codifying a byproduct material framework for some, but not necessarily all, fusion devices. The Fusion Energy Act would cover fusion devices, including fusion devices that utilize aneutronic technologies to sustain fusion reactions that incidentally produce radioactive material, so long as the device meets the definition of a fusion energy machine. The definition of a fusion energy machine in the Fusion Energy Act would include only fusion devices that are also particle accelerators. For instance, if the definition of a fusion energy machine referred to a "device" instead of a "particle accelerator," it would cover all fusion devices that meet the other criteria and would not be limited to particle accelerators. The definition would also include only particle accelerators that transform atomic nuclei, through fusion processes, into other elements and not particle accelerators that transform atomic nuclei, through fusion processes, into different isotopes of the same element. For example, a fusion device might use deuterium, a hydrogen isotope, as fuel and transform the deuterium into hydrogen and tritium, which is also a hydrogen isotope. In addition, the definition of a fusion energy machine would include only particle accelerators used for commercial or industrial purposes and not ones used for other purposes, such as research.

2. Are there any areas of concern in the discussion draft of the Fusion Energy Act that you would regard as being inconsistent with the Commission's decision to regulate fusion under Part 30 or NRC's existing policies and procedures?

RESPONSE:

The NRC has not identified at this time any areas of concern that would be inconsistent with the Commission's decision to regulate near-term fusion energy systems under a byproduct material framework.

3. Does the discussion draft of the Fusion Energy Act help ensure that the Commission's decision will be implemented across all fusion technologies in the technology-inclusive, risk-informed manner that the Nuclear Energy Innovation and Modernization Act (NEIMA) directed?

RESPONSE:

NEIMA defines the term "advanced nuclear reactor" as including both nuclear fission reactors and fusion reactors that have "significant improvements compared to commercial nuclear reactors under construction as of the date of [NEIMA's] enactment." As a result, NEIMA's requirements for advanced nuclear reactors currently apply to nuclear fission reactors and fusion energy systems, including the requirement for the NRC to establish, by December 31, 2027, a "technology-inclusive, regulatory framework for optional use by commercial advanced nuclear reactor applicants for new reactor license applications." Consistent with NEIMA and the Commission's direction in April 2023, the NRC staff is currently working to develop a draft proposed rule to establish a technology-inclusive regulatory framework for fusion energy systems and to develop guidance under, "Consolidated Guidance About Materials Licenses."

The Fusion Energy Act, as introduced on August 18, 2023, would add a new definition to NEIMA for the term "fusion energy machine" and would not amend NEIMA's definition for the term "advanced nuclear reactor." The definition of a fusion energy machine in the Fusion Energy Act would capture some, but not necessarily all, fusion devices. The Fusion Energy Act would also amend NEIMA to require the NRC to establish, by December 31, 2027, a "technology-inclusive, regulatory framework for optional use by fusion energy machine applicants for new license applications."

4. What are NRC's plans to work with the agreement states to ensure their preparations for the licensing of fusion machines?

RESPONSE:

The NRC staff is working collaboratively with our Agreement State partners as part of the NRC's efforts to develop a draft proposed rule to establish a technology-inclusive regulatory framework for fusion energy systems and associated guidance and to enhance preparedness for licensing fusion systems. The NRC is also leveraging the Agreement States' experience with

fusion devices. The NRC staff and staff from Agreement States have met to exchange licensing and inspection experience as well as guidance currently in use for fusion devices. In August, the NRC and Agreement States held an all-day session on fusion systems at the Organization of Agreement States annual meeting that included a regulators panel, industry panel, and a tour of the Helion facility in Everett, Washington. The NRC and Agreement States plan to work with the fusion industry to host a half day training session in May 2024. As the rulemaking for fusion systems progresses, the NRC will continue to work with the Agreement States to develop additional training opportunities to enhance preparedness for licensing and effective oversight of fusion devices.

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U.S. House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy, Climate, and Grid Security

Hearing Entitled:
American Nuclear Energy Expansion: Updating Policies for
Efficient, Predictable Licensing and Deployment

July 18, 2023

Questions for the Record for Ted Nordhaus
Founder and Executive Director, The Breakthrough Institute

I would like to express my gratitude once again for the opportunity to share my insights and perspectives during the American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment hearing on July 18, 2023. I am equally appreciative of the chance to address the follow-up questions posed by The Honorable Jeff Duncan and The Honorable Rick W. Allen. Your attention to these crucial matters is greatly appreciated

The Honorable Jeff Duncan

1. As you reflect on the discussion at the hearing, please provide any additional comments you believe would be useful for improving the proposed legislation or our broader work to improve NRC licensing and oversight of existing and advanced reactors?

Response

One of the major topics that the hearing focused on was staffing at the NRC. While it is almost certainly the case that the NRC will need more staff in order to successfully license the significant number of expected applications as advanced nuclear technologies are commercialized, increasing staffing and salaries without fixing the NRC's broken and highly inefficient licensing practices is unlikely to solve the problem. In order for efforts to recruit and retain staff to bear fruit, the NRC bureaucracy will need to be reformed in order to be much more efficient.

Two specific areas that I would flag as priorities are **NRC mission modernization** and **aligning the NRC's risk paradigm with other federal agencies**. The NRC has interpreted its mandate narrowly. The Atomic Energy Act directs the Atomic Energy Commission, and therefore, its successor institution the NRC, to take into consideration a multitude of factors in its decisions. Congress needs to re-establish, in no uncertain terms, that the NRC has a broad mandate to assure secure and reliable energy and protect public health and environment beyond a narrowly defined focus on safe operations at the plant level. The draft NRC Mission Alignment Act would represent an important step in this direction. Second, the NRC's public health standards are not grounded in epidemiologically observable metrics and are far more conservative than other federal agencies and should be aligned with public health standards at EPA and other federal agencies tasked with safeguarding the nation's public health.

2. I'd like to help restore an NRC culture of achievement that, of course, assures adequate safety for the public but with a broader measure on the benefits of nuclear.
 - a. What potential legislative or oversight actions might we consider helping develop at NRC a culture of achievement, in keeping with the Atomic Energy Act goals?

Response

The NRC is an agency in transition. Since its inception, it has regulated a technology, large water cooled reactors, that had already been commercialized and a fleet of reactors that had already been licensed and had largely already been built. At the same time, a large portion of the NRC's workforce is beyond retirement age.¹ As a result, agency surveys on the NRC's culture, find that while the "NRC maintains a few strengths compared to external benchmarks, results have declined significantly in a number of areas."²

In order to meet the challenges of the present and the needs of the new advanced nuclear sector, the NRC will need to adapt in order to meet the moment. Reestablishing a culture of achievement at the NRC will require getting back to basics: reestablishing the goals of the Atomic Energy Act to enable the safe use of civilian nuclear power, protect the environment, and improve the general welfare and setting clear goals and establishing performance metrics that align with the goals of the AEA.

Congress can assist the NRC in accomplishing this by providing direction, resources and oversight. As noted above, Congress should clearly reestablish that the NRC's mission is to advance the national interest and that mandate requires consideration of the benefits of nuclear energy. Congress should insist that the NRC establish an efficient, risk-informed, performance based framework for licensing advanced reactors. It should then provide the resources required to achieve the goals and the oversight to ensure the agency is meeting or exceeding those goals consistently.

The Honorable Rick W. Allen

1. The discussion draft for the Nuclear Licensing Efficient Act includes a provision that would amend the Nuclear Energy Innovation and Modernization Act (NEIMA) to require the NRC to review, assess, and revise, as appropriate, licensing performance metrics and milestone schedules required under the NEIMA to provide the most efficient performance metrics and milestone schedules reasonably achievable.
 - a. Could you each explain what implications this could have for the industry, and how this goal of providing the most efficient performance metrics and milestone schedules could best be achieved?

Response

¹ Study of Retirement Eligibles, April 6, 2021, <https://www.nrc.gov/docs/ML2109/ML21095A071.pdf>

² NRC Office of the Inspector General Safety Culture and Climate Survey, July 29, 2020, <https://www.oversight.gov/sites/default/files/oig-reports/OIG-20-A-14-NRC%20Office%20of%20the%20Inspector%20General%20Safety%20Culture%20and%20Climate%20Survey%28BXK%29.pdf>

The diversity of nuclear energy technology and applications for that technology is increasing dramatically. The NRC needs to modernize to efficiently and effectively regulate these new designs. With such a dramatic shift, it is necessary to ensure that the NRC is meeting the expectations of Congress, the public, and other stakeholders. It is difficult to track the NRC's progress with the current absence of clear performance metrics.

The performance metrics and milestones section in the draft Nuclear Licensing Efficiency Act reduces the buffer before reporting to Congress after missing a milestone from 180 days to 90 days and also requires the NRC to update those generic milestones every 3 years to provide milestones that are reasonably achievable.

The NRC provided generic milestones and timelines, as required by NEIMA.³ However, the generic timelines don't reflect Congressional intent to enable innovation and commercialization of new technologies. Experience has already shown that the metrics are overly cautious. The NRC estimated a 22-month review schedule for the Kairos Hermes reactor construction permit application,⁴ compared to the generic timeline of 36 months. The generic schedule does not differentiate between LWR vs. non-LWR, or power reactor vs. non-power reactor. Generic timelines should be periodically reevaluates as experience is gained.

Reducing the timeline to report to the relevant congressional committees is reasonable. As experience is gained over time the uncertainty related to review timelines should be reduced and the NRC should become more confident in review schedules.

³ Generic Milestone Schedules of Requested Activities of the Commission, <https://www.nrc.gov/about-nrc/generic-schedules.html>

⁴ Kairos Power, LLC - Hermes Test Reactor Construction Permit Application Review Schedule and Resource Estimate, December 15, 2021, <https://www.nrc.gov/docs/ML2134/ML2134A214.pdf>

CATHY McMORRIS RODGERS, WASHINGTON
CHAIR

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED EIGHTEENTH CONGRESS
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August 30, 2023

Ms. Maria Korsnick
President and CEO
Nuclear Energy Institute
1201 F Street N.W., Suite 1100
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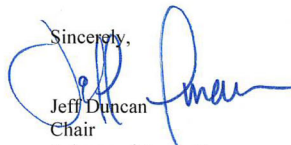
Dear Ms. Korsnick:

Thank you for appearing before the Subcommittee on Energy, Climate, and Grid Security on Tuesday, July 18, 2023, to testify at the hearing entitled "American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions by the close of business on Wednesday, September 13, 2023. Your responses should be mailed to Kaitlyn Peterson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515 and e-mailed to Kaitlyn.Peterson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Jeff Duncan
Chair
Subcommittee on Energy,
Climate, and Grid Security

cc: Rep. Diana DeGette, Ranking Member, Subcommittee on Energy, Climate, and Grid Security

Attachment

The Honorable Jeff Duncan

1. I understand that the Nuclear Energy Institute recently released a report detailing a problematic trend in NRC reviews for activities such as license renewal and power uprates. The report explained that the more experience the agency has the more costly and time-consuming the reviews become. That approach doesn't work in business and the same goes for the Federal government. Would you elaborate on this and provide your suggestions for how this trend could be reversed.

The road to clean energy runs directly through the NRC. Thus, ensuring U.S. leadership in nuclear energy places the NRC in a central and decisive role. To evaluate the NRC's performance over time, NEI examined public records providing information on the duration and costs associated with NRC's review of applications for power uprates, license renewals, design certifications, and early site permits. We found that, despite the well understood technology of light water reactors used by the commercial nuclear industry during the last 50 years, NRC's processes have become more cumbersome and costly, rather than more efficient.¹ We believe that one important contributing factor to this trend is the agency's penchant for diverting its focus (and consequently the focus of licensees and applicants) from safety significant activities to those that have a negligible effect on safety.

Although the NRC has taken some positive steps to increase efficiency, additional actions are necessary because the NRC's persistent drive toward zero risk—rather than adequate protection of public health and safety—too often stands in the way of nuclear energy making the “maximum contribution to the general welfare.” For example, NEI's review of publicly available information revealed that reviews have doubled, tripled, and even quadrupled in cost and length, not decreased as would be expected. Indeed, the NRC's own data² shows that the agency is applying 50 percent more resources for subsequent license renewals than it applied to initial license renewals, despite the scope of subsequent license renewal reviews being only a fraction of the scope of initial license renewal review. And according to the NRC's generic review schedule, even the simplest licensing actions are given a review schedule of one to two years.³

These problematic trends must be reversed if we are to deploy a new generation of clean, efficient, and reliable nuclear energy facilities and we very much appreciate the Committee looking into these issues. NEI has identified several specific actions and performance metrics which would result in more efficient NRC reviews. Many of these actions are outlined in our recent responses to requests from this Committee⁴ and the Senate Select Committee on Intelligence.⁵ Additionally, we were pleased to see the recent proposal⁶ by two NRC Commissioners that aims to develop transparent, detailed, and objective performance metrics. We believe developing and publicly tracking such performance metrics will result in a renewed focus on efficiency as the NRC carries out its safety and security mission. This transparency,

¹ NEI, “Examination of NRC Review Performance” (June 2023), available at <https://www.nei.org/resources/reports-briefs/examples-of-nrc-performance>

² NEI, “Examination of NRC Review Performance” (June 2023), available at <https://www.nei.org/resources/reports-briefs/examples-of-nrc-performance> and “Is the NRC Ready to Meet the Moment?” (June 2023), available at <https://www.nei.org/news/2023/is-the-nrc-ready-to-meet-the-moment>

³ NRC, <https://www.nrc.gov/about-nrc/generic-schedules.html>

⁴ Letter from M. Korsnick, NEI, to Chair Rodgers, Chair Duncan, Ranking Member Pallone, and Ranking Member DeGette, House Energy and Commerce (May 4, 2023).

⁵ Letter from M. Korsnick, NEI, to Chair Warner, Senate Select Committee on Intelligence (June 2, 2023).

⁶ NRC, Commission Paper from Commissioners Wright and Caputo: Measuring NRC Success (August 29, 2023), available at <https://www.nrc.gov/docs/ML2324/ML23241B013.pdf>

along with a focus by the staff and Commission on process efficiency, can enable real progress. It will take tangible progress on each of the actions outlined in our responses to the Congressional committees and the recent NRC Commissioner proposal to enable nuclear power to play a key role in meeting our clean energy and energy security goals.

2. As you reflect on the discussion at the hearing, please provide any additional comments you believe would be useful for improving the proposed legislation or our broader work to improve NRC licensing and oversight of existing and advanced reactors?

We were very encouraged by the proposed legislation discussed in the hearing. As the Committee further considers these proposals, we would encourage members to look for opportunities to integrate some of the specific recommendations that were discussed by the witnesses, as well as recommendations received in response to the Committee's April 17, 2023, request for information from nuclear energy stakeholders. As discussed in our written testimony submitted to support the July 18, 2023, hearing before the Subcommittee on Energy, Climate, and Grid Security NEI urges Congress to address the following critical actions:

- Modernize the NRC regulatory process.
- Establish a secure, reliable, domestic fuel supply.
- Surmount financing obstacles facing domestic plant development.
- Support U.S. competitiveness in the global nuclear market.
- Reauthorize the Price-Anderson Act.
- Establish an integrated approach to used fuel management.

We would be pleased to work with your staff to further discuss these ideas.

One key issue discussed at the hearing and in my written testimony, concerns the NRC's extensive hearing process, which includes the opportunity for *both* a trial-type *contested* hearing on safety and environmental issues, and a mandatory *uncontested* hearing. Notably, the public can participate in the contested hearing, but the mandatory uncontested hearing does not include public participation. It was added to the Atomic Energy Act in 1957 to address concerns about a lack of transparency in early licensing decisions. The mandatory hearing has outlived its useful purpose and unnecessarily adds 4-7 months and several millions of dollars to the licensing process. For example, this unnecessary hearing has delayed the NRC's approval of the construction permit for the Kairos Hermes reactor by several months.

There was clear agreement among both industry and NRC witnesses at the July 18 Subcommittee hearing that the mandatory hearing requirement adds virtually no value to the NRC's licensing process from a safety perspective, and that such a hearing could be eliminated without eroding public confidence. In fact, as the NRC witness at the July 18 Subcommittee hearing acknowledged, on June 9, 2008, the Commission provided then-Speaker of the House Nancy Pelosi with a legislative proposal to amend the Atomic Energy Act and eliminate the mandatory hearing requirement. We also note that the Efficient Nuclear Licensing Hearings Act – legislation referenced in the July 14, 2023, hearing memorandum – also proposes an

amendment to the Atomic Energy Act that would eliminate the mandatory hearing.⁷ We support elimination of the mandatory hearing requirement.

3. I'd like to help restore an NRC culture of achievement that, of course, assures adequate safety for the public but with a broader measure on the benefits of nuclear.
 - a. What potential legislative or oversight actions might we consider helping develop at NRC a culture of achievement, in keeping with the Atomic Energy Act goals?

To restore a culture of achievement at the NRC, there must be a broad recognition that NRC's regulatory and licensing processes not only provide adequate protection of public health and safety, but also facilitate achievement of the policy goal announced in the Atomic Energy Act of 1954 that nuclear energy make the "maximum contribution to the general welfare." We believe the NRC can achieve both objectives. We encourage Congress to direct the Commission to update its mission statement to drive more timely and efficient licensing reviews of U.S. advanced nuclear technologies. Doing so would not detract from NRC's focus on safety. Notably, we **do not** believe that providing such direction requires an amendment to the Atomic Energy Act.

In enacting the Atomic Energy Act of 1954, as amended (the Act or AEA), Congress declared it to be "the policy of the United States that . . . the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security." Although Congress later separated the Atomic Energy Commission's regulatory and promotional functions, that separation did not change the overall U.S. policy with respect to the use of atomic energy.

Today, however, the NRC's mission focuses solely on the safety and security of nuclear plants and omits any commitment to execute that mission efficiently, which is necessary to avoid unnecessarily hindering the broader U.S. energy policy goal of maximizing nuclear energy's contribution to the general welfare. This omission has fostered a drive toward "zero risk" and unnecessarily burdensome regulatory practices. As we look toward the future, it is essential that the NRC staff understand the key role that the agency plays in ensuring nuclear energy's contribution to the general welfare. The core value of efficiency must be reintegrated into the NRC's mission and culture. Now, at a time when nuclear power is essential to national security, electricity reliability, electricity affordability, and our nation's goals for a clean energy economy, it is essential that Congress reinforce these original intentions of the Act. Enclosure 1 of our May 4, 2023 letter to Chair Rodgers, Chair Duncan, Ranking Member Pallone, and Ranking Member DeGette, provides more details on how this can be achieved.

⁷ Memorandum, *Hearing entitled "American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment,"* July 14, 2023.

The Honorable Rick W. Allen

1. The discussion draft for the Nuclear Licensing Efficient Act includes a provision that would amend the Nuclear Energy Innovation and Modernization Act (NEIMA) to require the NRC to review, assess, and revise, as appropriate, licensing performance metrics and milestone schedules required under the NEIMA to provide the most efficient performance metrics and milestone schedules reasonably achievable.
 - a. Could you each explain what implications this could have for the industry, and how this goal of providing the most efficient performance metrics and milestone schedules could best be achieved?

We appreciate Congressional support to streamline regulatory permitting and licensing processes, as proposed in the Nuclear Licensing Efficiency Act. The lack of regulatory efficiency leads to excessive cost, a lack of predictability, and will hinder deployment. Regulatory risk stands in the way of the commitments – and the private investment – that industry needs to meet demand. Establishing efficient performance metrics and milestone schedules will reduce regulatory risk and provide the predictability and timeliness needed for reactor operators and developers. If nothing changes the industry won't be able to meet demand. Since the time of the hearing, we were pleased to see the recent proposal⁸ by two NRC Commissioners that aims to develop transparent, detailed, and objective performance metrics. It will take tangible progress on ideas such as these to enable nuclear power to play a key role in meeting our clean energy and energy security goals.

The objectives of this bill are a high priority for the nuclear industry. We believe the timeframes associated with the NRC's review processes provided in the bill could be further improved to be even more efficient.

We believe that further updates to the NRC's processes are appropriate to help achieve the following license review schedules:

With respect to an application that is docketed seeking issuance of a construction permit, operating license, or combined construction permit and operating license for a production facility or utilization facility, the Commission shall include the following improvements which can be modified to be shorter or longer with the consent of the NRC and the applicant:

- Undertake an environmental review process and complete any final environmental impact statement to the maximum extent practicable within 18 months after the application is accepted for docketing. To aid in meeting this deadline, the Commission shall develop procedures to allow use of an applicant's environmental report as a draft environmental impact statement (consistent with section 107(f) of the National Environmental Policy Act).
- Complete the technical review process and issue any safety evaluation report to the maximum extent practicable within 18 months after the application is accepted for docketing.

⁸ NRC, Commission Paper from Commissioners Wright and Caputo: Measuring NRC Success (August 29, 2023), available at <https://www.nrc.gov/docs/ML2324/ML23241B013.pdf>

- Complete the environmental review and technical review processes and issue a decision on the requested permit, license, or certification no later than 24 months after the application is docketed.



Mr. Jeffrey S. Merrifield
Chairman,
Advanced Reactor Task Force
U.S. Nuclear Industry Council
1317 F Street N.W., Suite 350
Washington, DC 20004

Dear Mr. Merrifield:

Thank you for appearing before the Subcommittee on Energy, Climate, and Grid Security on Tuesday, July 18, 2023, to testify at the hearing entitled “American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment.”

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions by the close of business on Wednesday, September 13, 2023. Your responses should be mailed to Kaitlyn Peterson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515 and e-mailed to Kaitlyn.Peterson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Jeff Duncan
Chair
Subcommittee on Energy,
Climate, and Grid Security

cc: Rep. Diana DeGette, Ranking Member, Subcommittee on Energy, Climate, and Grid Security

Attachment

Attachment—Additional Questions for the RecordThe Honorable Jeff Duncan

1. **As a former Commissioner you probably have views on agency management and leadership. Concerns have been raised repeatedly about NRC licensing performance, the decline in licensing activity, the more costly reviews, the longer reviews. Many stakeholders talk about the failure of the Part 53 process to reflect what Congress intended. Please discuss what is necessary for leadership at the Commission to address these issues.**

Since I left the NRC almost 15 years ago, there has been an increasing tendency of the Commission to promote leadership from within the organization and a larger percentage of managers at the Commission have worked with the Agency for their entire careers. Previously, there was a higher percentage of individuals with experience from the Department of Energy, the U.S. Navy Naval Reactor Program, or who possessed experience from having worked in the nuclear industry. The result, in my personal view, is that there is a greater level of insularity within the NRC staff and management and an increasing lack of innovation and fresh thought. Two notable exceptions to this trend are Ray Furstenau (formerly with DOE) the Director of the Office of Research, and Mirela Gavrilas (formerly at the University of Michigan), the Director of the Office of Nuclear Security and Incident Response, who have, in my view, brought experience from outside the Agency and who have provided innovative leadership efforts in the areas under their responsibility. Further, many of the senior leaders within the NRC leadership lack the kind of technical depth within the senior management ranks as we had when I was a commissioner. Due to this change, the current crop of senior NRC managers is less likely to challenge the recommendations made by lower-level staff that do not align with the Atomic Energy Act's requirement that the NRC regulations meet the reasonable assurance of adequate protection standards – but not more.

The recent experience with Part 53 is a direct example of this gap. The individuals at lower levels of the NRC organization put together a draft Part 53 rule which borrowed from other portions of the existing Part 50 and 52 processes and layered on additional requirements that were more stringent than existing rules. This effort was completely contrary to the notion of coming up with a risk informed rule that recognized the lower level of risk associated with the advanced reactor technologies that are being considered today. Instead, the draft Part 53 before the Commission would propose an increased number of requirements when compared with the existing light water fleet, rather than a reduced regulatory burden that reflects the lower risk presented by these technologies.

Another example of the challenges demonstrated by my point above is the management of the differing professional opinion (DPO) program of the NRC. I believe the DPO program is an important avenue to make sure that safety issues or concerns aren't ignored and that individual views about safety, as demonstrated by the Challenger accident, should be evaluated and dispositioned. Evaluating these concerns is a difficult balance because sometimes it results in the Agency changing its policies, or sometimes the individual raising the concern must be told that their views didn't prevail, and that the Agency is sticking with its position. This requires strong management and sometimes difficult conversations. Unfortunately, I believe the NRC DPO process has been abused by individual staff of the NRC who refuse to back down after they have been given an opportunity to go through the process. This has resulted in a chilling effect among NRC managers who are fearful of telling the NRC staff "no" and instead want to negotiate a more intermediate position to assuage their concerns. Compounded by a lack of technical acumen among this same cohort of managers, this results in unneeded regulatory ratcheting at the Agency and imposes additional, unnecessary and costly regulatory burden on the industry and other regulated entities. This process also has a tendency

to drag out Agency processes and is one of the reasons why Agency decisions have taken more and more time as the years go by.

To reverse these trends, the Commissioners must engage in leadership renewal within the Agency's management ranks. This should include making sure that every senior management position within the Agency is opened to outside competition and the Agency should set an explicit goal of making sure that they continue to identify senior staff who have experience outside of the Agency. Further, the Agency would benefit from creating a Chief Technical Officer position and they should identify and hire experts with various forms of technical expertise that the Commission could call upon to ensure that the Agency's regulatory processes are not unnecessarily conservative.

2. **As you reflect on the discussion at the hearing, please provide any additional comments you believe would be useful for improving the proposed legislation or our broader work to improve NRC licensing and oversight of existing and advanced reactors?**

When I testified before the Committee, I did not have the opportunity to provide my detailed comments about [H.R. 4530](#), NRC Office of Public Engagement and Participation Act of 2023 (Rep. Levin).

While I appreciate and share the concern that the NRC can do a better job of engaging in two-way communication with the public as well as its licensees, I believe the current culture of the Agency, which has an overly broad view of what constitutes promotion, has unnecessarily limited the manner in which it engages with the public, including the type and breadth of information it provides to members of the public, and I am supportive of making changes that would improve this situation.

While well intended, I believe H.R. 4530 could cause unintended consequences that would not be beneficial to the public at large and could detract from the goal of efficient and timely licensing to enable nuclear power to meet the needs of addressing climate change.

The Office of Public Engagement, which is proposed in the bill, is similar to a structure that has been implemented at FERC and by some State Public Utility Commissions. An important distinction is that these institutions are economic regulators and hence every member of the public is directly affected by the decisions of this entity. In the case of this proposal, there may be only a small portion of the public who oppose these decisions and there is no nexus to location, standing, or a personal stake in the licensing decision to be funded by the advocate. Nor is there any nexus to public participation that furthers the goals of the NRC by actually improving public health and safety.

The legislation, as proposed, would create a new Office, equal in standing to the Office of Nuclear Reactor Regulation, but with a mandate to assist in submitting contentions and hearing requests, which are ultimately a challenge to the NRC Staff licensing process. These contentions, could then be funded by taxpayer dollars which would result in the NRC Staff using taxpayer dollars to come up with new and creative ways to legally challenge the NRC's own licensing decisions, potentially delaying those decisions in the process.

Additionally, besides the Commissioners and the NRC Inspector General, no other management official in the Agency has a fixed term or such high standards preventing removal. As a former Commissioner, I believe the Commission needs the flexibility to remove or reassign any manager to address agency needs, gaps in capabilities or lack of performance. The individual in this role should be no exception.

In my view, to meet the worthwhile goal of increasing public participation and awareness of the Agency's process, I would suggest the following steps:

- I would strongly recommend improving and enhancing the Adams Electronic system at the Agency. Enabling greater public access to NRC files would be of great value in allowing the public to better understand and engage with the Agency decisions.
 - Modify the Nuclear Energy Innovation and Modernization Act to include a definition for "public engagement" and require the NRC to capture this within its Rules and Guidance.
 - Take Public Engagement Activities off the Fee Base to eliminate the existing disincentive for the Agency to undertake broader stakeholder engagement activities.
 - Require the NRC staff to actively "engage" and answer public questions and require the hiring and training of additional staff facilitators who could more effectively achieve this goal. The Agency should not shy away from providing informative documentation and presentations that would explain the technologies, subject to the Agency's regulations, to provide a better basis for members of the public to educate themselves and engage in dialog with the Agency.
3. **I'd like to help restore an NRC culture of achievement that, of course, assures adequate safety for the public but with a broader measure on the benefits of nuclear.**
- a. **What potential legislative or oversight actions might we consider helping develop at NRC a culture of achievement, in keeping with the Atomic Energy Act goals?**

When I was an NRC Commissioner, we had a very good appreciation for the balance created within the Atomic Energy Act and the Energy Reorganization Act in which the Agency should regulate these technologies to provide reasonable assurance of adequate protection of public health and safety, but conducted in a manner which would enable these beneficial technologies to be deployed. Since I left, I believe the Agency has become increasingly conservative in engaging in any activities that could be even remotely perceived to be promotional. This has resulted in increased insularity, the inability to adequately engage with the public and regulated licensees and, frankly, erosion in the confidence of the Agency's decisions. To me, the Agency can engage in a more forward-leaning manner to explain and educate the public about these technologies without endangering their regulatory independence on specific regulatory decisions or actions.

Whether through additional legislation, or further oversight hearings, I think Congress needs to remind the Commission and its senior staff that they need to remember the balance I described in the previous paragraph and recognize the intention, as captured in the Atomic Energy Act, that these technologies should be licensed in a manner that imposes only that level of regulation needed to meet the reasonable assurance of adequate protection standard and enables these technologies to be promptly deployed for beneficial public use.

The Honorable Rick W. Allen

1. **The discussion draft for the Nuclear Licensing Efficient Act includes a provision that would amend the Nuclear Energy Innovation and Modernization Act (NEIMA) to require the NRC to review, assess, and revise, as appropriate, licensing performance metrics and milestone schedules required under the NEIMA to provide the most efficient performance metrics and milestone schedules reasonably achievable.**

- a. **Could you each explain what implications this could have for the industry, and how this goal of providing the most efficient performance metrics and milestone schedules could best be achieved?**

I believe there is a tendency for the Commission management to use the “NRC Principles of Good Regulation” as an overarching yardstick to measure whether their regulatory activities are appropriate and useful. When I was on the Commission, we continually challenged our staff to review regulations, not only to ensure that there were no regulatory gaps, but also to identify areas where unnecessary regulatory burdens could be reduced, and regulations slimmed down where they did not make sense from the standpoint of the reasonable assurance of adequate protection standard. From all appearances, this philosophy is no longer embraced by the Commission or the senior staff and therefore there appears to be a one-way ratchet on regulatory actions.

During my time on the Commission, we operated with the principle that the NRC’s regulatory actions should be effective, efficient and timely in order to avoid imposing unnecessary regulatory burden. We also had a strong reporting culture and were required by Congress to provide succinct, graphical reporting documents with appropriate metrics to make sure we had a transparent way for the Commission to supervise, manage and adjust licensing activities to meet pre-determined milestones and Congressional expectations.

Today, the Agency does not fully embrace the mindset that its regulatory actions should be effective, efficient and timely, and I believe that the identification of appropriate evaluative performance metrics and milestone schedules should be imposed, with the appropriate input of Congress, to make sure that the Agency can meet these goals and expectations. When I was a Commissioner, we made the commitment to complete license renewal reviews within an 18-month period and new reactor licensing reviews within 36 months. This required significant effort by the Commission and its staff, but we managed the Agency actions in an effective manner to meet these goals and it proved to be a vital tool in making sure the Agency could be held accountable.